

Exploitation and exploration in a company with institutionalized Lean practices

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Preface

Writing this thesis has been an interesting journey that has both challenged and modified my view on Elkem's adaption of Lean manufacture, the Elkem Business System (EBS).

Through working with technical support, sales and marketing over many years, I have experienced that it is not always easy or even desirable to alter a well-functioning and streamlined production, just because it might bring new customers and new opportunities in the future. This strain between pursuing a cost-efficient production one hand, and aiming for market orientation and product development on the other, has led me to wonder how EBS might be influencing the organization's ability to innovate. And how other companies applying Lean practices are experiencing and handling the same. This motivated me to define a research topic in the area of Lean manufacture and innovation.

In the search for relevant literature, my supervisor Torbjørn Hekneby was of great help in defining the general orientation, by pointing me in the direction of Benner and Tushman and their classical article on exploitation and exploration. I am also grateful for Torbjørn's valuable input on choice and use of scientific methods, and for his help in framing the scope.

I would equally like to express a great thanks to my coworkers in Elkem, for their willingness to devote time, and to openly share their thoughts and experiences.

Warm thoughts are sent to my father, who contributed by serving as discussion partner and by challenging formulations and illustrations.

And last but not least, a warm thank you to my dear Denis, for his patience and never-ending support throughout this process.

I hope the reader will enjoy this thesis, and learn how it altered my perhaps preconceived view on EBS and Lean practices.

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Abstract

This study investigates the difficult task of balancing continuous improvement of existing business on one side, and exploring new opportunities on the other. The two strategies are equally important for a company's long-term success, but also fundamentally different. While one is associated with control, refinement, efficiency and reduced variation (exploitation), the other involves risk-taking, experimentation and innovation (exploration). In a time when globalization is tightening the competitive landscape, and in a market that is perhaps more dynamic and rapid-changing than ever, mastering this balance is becoming increasingly important.

The exploitation-exploration dilemma is in this work studied in a multinational manufacturing company, founded more than a century ago. The company has long tradition for use of Lean practices, and has adapted its own version that has matured over two decades through constant management focus. This makes an interesting backdrop for the present study, as Lean and similar philosophies have been suspected of restraining employees' entrepreneurial orientation and thus inhibiting exploration.

Through semi-structured interviews of ten key members of the organization, information about the company's ongoing initiatives, idea generation, project prioritization and related aspects of the company culture and competitive context was gathered and analyzed. Results from the interviews are discussed in the context of relevant literature, primarily within the fields of exploitation and exploration, ambidexterity and corporate entrepreneurship.

The study concludes that despite a highly explorative origin, the case company's current orientation is mainly exploitative. This is successfully achieved through their mature adaption of Lean philosophy. But in contrast to literature pointing to Lean and similar philosophies as potentially harmful for a company's ability to explore, the findings rather propose that the philosophy itself is not to blame for limited entrepreneurial orientation. The observed hindrance is rather due to the ever-existing issue of scarce resources, combined with an overall company culture. The company culture is regarded as the sum of many factors, both internal such as management orientation, attitude towards risk and reward systems, and external such as market competitiveness and megatrends.

Chapter 1 Introduction

In a world that is changing ever faster, innovation and exploration is becoming increasingly important for firms that want to stay in the game. At the same time, increased globalization is bringing the world corners closer together and tightening the competitive landscape. In order to excel, firms must not only be able to maintain the development pace, but also manage to reap the benefits through efficient operation.

How should a company go about to manage this? And how is a 116 year old holding up in such a demanding landscape?

This study will investigate the two sides of competitive advantage, labelled exploration and exploitation, within a multinational manufacturing company. With a century of experience in the field, the company has seen its ups and downs. The fact that it's still around, and today recognized as one of the world's leading manufacturer of metals and materials, proves its capability of long-term success. The reasons for success can be many and complex. Some stretch back to the company's early history as an inventor and technology provider, while a more recent contributor probably is found in the company's mature and particular adaption of Lean philosophy, an overarching business system that has been developed over more than two decades.

Lean manufacturing is a way to assure efficiency throughout entire value chains, by removing waste and adapting to customer requirements in a cycle of continuous improvements. From its origin in the automotive industry, known as the "Toyota Production System", the philosophy has gained ground over the years. Lean practices are today used not only for manufacture, but also in fundamentally different sectors such as service industry and health care.

Along with its widespread use comes a considerable amount of publications on successes and failures with Lean implementation and Lean practices. Some refer to implementation of Lean as positive for employee engagement and innovation (Lindskog, Hemphälä & Eriksson, 2017; Ståhl, Gustavsson, Karlsson, Johansson, & Ekberg, 2015), while others point to possible negative effects on creativity and entrepreneurial behavior of a regime based on measures, control and streamlining (Chen & Taylor, 2009; Lewis, 2000).

What is however more difficult to find, are studies that empirically investigate *long-term effects* of Lean practices. The majority of published reports are dealing with the implementation phase of Lean, and are as such rather operating in the field of change management. Or, the investigation is conducted when the implementation is still only a few years old and presumably not yet mature. Neither of these angles will be able to describe how Lean practices impact an organization after they have matured and become institutionalized.

In the early 1990s, March created a path in literature that has come to be recognized as the dilemma of *exploitation and exploration* (March, 1991). In this context, Lean practices can be seen as a way to *exploit* the benefits of defined processes and products, by continuously optimizing and incrementally adapt to changing customer requirements. This is crucial if a company wants to be profitable. On the other hand, companies that want to succeed also in the long run, need to simultaneously allocate resources to *explore* new opportunities. It could be in order to maintain market share in an increasingly competitive environment, to adapt to stricter environmental regulations, or responding to other megatrends such as urbanization, digitalization, population growth or business gravity towards the East.

It is easy to grasp the idea of this balance being important. Indeed, many articles present examples of limited success due to one-sided focus on one or the other, whereas cases of long-term success are found among those who are able to pursue both. Some of these are presented in Chapter 2. The more interesting question, and where it starts to get difficult, is when trying to describe *how* a firm should go about to do this. Because simultaneous focus on both exploitation and exploration is difficult to manage. First of all, the two directions imply fundamentally different ways of managing an organization. There are different types of follow-up measures, different tools are being applied, there are different motivations, different time frames, different dynamics, and different targets. Exploitation would focus on improving something known, while exploration would be to develop something unknown. Managing such different tasks at the same time, requires that employees are able to work with different and sometimes even contradictory targets and structures. Or, it requires enough resources to allow for the tasks to be separated. In literature, this is found under the topic of *ambidexter organization*, i.e. managerial ways for a firm to simultaneously dedicate effort to exploitation and exploration.

The dilemma of exploitation and exploration has been further problematized by linking exploitation to *process management* - a common denominator for Lean manufacturing, TQM, Six Sigma and similar philosophies. Skeptics of process management will say that Lean practices inhibit explorative activities, and that the more an organization focus on exploitation, the less it will focus on exploration. This is the topic of Benner and Tushman's classic article, for which they received the Academy of Management Review's *Best Article Award* in 2003 and *Decade Award* in 2013 (Benner & Tushman, 2003; Benner & Tushman, 2015). Suggested mechanisms are well described in their work, as briefly summarized in Chapter 2.

The works of March (March, 1991) and Benner & Tushman (Benner & Tushman, 2003) seem to have inspired a large number of later publications, judging by their more than 26 000 and 5000 citation, respectively. Nevertheless, empirical studies about how companies actually are dealing with the exploit versus explore dilemma have been difficult to find. The majority of the reports seem to aim at proposing frameworks, comparisons of different organizational forms and strategies, and hypothesis of mechanisms. But little literature has been found on empiric testing of such hypothesis. Arguably, it can be a difficult matter to test, given the complex nature of interacting variables and context.

While the ambidexter literature looks to organizational solutions to the exploit-explore tension, there are also more structural ways out of the dilemma. On a corporate strategy level, as described in the field of *corporate entrepreneurship*, exploration can be achieved through simply screening niche markets for new inventions (Christensen, 1997), corporate venturing, or open innovation (Burns, 2016).

In this work, the main focus has been on the organizational side, and less on the structural and strategic side. The motivation has been to investigate the difficult balance of exploitation and exploration within an established company. Not just in general, but specifically in a company that has long tradition for Lean production. Given that an important amount of literature point to possible conflicts between Lean practices and innovation, and in particular explorative innovation, the question asked in this study is formulated as follows:

How is a company, where Lean practices have been institutionalized over more than twenty years, balancing exploitation and exploration?

Chapter 2 will present an overview of relevant theory and literature, while Chapter 3 describes the applied methodology. Chapter 4 explains how the empirical work was conducted, and gives an introduction to the case company. The results are laid out in Chapter 5, and then discussed in Chapter 6, which also discusses the applied methodology. Finally, Chapter 7 presents the main findings and conclusions of the discussed topics. This final chapter also suggests how the study can be complemented and extended.

Chapter 2 Theory

2.1 Lean Manufacturing

What is today known as *Lean manufacturing* has its origin in the *Toyota Production System*, first described by Shigeo Shingo in the 1980's (Shingo & Dillon, 1989). The term *Lean* was introduced some years later, by Womack, Jones and Roos in their bestselling book "*The Machine that saved the world*" (Womack, Jones & Roos, 1991). The Lean business philosophy is today recognized as a set of tools and ideas that are derived from a few main principles:

- Focus on customer needs (pull)
- Mapping of process streams
- Defining best practice and standardizing
- Determining and eliminating waste, where waste is defined as non-value adding process steps such as waiting, overproducing, unnecessary inventory, unnecessary motion, over-processing, rework, correction and scrap
- Continuous improvement of existing systems

Since its beginning in the automotive industry, the Lean concept has over the years been introduced in many types of manufacturing industries. Its popularity has also spread to other sectors, such as service companies and health care.

Lean, together with neighboring philosophies such as TQM and Six sigma, has undoubtedly improved many organizations' efficiency and productivity (Benner & Tushman, 2003). On the other hand, organizational theorists are raising a concern about these philosophies' possible negative impact on an organization's ability to innovate and adapt to changing environments (Lewis, 2000; Chen & Taylor, 2009; Protais, 2017).

2.2 Innovation

Recognizing that innovation is a broad term, it is useful to visit some definitions before further exploring how it might relate to Lean practices. Searching the literature, a vast number of definitions can be found. Eric Shaver presents a selection of published definitions in his

blog post (Shaver, 2020). Common factors seem to be “something new” combined with “implementation” or “creation of value”, or “the implementation of something new in a way that brings value”. According to OECD (EUROSTAT 2005), “*an innovation is the implementation of a new or significantly improved product (good or service) or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations*”.

Further, it is important to distinguish the process of innovation from the psychological concept of creativity, creativity being a human trait that we all possess to a smaller or larger degree (Hoerl & Gardner, 2010).

A given innovation can be placed somewhere along a scale from continuous to disruptive (Dosi, 1982), or from incremental to radical (Green, Gavin, & Aiman-Smith, 1995). These terms are often used interchangeably. They may also be placed in a conceptual diagram, as illustrated in Figure 2-1. The diagram separates innovation along two different axes: Technology and Market (Abernathy & Clark, 1985). The span can then be divided into four groups, representing four different types of innovation: Incremental or continuous, disruptive, architectural and radical.

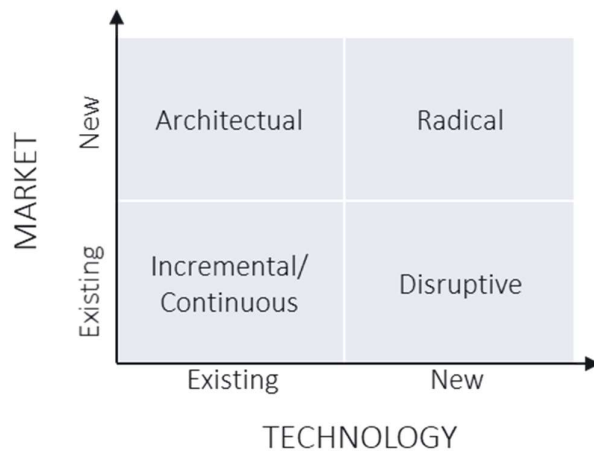


Figure 2-1 The innovation matrix (Abernathy & Clark, 1985).

Bansi and Tuff developed the concept further by proposing “*The innovation ambition matrix*” (Bansi & Tuff, 2012), represented in Figure 2-2. Innovation is still defined along the axis of Technology (“How to win”) and Market (“Where to play”), but rather than dividing into the

classical four areas, the span is segmented into core-, adjacent- and transformational innovation. They further suggest a strategic approach where “transformational” development is achieved by first building competence in an area “adjacent” to core activity.

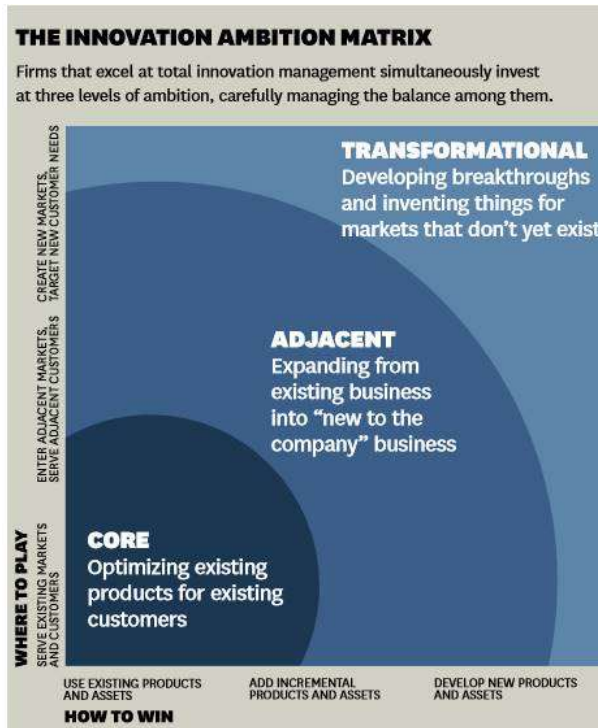


Figure 2-2 The innovation ambition matrix (Bansi & Tuff, 2012)

Innovations can also be classified as for instance organizational or technological, or could even be grouped according to the “ten types of innovation” as proposed by Keeley, Walters, Pikkell and Quinn (Keeley, Walters, Pikkell & Quinn, 2013):



Figure 2-3 The ten types of innovation (Keeley & al. 2013).

2.3 Exploitation and exploration

Another set of terms used in connection with innovation, is exploitation and exploration. March (March, 1991) applied these terms to describe two different modes of organizational

learning. Exploitation implies activities such as refinement, production, efficiency, selection, implementation and execution. In contrast, exploration implies terms like search, variation, risk taking, experimentation, play, flexibility, discovery and innovation.

Although parallel to the gradual incremental - radical scale, the concept of exploitation and exploration is often rather seen as two distinct aspects of organizational learning. This distinction can also be expressed as development based on existing competences (exploitation), versus requiring new competencies to develop an innovation (exploration) (Danneels, 2002).

What makes exploitation versus exploration an interesting concept?

There are many studies supporting the idea that for a firm to be successful in the long run, a combination of exploitation and exploration is beneficial. A good balance between exploitative and explorative activities helps to build sustainable competitive advantage (Lewis, 2000). To be able to respond to external pressure such as increased competition or changing market dynamics, sufficient effort needs to be allocated to exploration of new possibilities, new business areas, new technologies etc. At the same time, once an innovation - in the shape of for instance a new product or an improved process step - is implemented, it needs to be exploited. That is, being capitalized, optimized and continuously improved according to for instance Lean principles.

In an empiric study of 206 manufacturing firms, He and Wong (He & Wong, 2004) investigated the effect of technological innovation strategy on sales growth rate. As independent variable they used a Likert scale with eight different reasons for a firm to select innovation projects. Based on the responses, the firms were defined as having an exploitative innovation strategy, an explorative innovation strategy, or neither (i.e. limited focus on innovation in general). They found that companies pursuing both exploitative and explorative technological innovation had higher sales growth rate than companies with either an imbalance between the two types of innovation, or focused on neither of them. That is, an overweight of exploitation, of exploration, or of neither, was negatively correlated with sales growth rate.

Hoerl and Gardner (Hoerl & Gardner, 2010) used the US health care system as an example of “the hazards of a singular focus on innovation”. Although US medical science is at the

forefront of worldwide development, Hoerl and Gardner noted that too little effort is put into continuously improving the healthcare service. “*The same life that is saved by radical new technology in the USA is too often lost by preventable blunders made in the health care system*”. Or as they summarize: Long-term business success requires a balanced approach that plays both defense (problem solving) and offence (innovation).

Bauer and Lekner (Bauer & Lekner, 2013) investigated how balancing R&D budget allocation between exploitative and explorative innovation activities (in terms of share of R&D expenditure) affects new product performance (given as share of sales from new products). The study is based on 69 strategic business units within 15 European chemical companies. Bauer and Lekner distinguish between process R&D and product R&D, and give examples to underpin the importance of process R&D on new product performance (the link between product R&D and product performance being more intuitive). One of these examples is Wacker Chemie AG, and how their strong market position and competitive advantage comes from their knowledge about high-purity production, throughout several integrated process steps. Bauer and Lekner’s results suggest that new product performance is positively correlated with a balance between exploitative and explorative innovation activities. This holds for both process- and product innovations.

Literature seem to agree that a combination of exploitative and explorative activities within a firm is beneficial for its long-term competitive position. So why don’t all firms just apply this?

The dilemma of exploitation and exploration

Another path found in literature, is the investigation of the *interplay* between exploitative and explorative activities. As it turns out, simultaneous focus on both exploitation and exploration can be quite difficult. Both types are important for firms’ long-term survival, but exploitation and exploration entail contradictory organizational processes.

In 1991, March (March 1991) established a basis for further debate when exploring the dilemma of *variance* in relation to organizational learning. While continuous improvement seeks to improve productivity by reducing variance, variance is an important element in exploration. March built a model based on two mechanisms of organizational learning: Employees adapting to the company code on one side, and the code itself being adjusted by

the dominant part of the organization on the other. The code is described as the sum of a company's written and unwritten norms, procedures, attitudes and culture.

Through a series of simulations, March demonstrated that fast learning in the sense of rapid adaption to the company code is positive in itself, as a means to reduce variance and increase efficiency. With a strong company code, newcomers to the organization will quickly learn and adapt, and thereby quickly becoming a value adding member. This is a positive reduction in variance. On the other hand, the reduced variation also limits the company code itself to evolve, as it is to a less degree being challenged by different opinions. Too rapid adaption to the code leads to slow collective learning, and is particularly negative in rapidly changing environments. March proposes more diversity and higher employee turnover as possible remedies.

2.4 Process management and exploration

In their much referred to work from 2003, Benner and Tushman (Benner & Tushman, 2003) link the exploitation and exploration debate to *process management*. They describe process management as a concept where an organization is viewed as a system of interlinked processes. Improvements are achieved through mapping and streamlining of the processes, defining and improving standards, and then adhering them. These practices are at the core of several business philosophies, such as TQM, Six Sigma and Lean manufacturing (Kovach, Stringfellow, Turner, & Cho, (2005).

In their inductive study, Benner and Tushman reviewed literature on the dilemma of variance and productivity. Based on their findings, they established a theory about why and how institutionalization of process management principles limits a company's ability to explore. They argue that given scarce resources, process management leads to focus on existing customers at the expense of potential new customers. Decision-making will tend towards activities that have short-term benefit, involve little risk, and are easy to measure, as these are more lucrative to decision makers than more uncertain explorative activities - regardless of potential future benefit of explorative innovations. Benner and Tushman also discuss the impact on organizational learning. Focus on incremental innovation reduces exploratory activity, and thereby limits learning outside of the existing technological trajectory. Further,

limited new learning means smaller knowledge base for absorption of new achievements in relevant fields; a self-reinforcing cycle. Finally, given the likely measurable and rapid success of process management, the practices will have a tendency to spread to other areas of the organization.

It should be noted though, that Benner and Tushman underline that process management is beneficial in environments and eras of technological stability. However, it may inhibit a company's ability to adapt to changing conditions.

Further, in a reflection presented twelve years after the original work (Benner & Tushman, 2015), the authors note that factors such as advances in digital communication and increasing use of "open innovation" is changing how companies address the dilemma of exploitation and exploration, and that their framework should be reviewed.

2.5 Solutions to the exploitation and exploration dilemma

Being an extensively described dilemma, many authors have proposed solutions to the inherent tension between continuously improving existing activities and exploring new possibilities.

For instance, Salah (Salah, 2017) views continuous improvement and innovation as two different methodologies used by companies, where both are means to stay ahead of their competition. Salah proposes that due to the many similarities between the methodologies (for example customer focus, project selection, leadership support, incentives and performance target), the differences may be overcome (such as different attitudes towards risk and variance), and thus a simultaneous implementation of both should be feasible and beneficial. However, details suggesting how an organization should go about to succeed with this is not discussed.

Chen and Taylor (Chen & Taylor, 2009) have a similar approach, when comparing key features of Lean practices with main factors hindering or contributing to creativity and innovation. The resulting propositions point to Lean practices as having a positive impact on incremental innovations, but a negative impact on radical, revolutionary (disruptive) or

architectural innovation. As solutions Chen and Taylor suggest outsourcing of innovation, establishing an independent innovation center, or techniques referred to as “Lean Innovation System” or “Innovative Product Development Process”. A key aspect of the latter two is to redefine the notion of waste so that development for potentially new customers is considered a value, although not a value adding activity on short-term.

2.5.1 Ambidexterity

Still, the most commonly proposed solution is *ambidexter organization*. From Latin, ambidexterity refers to “having two right hands”, and can be thought of as the ability to do two things at the same time. Duncan (Duncan, 1976) was the first to use the term ambidexterity as a metaphor to describe an organization that is able to simultaneously conduct exploitation and exploration, and managing the inherent tension between the two modes of operation.

Earlier work (Duncan, 1976; Benner & Tushman, 2003) refer to ambidexterity as dividing the organization so that exploitative and explorative activities can be separated from each other and managed independently. This is known as structural ambidexterity. The split can be organizational, physical, or even in time.

More recently, also contextual ambidexterity is being discussed (Gibson & Birkinshaw, 2004). In contrast to structural ambidexterity, contextual ambidexterity can be understood as a business unit’s or a group of individuals’ behavioral capacity to simultaneously align with current systems (exploitation) and adapt to new demands (exploration). Based on their empiric study of forty-one business units within ten firms based in six different countries, Gibson and Birkinshaw further suggest that a higher level of ambidexterity is achieved through interaction of four contextual factors: Stretched targets, discipline, support and trust.

Contextual ambidexterity may be further split into cultural driven or process driven ambidexterity, as proposed by Alizadeh and Jetter (Alizadeh & Jetter, 2019). In their work, literature from various disciplines was reviewed to search for factors contributing to ambidexterity. Through theory from the disciplines of project management, open innovation, knowledge based organization, creativity theory and product innovation theory, Alizadeh and Jetter list a number of parameters that influence exploitation, exploration or both. Factors

listed as favoring ambidexterity are such as cross-functional communication, shared vision, horizontal- and bottom-up communication, collaboration with external units, and rate of hiring new personnel. Other factors are found to have a positive impact on exploitation, but negative impact on exploration, namely performance management system, risk aversion, critical process management, centralized decision making and top-down knowledge flow. As for the opposite, factors like internal and external rivalry, collaborative decision making, job rotation, external team leaders or team members, flat organizational structure, team diversity and personnel turnover, are positive for exploration, but negative for exploitation.

Alizadeh and Jettens underline that ambidexterity should be viewed from a systemic perspective, given that the tension between exploitation and exploration is at its very core related to conflicting objectives and practices, and that solutions for achieving ambidexterity aim at designing better organizational structures.

2.5.2 Strategic alternatives: Open innovation and corporate venturing

Looking beyond the organizational oriented literature, there are also wider solutions to the exploitation-exploration dilemma. The field of *corporate entrepreneurship* discuss how large companies can maintain their entrepreneurial orientation. The core problem is that although large players should have all the necessary resources, connections and expertise to excel at innovation, they are often overtaken by smaller and more dynamic competitors (Burns, 2016). This is attributed to the larger companies' tendency of focusing on control and efficiency (exploitation) rather than creativity and empowerment.

This is also the topic of Christensen's popular book, "*The innovator's dilemma*" (Christensen, 1997), in which he describes how established and successful companies often fail when confronted with disruptive innovation. Much in parallel to the exploitation and exploration debate, Christensen suggests that pursuing and optimizing a known path seem more lucrative to established firms, than embarking on something new, unproven and perhaps still flawed.

The solutions are similar to the ones proposed in ambidexter literature, but also stretch beyond the organizational aspects. In addition to adapting leadership and culture to fit an entrepreneurial mindset, through many of the same factors found in ambidexter literature (egalitarian culture, empowerment, visionary leadership, and acceptance of risk-taking),

another possibility is to simply in-source new competence through *open innovation* or *corporate venturing*. Open innovation implies cooperation with external partners, and sharing knowledge, risk and also possible benefits. Corporate venturing means to acquire or invest in firms that already have the desired competence, typically small, innovative and specialized start-ups.

2.6 Agile

Agile is a methodology that was originally developed within the software industry, as a means to increase efficiency and quality of development work. Some basic ideas are close collaboration with customers, iterations and adaption to change. For instance, early and frequent product testing, in close cooperation with the target user, ensures continuous correction and adaption to the needs. This is opposed to developing a complete solution, and presenting it to the market only when it is ready. In 2001, the Agile Manifesto was published (Fowler & Highsmith, 2001), presenting four core ideas and twelve principles. In the following years, the Agile concept has grown in popularity, and has been included in the society of business system philosophies together with for instance Lean and Six Sigma. While Lean seeks to continuously improve existing solutions, Agile is oriented towards complex problems with unknown solutions. Despite these differences, the two methodologies also share some common features. They both have customer need as an important focus, they both aim at reducing waste, and they both place high value on supplier partnerships (Kovach, Stringfellow, Turner, & Cho, 2005).

2.7 Purpose of study – the research question

By design, Lean principles and exploitation reduce variation and uncertainty; the same factors that are needed to succeed with exploration and innovations. Lean philosophy also aims at reducing waste, by removing non-value adding aspects of a process. However, a certain amount of organizational slack, time and other resources is necessary in order to succeed with explorative tasks where the outcome is unknown. There is also a contrast in the market perspective. While Lean practices seek to optimize according to existing customer needs, exploration seeks to investigate and adapt to needs of future, potential customers.

Yet, despite the many inherent conflicts between Lean principles and explorative activities, simultaneous success in both areas is necessary for a company's long-term survival.

The aim of this study is to investigate this challenge in a company where Lean principles have been practiced for more than two decades, and where the concept over the years has matured and become part of the company culture. This leads to the following research question:

How is a company, where Lean practices have been institutionalized over more than twenty years, balancing exploitation and exploration?

Assuming that the answer will be a sum of many parameters with complex interactions, the following sub-questions were defined to guide the research:

1. How is the current balance between exploitative and explorative projects?
2. Idea management: To what extent are new ideas encouraged, what is the predominant orientation of new ideas, and how are they captured?
3. Project management: How are projects selected and followed-up?
4. Prioritization: What are the decisive factors when prioritizing between ideas and projects?
5. Ambidexterity: Is there evidence of ambidexter organization, either structural or contextual?
6. Company culture: Does the company culture support exploitation, exploration, or both? Is use of Lean practices influencing the level of exploration?

In the search for answers to these questions, the different business units of the case company are compared and contrasted.

Chapter 3 Methodology

3.1 Scope

Many publications have discussed possible effects of Lean practices on a company's ability to innovate (Lewis, 2000; Mehri, 2006; Wang and Huzzard, 2011; Wharton University of Pennsylvania, 2009). However, this study does not seek to investigate or establish a direct cause and effect relationship between Lean and innovation capability. Finding evidence for such causal effects would demand extensive and longitudinal investigations, and is considered unrealistic within the given frame of time and resources.

Rather, the aim of this study is to qualitatively investigate to what degree a company with institutionalized Lean practices is able to engage and deliver on both exploitative and explorative activities. A secondary target is to search for explanations and factors influencing the degree of ambidexterity: How and why is the company capable of succeeding in both areas? Or alternatively, what are the inhibiting factors?

3.2 Research method

In order to answer the research question: "*How is a company, where Lean practices have been institutionalized over more than twenty years, balancing exploitation and exploration?*", a case study was considered the most appropriate research method. A case study is a qualitative method that is well suited for investigating complex cases in the area of social science, and where the phenomenon to be studied is difficult to distinguish from its context (Yin, 2018).

3.2.1 Research technique - Semi-structured interviews

The chosen technique of investigation is semi-structured interviews. Interviews allow for in-depth analyses, and are appropriate for studies where the aim is to answer "how" and "why" type of questions (Yin, 2018). Interviews as research technique also enables the researcher to focus directly on the research question, while at the same time gathering valuable information about relevant context.

In addition to the interviews, data about the case company was retrieved from their web page, their published annual and quarterly reports (Elkem, 2020), and “Skaperkraft”, a non-fiction novel written by historian Knut Songer on the occasion of the company’s 100th anniversary in 2004 (Songer, 2003).

3.2.2 Potential pitfalls

The quality of a semi-structured interview, measured as the amount of relevant information gathered, will depend not only on the respondent’s knowledge and inclination to share thoughts and believes, but also on the interviewer’s ability to listen, encourage and guide the questions. Information may be lost if the interviewer is a poor listener; interrupting or missing the essence of what was said. The verbal form of an interview also opens the possibility of poor recall of the conversation.

Since a semi-structured interview takes place as a dialogue between two people, there is an inherent risk of misinterpretations. Both questions and answers can be unclearly articulated and perceived differently by the receiver than intended by the sender.

And even if both questions and replies are clear, biases might exist on both sides. The interviewee might have a biased view on the topic, and for instance hold opinions that are colored by resent events. The interviewer can be biased by predefined attitudes or believes about the topic, and unconsciously be looking for confirmation of these. In a sense “hearing what one wants to hear”.

There could also be a problem of reflexivity, where the interviewer and the respondent unknowingly influence each other during the interview (Yin, 2018). A neighboring problem is the issue of social desirability bias (Fisher, 1993), when an interview-subject is presenting what is believed to be the “correct” or the expected answer, rather than a sincere opinion. One way to overcome this is to use indirect questioning, a technique where the subject is asked to respond from the perspective of other persons or groups.

It is important to have these possible sources of error and misinterpretations in mind when preparing and conducting the interviews. Realizing that it may be difficult to eliminate the effects, they must also be considered when analyzing the gathered data.

3.3 Selection of case company

The case company was selected due to its long tradition for use of Lean practices. The implementation started around twenty-five years ago, and consistent focus from senior management ever since has led to broad involvement of the employees. In literature, most case studies are related to implementation of Lean, or the investigation is conducted only a few years after implementation. It was therefore considered interesting to study an organization that has developed a mature adoption of Lean.

Another interesting aspect is that the company over the years has been quite successful in its field, in terms of financial turn-over and profit. Literature predicts that a sound balance between exploitation and exploration is necessary for long-term success, making the company an interesting case for investigating this balance.

The case company consist of different business divisions. The divisions have different historical backgrounds, operate in different markets, and have different nationalities as bases. Some areas have a long tradition for Lean, while others are rather new to the concept. This diversity makes room for comparing and contrasting the different units, something that can add valuable insight.

Finally, the author has been part of the company for twenty-five years, in different positions and in different divisions. Undoubtedly, there are possible downsides of personal bias, and a risk of being too close to the organization to perform an objective study. However, this is though to be out-weight by the benefits of easy access to data, and willingness from interviewees to dedicate time and effort for a person they know or have a connection to.

Chapter 4 Empirical work

4.1 Choice of interview-subjects

The interview-subjects were selected in order to represent a broad base of the company. The target was to achieve a spread over the different divisions, of work functions, and of demographical factors. The following criteria were considered:

- Work experience relevant for the research question
- Duration of employment
- Diversity:
 - o Participants from the different divisions (to be able to compare and contrast)
 - o Participants with different organizational positions (level in hierarchy and degree of decision power)
 - o Participants from different functions (R&D, technical, commercial and production support)
 - o Diversity in terms of gender and nationality

The subjects were selected through non-random sampling, i.e. they were purposefully selected for having positions and work experience thought to be relevant for the research question. A number of ten interviews was deemed feasible within the given time frame. At the same time, although limited, opinions and perceptions from ten different individuals was considered an acceptable amount of data to be able to suggest findings.

With the limited total number of interviews, there is an inherent dilemma of securing diversity, and at the same time securing more than just one observation from each area. The target was to select at least two individuals from each of the sub-groups of division, job role and gender. Relevant job roles were considered to be within R&D, Lean support function, Sales and Marketing and Production. Several of the interview-subject have background from multiple disciplines or multiple division within Elkem. The subjects represent four nationalities (Norwegian, French, Icelandic and American) and three geographical units (Norway, France and Iceland). An overview of the subjects is presented in table 4-1.

Table 4-1 The interview-subjects

Code	Unit of employment ¹⁾	Area of responsibility ²⁾	Formal title ³⁾	No of years employed by Elkem	Current geographical workplace	Gender
A	Elkem Corporate	Innovation	SVP Innovation and R&D	5	France	Male
B	Elkem Corporate	EBS	Continuous improvement leader	18	Iceland	Male
	Elkem Foundry	Production	EBS Coach			
C	Elkem Silicones	R&D	R&D Director	15	France	Female
D	Elkem Silicon Materials	Sales and marketing	Vice President Market	17	Norway	Male
E	Elkem Silicon Materials	Business Development	Retired; previously R&D Director, Business Development Director, Senior Technical Specialist	45	Norway	Male
F	Elkem Silicon Materials	R&D	Director of product development and Innovation	9	Norway	Male
	Elkem Carbon	EBS	EBS Coach			
G	Elkem Foundry	Product Development	Technology Director	12	Norway	Female
H	Elkem Carbon	R&D	Director R&D	20	Norway	Male
I	Elkem Carbon	Operational improvements	EBS Coach	31	Norway	Male
		Production	Process Leader/Maintenance Planner			
J	Elkem Technology	R&D	R&D Manager	17	Norway	Female

¹⁾Unit of employment at time of the interview, and previous areas relevant for the study.

²⁾Area of responsibility at time of interview, and previous areas relevant for the study.

³⁾Formal title at time at time of interview, and previous titles relevant for the study.

When referring to and quoting the interview-subjects throughout this work, the codes A to J in table 4-1 are used as reference.

4.2 Performing the interviews

Two pilot interviews were performed prior to the ten reported interviews. All interviews were conducted as video meetings, and were recorded to avoid possible bias due to poor or selective recall of what was said. In order to comply with the GDPR regulative, each interviewee gave their written approval of recording prior to the interview. The interviews were then transcribed, and the original recordings were deleted. The transcribed interviews

are given in Appendix C. A summary from each interview was prepared, and presented to each respondent for review and acceptance. The summaries are found under appendix B.

The aim of the interviews was to investigate the current balance between exploitative and explorative activities, and to explore each person's views and perceptions of the company culture, communication lines, idea generation and prioritization of projects. The interviewees were also asked whether they find the applied Lean practices to be a support for or a hindrance to development. The general guideline developed and used by the author throughout the interviews is presented in appendix A.

4.3 Data analyzes

In order to facilitate the study of the gathered data, findings were grouped into eleven different categories: (i) split between core, adjacent and transformational projects, (ii) market conditions, business model or strategic direction for the unit, (iii) prioritization of ideas and projects; what, who and how, (iv) cross-border communication, (v) signs of structural or contextual ambidexterity, (vi) idea generation, (vii) idea management, (viii) project management (ix) cultural aspects, (x) thoughts around Lean practices, and finally (xi) general, miscellaneous comments. Further, the findings were sorted in a table with one row for each interviewee, and one column for each category of findings. The table was then used as a map for evaluation and comparison of the input.

4.4 The case company – Elkem ASA

Elkem ASA is a metals and materials producing company that was founded in Oslo in 1904. The company is today (December 2020) the workplace of 6700 employees, and has 31 different production units in 15 countries spread over 5 continents. Elkem is today organized into three business divisions: Elkem Silicones, Elkem Silicon Products and Elkem Carbon Solutions.

4.4.1 From technology provider to metals producer

In its origin, Elkem was a highly entrepreneurial company. Its greatest achievement is perhaps the invention of the Søderberg electrode (Songer, 2003). Patented in 1919, this new technology revolutionized the world's way of producing ferroalloys and aluminium, and is still today the predominant technology for metal production. Elkem continued to develop into a technology provider and engineering company, and has supplied a large amount of the world's electric arc furnaces. In parallel to providing technology, Elkem also developed their own metal production. This part of the company has grown stronger over the years. During the 1980's, the main strategic orientation shifted from technology development towards production excellence, and has in later years become Elkem's main focus.

In 2011, Elkem was acquired by Chinese National Bluestar. Four years later, Bluestar's silicones business unit was taken over by Elkem. The new division, named Elkem Silicones, is today the largest part of Elkem.

Before assuming responsibility of the silicones operation, Elkem traditionally consisted of five business units: Elkem Silicon, Elkem Foundry, Elkem Materials, Elkem Carbon and Elkem Technology. The units have been grouped in different ways over the years, as illustrated in figure 4-1.

During the course of this work, the company restructured the organization by merging Elkem Silicon Materials, Elkem Foundry and Elkem Technology into one unit. Since the interviews were performed prior to the merger, this work will use the pre-merger denotations of the groups. For some considerations, it is also useful to look at the grouping according to "previous structure" as given in figure 4-1.

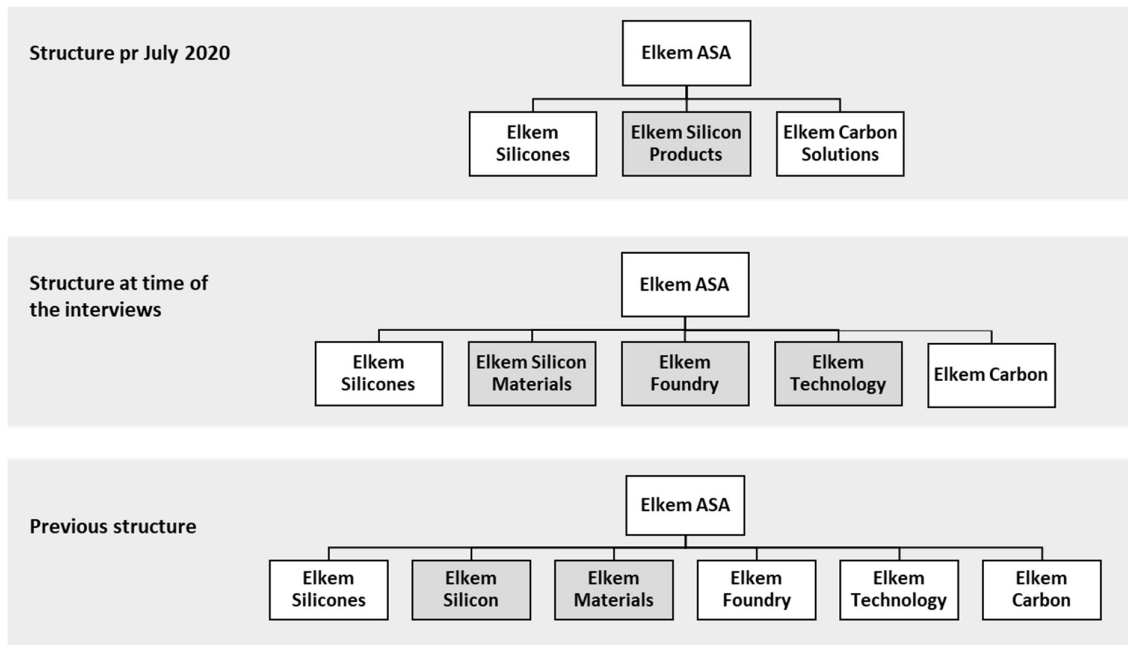


Figure 4-1 Historical grouping of Elkem units.

4.4.2 Traditional and new Elkem

Elkem Silicon, Elkem Foundry, Elkem Carbon and Elkem Technology constitute the traditional core of Elkem, with production of silicon, ferrosilicon and carbon products as their main activity. These units share a common technology base that goes some hundred years back. The main base is Norway, but there are also production units in different parts of the world, as summarized in table 4-2.

On the other hand, Elkem Silicones represents the “new Elkem”. Silicones are made out of silicon, and silicone production is a downstream market for the “traditional Elkem”. The main base for Elkem Silicones is France and China.

Elkem Materials is also part of the Norwegian base, but has a somewhat different history and mode of operation than the more traditional part of Elkem. During late 1970’s and early 1980’s, Elkem started to filter the off-gas fumes generated during production of silicon and ferrosilicon. This eliminated the dust emissions to air, but generated a deposit issue. Initiatives were taken to explore possible commercial use of this silica fume, today known under the tradename Elkem Microsilica[®]. The first years of Elkem Materials were highly explorative, and more than 200 possible applications for microsilica were investigated. A handful of these

proved successful, and over years, Elkem Materials has grown into a highly profitable business unit. Elkem Materials is today sourcing raw materials both internally and externally, and has a well-developed product portfolio for different markets.

In contrast to the production-oriented parts of Elkem, the Materials unit is more of a trading business focused on developing applications for their product, with little cost bearing production equipment compared to the rest of the company.

Elkem Technology

Elkem Technology is today a support function for the divisions, and a centre for new development initiatives. Elkem Technology is responsible for long-term research, while the individual divisions are responsible for more short-term activities. There is some financial support from the Elkem group for the long-term development tasks, but funding mainly comes from external sources such as governmental funds, the Research council etc. It is Elkem Technology’s responsibility to apply for such support, and in this way be able to fund their own projects. The applications are often done in cooperation with external entities, such as universities and research institutes.

Table 4-2 Activities and geographical presence of Elkem’s business units.

	“New Elkem”	“Traditional Elkem”				
	Silicones	Silicon	Foundry	Materials	Carbon	Technology
Main product	Silicones	Silicon metal	Ferrosilicon	Microsilica and related specialty materials	Carbon pastes	- R&D - Project management - Laboratory - Pilot plant
Production units	- France - China	- France - Chinay	- Norway (3) - Iceland - Canada - Paraguay	-	- Norway - South Africa - China - Brazil - Malaysia	-

4.4.3 Elkem’s adaption of Lean – The Elkem Business System (EBS)

At the beginning of the 1990’s, Elkem was close to bankruptcy following a decade of investments and acquisition that took their toll on the company’s profitability. This launched an era of divestments, focus on core activities and streamlining of operations. From the joint

venture with Alcoa, Elkem picked up the *Alcoa Business System* (ABS) in 1997. The *Alcoa Business System* was based on the *Toyota Production system*, that later has become known as *Lean production*. Over some year, Elkem transformed the ABS into its own adaption: *The Elkem Business System*, or EBS (Songer, 2014).

EBS is an organizational structure where autonomous groups are given responsibility for continuously improving the process they work with, as opposed to a more hierarchical structure with middle management setting the daily work tasks:

“One central element of [Elkem Business System] is to eliminate middle management levels at the production units, which have traditionally had the function of directing and coordinating production processes and work processes, and to replace these levels by a “pull driven” system whereby the customer pull through the value chain dictates the flow of the goods and the flow of information without the help of “coordinating levels.” (Songer, 2014, p. 297).

One of the key tools in EBS, taken from Lean manufacturing, is the *A3*. This is a structured way of describing and presenting a new activity. The name *A3* refers to a large piece of paper – an *A3* format – that is divided into four sections: Business case, current situation, target situation and action plan. The Business case describes potential outcome in terms of quantitative data; value, tonnage, or similar. The current situation explains today’s status, while the target situation is a description of the ambition for the activity. The fourth part, the action plan, includes a detailed progress plan with activities, responsibilities and time limits.

EBS also applies many of the other tools found within Lean methodology, such as Kaizen, Kanban, 5S, value stream mapping and process maps. Still, EBS is perhaps best summarized by its logo, highlighting the three main drivers “*Make to use*”, “*Elimination of waste*” and “*Empowerment of People*”. These are all means to achieve the target: “*Processes under control*” (Elkem, 2020):



Figure 4-2 The EBS logo (Elkem, 2020).

Chapter 5 Results

Day to day development work in Elkem is to a large degree focused on process optimization and incremental improvement of products value chains. The scope of this study is to investigate the balance between this type of development and more explorative activities in the form of developing new technologies, new products and new markets.

5.1 Current balance between exploitative and explorative projects

Development in Elkem is structured as a few, long-term strategic programs, and a large number of projects. The projects are normally not linked to the programs. The ratio is about 1:100. There are at present three strategic programs, and more than three hundred ongoing projects.

Of the long-term programs, two can be characterized as explorative (new products, markets or technology), while the third is more exploitative and focus on value stream optimization. However, also this one has an element of exploration, given that technologies new to Elkem, such as AI, are being employed. The programs have time frames of at least 5 years, while the projects have shorter and more variable durations. The vast majority of the projects are related to core business and core technology, and are incremental in type.

Figure 5-1 is a qualitative representation of the “Innovation ambition matrix” (as described in Chapter 2.2) for individual divisions and for the company as a whole, based on input from the interviews.

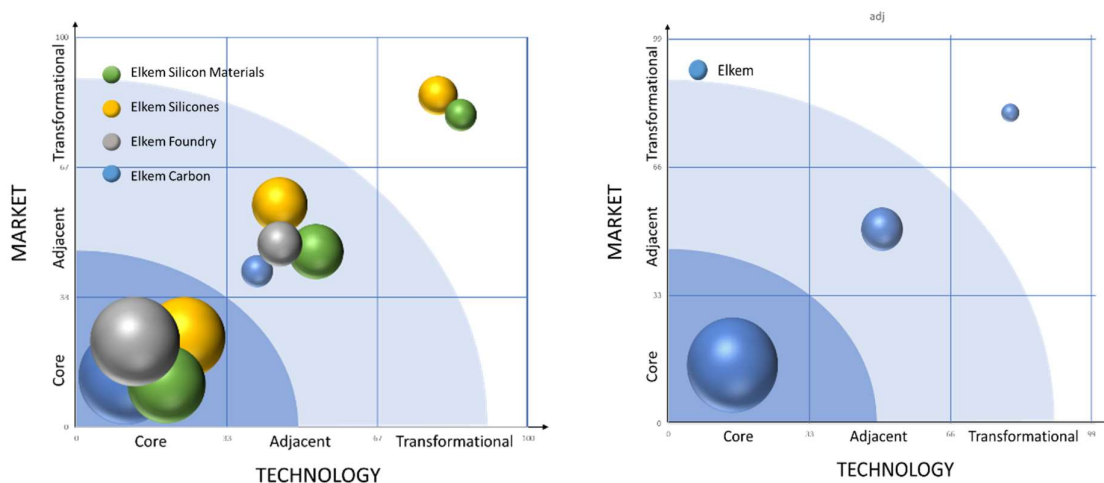


Figure 5-1 Qualitative representation of target for development work in Elkem.

Source: interviews.

5.2 Idea management

Collection and processing of ideas is managed differently across the Elkem units. Silicones, Technology, Silicon Materials and Foundry all seem to have generation of ideas on the agenda, and have an active approach towards capturing ideas. In Carbon, idea generation is rather linked to continuous improvement of processes, through “critical process teams” or “improvement groups” – which are part of the EBS system.

5.2.1 Encouragement, capturing and orientation of ideas

Elkem Silicones

Looking at Elkem Silicones, there are specific targets for how much of the income that should be generated from new activities. This is followed-up and monitored, creating a real pressure and motivation for such activities. Figure 5-2 gives an example of Critical Process Indicators (CPI, or KPI in Norwegian) for R&D in the Silicones division.

C: “For Elkem Silicones it’s like that. We have a clear target. We have to each year generate sales with new products, so today we are generating 20% of our sale each year with new products. That means that we have this pressure, and this is a KPI which is monitored and looked at by the boss of the company. So that makes the pressure there.”



Figure 5-2 Examples of Critical Process Indicators on product development in Elkem Silicones.

As for idea management, Elkem Silicones applies an “incubator” system to evaluate and test new initiatives. Since each sub business unit is responsible for bringing up ideas, they are filtered on a unit level before reaching the incubator.

Elkem Silicon Materials

In a similar way, Silicon Materials has a clearly stated strategy of being innovative and market oriented. The current five-year strategy states that 60% of the profit shall come from existing activities, while 30% and 10% shall come from adjacent and new business areas, see figure 5-3.

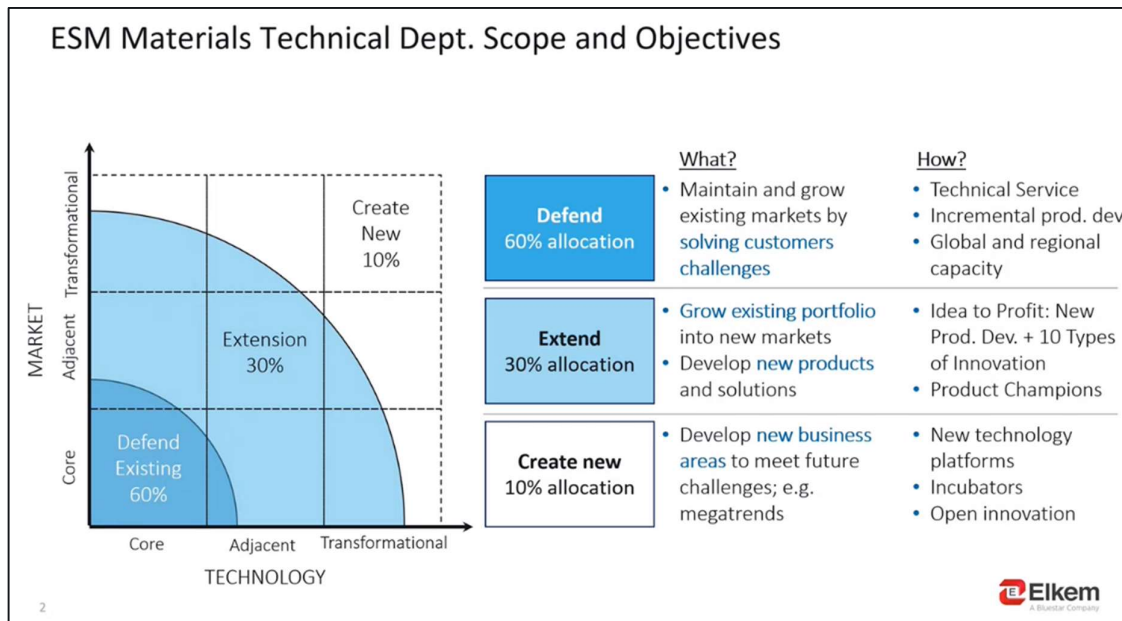


Figure 5-3 Innovation Ambition Matrix for Elkem Silicon Materials for the next strategy period

The strategy is implemented by giving each of the existing sub business units a quantified target for how much of the future profit that shall come from new activities; i.e. new technology in new markets. Overall for Silicon Materials, these new activities shall account for 10% of the profit within the next five-year period. There is also a clear expectation that new markets must expand outside of Europe, which means involving all regional organizations.

This creates “a pull” on the rest of the organization for developing new ideas, and assures focus on market oriented development.

Elkem Technology

In the Technology organization, coming up with new ideas is thought of as part of the job, and is normally a topic during the annual “co-worker interview”.

J: “A least in my department, it's always part of the yearly co-worker interview. Have we received any new research projects? Have we received any new ideas? What new things have we done? This is probably not the case everywhere in Elkem. I do not think so, so it is probably not very widespread.”

The ideas generated within Technology normally evolve around existing business, and can be said to be mostly in “exploitative” direction. But there are exceptions, such as the “Battery project” that is now one of the corporate development programs. The origin was a spin-off of the “Solar project” (i.e. development of high purity silicon for use in solar wafers), and came more or less as a personal initiative within the Technology organization.

Elkem Foundry

A few years ago, the Foundry unit went through a consultancy driven intervention focusing on “Growth mind-set”. This seems to have had a positive effect on creativity and idea generation, and has led to broader involvement from both management and employees.

B: “In Foundry, there was an absolute turning point when they brought in a consultant to help them with the culture in the company - maybe three years ago. They got highly focused on growth mind-set. They had a program around it, they were training their people, and you could see an absolute shift in peoples mind set.”

Elkem Carbon

Elkem Carbon has more focus on defending existing market position, and is less oriented around search for new opportunities. New ideas as not directly encouraged, but are typically brought up through various production related “improvement teams”. The vast majority of new initiatives is in the direction of incremental, continuous development of existing products and existing processes.

5.2.2 Wazoku idea management system

As for idea management, Elkem has used different systems over the years. The back-in the day's solution of a physical "idea mail box" has been removed, reinstated, and evolved into an electronic version. As of lately, the web based Wazoku system has been applied. This is an online system where employees can post their ideas, and have others comment and openly discuss solutions, potentials etc. The system can also be used to present a specific problem or area of interest, and then invite colleagues to come up with suggestions.

The Wazoku system is currently being applied by Silicones, Silicon Materials, Foundry and Technology. The posted ideas are distributed to the corresponding business units, or to Elkem Technology for those that don't belong in any specific division. The major part of the proposed ideas are incremental improvements.

Although the units are applying the same system for collection of ideas, the further handling of them differ.

For Foundry it works well. The ideas are evaluated by a board, who evaluates and decides which ones to bring forward.

For Materials, the Wazoku system has been successful in the sense that a large number of ideas have been collected. But the weak point is follow-up. The challenge has been to devote enough resources to evaluate the initiatives, to develop business cases, and to move ahead with the ideas.

D: "The ideas need to be followed-up. Not only asking the innovators to "please use your spare time to develop this further."

F: "We come up with hundred ideas and then they sit there for three years. We talk about them for a little bit, but we never progress any of them. We just have lot of new ideas."

5.3 Project management

If an idea is promising, it may develop into a project proposal. What processes are applied in order to evaluate and select which projects to go ahead with? Who is making the prioritization, and how is project selection structured within the different units?

A common denominator throughout Elkem is use of the Lean tool *A3*. Important aspects of an *A3* are calculation of net present value (NPV) for a given activity, and a detailed action plan. Presenting an *A3* is in many cases considered a minimum or a starting point for any initiative. The next step would be evaluation of various *A3*s at a higher level of the organization. For several of the Elkem units, this next step will involve presenting the initiative in the Stage gate process.

5.3.1 Stage gate

Most units in Elkem are using the Stage gate tool for project prioritization and follow-up. Working like a funnel, the Stage gate process will evaluate projects at different stages. Once a project has met certain criteria, it is allowed to pass the “gate” and progress onto the next “stage”.

However, how it is applied varies between the units varies.

Elkem Silicones is using it in what is referred to as “a more mature way”. One aspect of this is that they actively “park” promising projects that are not prioritized just then, rather than leaving them to be forgotten.

B: “...and that’s why this Stage gate in Silicones is so good. They have this parking lot where they put things on hold. And they are very prioritized, and they are very mature about it. This is perhaps also a difference between old Elkem and new Elkem; this level of maturity. To park good ideas or good project.”

Elkem Foundry and Elkem Materials also use Stage gate, but less for prioritization and more for follow-up. Projects are rather filtered at operational or lower levels in the

organization, and each sub-unit will bring in their selected tasks. Normally, the total number is limited enough not having to select between them, once they have reach Stage gate.

To a larger degree than for Silicones, the other departments seem to be more challenged by slow progress as a result of the Stage gate process. Although the Stage gate tool has been in use for some years and has been improved along the way, the process is still bureaucratic and demands a lot of work up-front.

G: *“(….) the rather bureaucratic regime that is seen today, where everything is expected to be sorted out before launch, and move towards more testing and experimenting with semi-finished ideas and products, preferably in close cooperation with customers. This involves frequent assessment of resources and ongoing tasks, instead of project management and project steering committees.”*

D: *«We are used to Stage gate. And the way we work; everything should be in place before you move on. And you should have the entire business case ready, and everything should be fixed, and you spend a lot of time up-front.»*

E: *“I cannot remember one single project that went through there [Stage gate], that actually succeeded. It rather worked like a sieve: It was those who were good at selling, often those who spoke American, that succeeded in getting through the steps of Stage gate. I cannot remember a single success story that came from this.”*

E: *“EBS is very reasonable when it comes to production, rationalizing and streamlining etc. But in the shape I have seen it in the Stage gate system, I believe it is a direct obstacle for further development.”*

In some cases, there seems to be a double structure around project management. There is Stage gate on one side, and on the other side, larger projects also have their own steering committee.

H: *“...if we are to do it [use Stage gate in a beneficial way], it must be in such a flexible manner that it does not impede progress. And I think it's silly to Stage gate-consider a project that also has a steering committee with members who understand*

development projects and business development. It will be double work as far as I can judge.”

G: “Often, a steering committee consists of persons with little knowledge about the topic; their participation is often only based on their position within Elkem.”

Elkem Carbon applied Stage gate for a while, but moved away from it. Partly due to reorganization, and partly because a limited number of R&D project didn't require a portfolio management system.

5.3.2 Agile methodology

Elkem Silicon Materials and Elkem Foundry seem to be moving away from a more rigid use of Stage gate, and towards adapting Agile methods.

F: “... he's [Sales and Marketing Manager of Silicon Materials] doing a lot to leading the culture. What he provides a lot of times, is quick decision and not a lot of bureaucracy. A culture where it's ok to try something else. And fail. It's ok to take risk.”

As an example, when an employee came up with a proposal of tripling an existing product's shelf-life by adding a “magic powder”, it was decided not to pass it through Stage gate:

D: “...but then we by-passed the entire system: Go for it! You make some short-cuts, if something looks really good.”

Within Elkem Silicones, the Agile methodology has been tested on a few projects, with promising initial results.

C: “We have been reducing the time to market dramatically, and the sales have been starting very fast with this kind of methodology. I am fully convinced about the Agile.”

5.4 Prioritization

We have seen that different Elkem units manage ideas and projects in somewhat different ways, and according to more or less bureaucratic principles. But what are actually the decisive factors, when selecting which initiatives to move forward with?

5.4.1 Project pay-back

While link to strategy and megatrends are important for the strategic development programs - of which there are currently three - the most important factor when selecting at lower levels, is project pay-back. This was stated by many of the interviewees. And with pay-back being a main decisive factor, it is difficult to get approval for initiatives where this is difficult to calculate, even if it might be technically or otherwise promising. Factors such as long timeframe, high risk and high complexity all contribute to uncertain pay-back calculations. As an indirect consequence, short-term, low-risk projects are often favored.

A: "But the short-term focus is too often prioritized. (...) for the strategy it's OK, there is a strong link. But the short-term is always preferred."

A: "Because if the time frame is too long, it is difficult to project. It will cost a lot of money, and it's difficult to get a pay-back."

J: "And this is – I would not say a problem - but a challenge. How do you make a good business case for an undeveloped market? Because to do so, you need to present an NPV, and it is very difficult. I have read some research literature on this. When it comes to radical innovation, one should rather use other indicators than the financial ones, and rather look at match towards strategy; How does this fit into our portfolio? Do we have the necessary expertise within the group? Such type of arguments should be used, rather than the financial concepts."

J: "It is very difficult. They ask about business case. In a way, I understand that too, because you want to have a market, or to know that you have a market that will come. But it's a challenge. If you can't refer to the business case in your A3, then it is very difficult to get money for the project."

H: *“In order to make an investment in Elkem, simply put, you must have a positive business case for the investment. And that business case must be concrete. And that means you cannot accept risk when considering an investment. And that means you are excluded from making big changes, because big changes involve risk.”*

E: *“It is very unrealistic to sit down with a small piece of paper and evaluate the market ten years from now, and to make decisions based on such prognosis. If there is one thing you can be sure of, it is that your assumptions will be wrong.”*

An observation throughout the interviews is that representatives for the Silicones and the Silicon Materials units talk less about pay-back, and more about potential income and margins.

5.4.2 Crises mode

Another factor favoring short-term focus within Elkem, is “times of crisis”. Operating in a cyclic industry, this is something that happens regularly, typically every four to five years (Indexmundi, 2020). In such times, the organization is expected to take actions to improve or secure immediate operational results. Given the short timeframe, this calls for actions related to existing products, markets and processes, rather than exploring new options. However, SVP Innovation and R&D questions whether this is the best remedy:

A: *“But it’s always the same story. If the business is going well, you can have more and more long-term projects. And if the business is not going so well, the business would prefer to prioritize the short-term. So it’s always this type of balance that we have to look at, and typically during a crises. Normally during a crises, we have to prepare more the long-term. And too often what is done is the contrary, which is to prioritize short-term.”*

A: *“Crisis mode favors short-term, not really due to allocation of resources. Speeding up the process means current products and current markets. But it is not because you speed up something that you will be successful. When it’s too late it’s too late, and you*

just have to jump to something else. During crisis mode, I would prefer to prepare long-term partnerships and discuss how we would work for the future with a partner, rather than to say: What do you want tomorrow?"

5.5 Ambidexterity

Ambidexterity can be referred to as the art of doing two things at the same time. Used as metaphor in an organizational context, it translates into either a *structural* way of separating the organization, or a *contextual* way of enabling individuals or business units to at their own discretion maneuver between the conflicting tasks of exploitation and exploration.

Although the majority of projects in Elkem are exploitative in nature, there are also some explorative activities. How is Elkem handling this; are there signs of ambidexter organization?

5.5.1 Structural ambidexterity

It is quite evident that Elkem is applying an ambidexter approach for large, exploratory projects. This was clearly the case for the former Solar project:

J: "Elkem took a big risk, and said that we do this by taking it [the Solar project] out of the organization, in order not to continue this in the ordinary organization. Because then you would be restrained by the ordinary operation and more incremental innovation. It was taken out, and it eventually became a separate business unit. And we took a much higher risk than we normally do in Elkem. So when you look at it, I would say that we are on the "explorations" side."

The same holds true for the two ongoing exploratory programs. Both are targeting new markets with technologies that are new to Elkem. Once it was decided to move ahead with these projects, they were lifted out of the divisions they initiated from, and organized as separate units.

Going some twenty-five years back, in the earlier days of the Elkem Materials unit and before the merger with Elkem Silicon, there was also a clear structural ambidexter approach within the department.

E: “The culture within companies such as traditional Elkem, can easily give a focus on cost reduction. Working with sales easily brings up cost considerations. Minimizing logistics and such. And within such a culture, it is difficult to ... I remember it very well. We sat up there, selling to concrete, and then some were engaged in making “the world's strongest concrete”, and others worked with refractory materials. Then he [a consultant] said, “Separate it in two! Send the sales department and those who do logistics one floor below. Let them sit there and work for themselves, and then hire thirty-five master of science engineers to aggressively work with product development.” The last part was related to ensuring critical mass, of course.”

5.5.2 Dilemma of critical mass

Structural ambidexterity brings along a dilemma of available resources, which was pointed out by representatives for Elkem Silicon Materials. In a growing business, there is an inherent conflict of attending to the increasing base of existing customers and products, and at the same time searching for new opportunities. An ambidexter approach would be to separate the two. But since available resources are typically not increasing in the same order of magnitude, such a split is difficult. Elkem Silicon Materials seems to be well aware of this, especially related to the Materials unit:

F: “... So then maintaining that, milking the cow or whatever, becomes really important. Then new product development and new exploration becomes harder and harder. Even in the four years I've been here, I see that it's getting more and more difficult every year because the customer base of existing business becomes bigger and bigger and demands more attention.”

F: “We end up spending a lot of our resources on sort of defending. Dealing with Synergy cases [the deviation system used by Elkem], and dealing with technical support for existing customers and existing products, and formulations that are within

the core knowledge. That stuff's urgent but not always the only thing that is important. So then our new product development takes longer and longer time."

The dilemma of structural ambidexterity versus available resources is quite evident in the technical department of Elkem Silicone Materials (no longer called "R&D"). The department is covering technical customer support, product development, and technical development towards microsilica production, i.e. follow-up of the plants. And being a rather small unit, these tasks have to be shared between the same technical resources. In theory this is a good combination, assuring cross-functional communication and understanding. But the resources easily become stretched between the different areas.

D: "... I want him [technical resource] to be facing customers as much as possible. Either technical support or product development. But then he gets such cases (...) he has to work with Thamshavn [production unit] before we talk to customers. Then there is the task of developing. Because it is not Thamshavn that comes up with such ideas, they don't have resources for that. So I kind of lose that resource towards the customer. It's a sort of realization that we would like to have more people."

5.5.3 Contextual ambidexterity

Apart from the larger, explorative projects, there is today little evidence of structural ambidexterity throughout the Elkem organization. For instance - at least for the traditional part of Elkem - R&D is to a large degree oriented around continuous improvement of existing activities and closely connected to the production environments.

Contextual ambidexterity is more difficult to demonstrate, as it involves managing the split on an individual level. Nevertheless, Elkem Materials shows signs of a management orientation where such a split is encouraged and attempted to control. For instance, follow-up of plants seems to have a different work pattern than market-oriented work, although the resources are often overlapping. Towards the plants there is a traditional use of EBS tools, while work towards the markets is in a process of adapting more Agile thinking. EBS philosophy should still be the basis, but with more openness to test and experiment with new ideas.

Also concerning the dilemma of available resources, where technical personnel is stretched between follow-up of existing customers and development of new solution, Silicon Materials seems to have a conscious structure that points to contextual ambidexterity. In order to assure a good balance between the tasks, and avoiding for instance that personal preferences lead to some areas being more focused on than others, it is necessary to have good CPIs and apply deadlines.

D: "It's a nice combination really, as long as you have some CPI follow-up, that they do not just switch from one task to the other. That it doesn't become personal what you prefer. (...) Coming back to what he [a technical resource] is supposed to do, and what a previous business development director defended: "You have to give them freedom, they need pingpong tables, and they need space to think." But you know me, I like structure. I think it's nonsense if I may say so. They must be allowed to think, but they must have their structures. I think Agile might be able to give something there, the freedom they are looking for. But we cannot have people doing fundamental research because it's very interesting to "see what happens to that particle if you add voltage", if there is no hypothesis about getting something out of it. We're too small for that."

A feature that is often described as fostering innovation, is cross-border communication. Cross-border communication is also said to be favorable for contextual ambidexterity. As for many of the other investigated factors, also this seems to be different across the Elkem units, as exemplified by Elkem Carbon and Elkem Silicones. In Elkem Carbon, communication between different departments and different production plants seems more or less sporadic, and not organized. There used to be process teams across the plants, but there has been less activity in this respect later years. Communication across the internal plants are today mainly done by the plant managers.

In contrast, Elkem Silicones seems to have a more conscious approach to bringing employees in different geographical areas closer together.

B: "They [Elkem Silicones] work across units; between France and Asia, and America and Europe. And it's really fascinating how they work together and in teams. I think this is something that old Elkem has been lacking, but is very fast improving."

Also Elkem Silicon Materials seems to have more of this focus. New activities are expected to have a world-wide representation, which means including the organization across the different geographical areas (ref Chapter 5.2.1).

On a corporate level, cross-border communication has been strengthened through the establishment of the *Elkem Innovation Team* four years ago, a team where all divisions of Elkem are represented. The team's objective is to build and strengthen the innovation culture within Elkem, through campaigns, web presentation etc. The team also serves as a focal point for discussions around implementation and application of support systems, for instance the Wazoku idea management system.

5.5.4 Strategic solutions: Open innovation and corporate venturing

When it comes to ambidexterity, contextual ambidexterity can be a solution to limited resources. Another direction is to let the organization focus on exploitation, and rather seek exploration through strategic options.

Open innovation

Open innovation involves exploration through cooperation with external partners, and sharing research objectives and potential outcomes. Although the term is quite new in Elkem, Elkem Technology has been applying such a strategy for many years. There is a tradition for cooperation with for instance universities and research institutes, for both research and funding: The Elkem Group is providing some financial support for the long-term development tasks, but the main part of the funding comes from external entities, such as governmental funds, the Research council etc.

J: "... they talk a lot about open innovation. And that is to use research institutes and universities towards us. But I must say that it is something we have done for many years. So it is not unknown to us to have projects in cooperation with research institutes. But maybe it will now appear in a slightly different form, and more towards management. So I think it's exciting."

Open innovation is a way to share resources, and to gain access to external competence. It is also a way to mitigate risk, and is becoming a more pronounced strategy in Elkem, also outside of the Technology department.

A: “This is where we also have to be more explorative. But we don’t have to do everything by ourselves. If you go outside and find someone that are developing a technology and is able to develop something new, that’s great, and you can collaborate and partner with them. It’s a way to also mutualize the risk and to be very explorative, and it will not cost too much. There is one draw-back: If it is very successful, you have to share the benefits. But why not? And if it’s a failure, it just means that OK, you didn’t invest so much. So in the end, it’s a good compromise. It is the reason why I like so much open innovation. It is a way to speed up, and to mutualize risk.”

Corporate venturing

Open innovation can be seen as an alternative to inhouse development. Another option is to buy-in product development or desired competence through corporate venturing.

Elkem has also been pursuing this route, predominantly withing the Silicones division. The recent acquisitions of Basel Chemie and Polysil are two examples, adding to Elkem’s competence and product offering (Elkem, 2020).

5.6 Company culture

What is typical for the culture in Elkem? Does the culture support exploitation, exploration, or both?

5.6.1 Elkem Business System

Elkem’s adaption of Lean, the Elkem Business System (EBS) is in itself a strong culture in Elkem. It has been built, developed and fine-tuned over many years. The principles are today institutionalized, i.e. they have become “a normal part of the organization’s functioning” (Cummings & Worley , 2015, p221).

F: *“So it might be that EBS is reflective of Elkem. And then it reflects back again.”*

Employees across the company use the same concepts, they apply similar measurement systems and can be said to share a “common language”.

B: *“What EBS is first and foremost bringing in, is that we are used to some standardized business system. We are used using the same lingo, and the same language.”*

Is this culture influencing exploration?

Throughout the interviews, application of EBS tools and practices were largely discussed. Although somewhat different individual opinions, a common denominator is that EBS has been and still is an important base for Elkem’s success. It assures continuous improvement and adaption to customers’ needs. Most seem to agree that EBS should also be used as frame for explorative activities and non-core innovations. It is regarded as a good foundation for building innovation structure, as the organization is already sharing concepts, language and tools.

A: *“EBS is very good to fix a process. Even for innovation, we are using EBS from time to time. Typically, if you want to develop, to propose a new project, we are using A3. If we want to develop KPIs, we are looking at focus system.”*

B: *“I have seen that the foundation of EBS and the thinking of EBS, you know, empowering your people, eliminating waste, and working towards your true north, that’s really a good foundation for your innovation thinking and innovation culture.”*

H: *“If you didn’t have the Lean mindset with structure and systems and procedures, it would be very much harder to learn. Because then you could have done something, but you don’t remember exactly what it was. And then maybe you do it slightly differently than the last time, and then you don’t know if you can compare.”*

C: *“Here, from my Elkem Silicone perspective, I think EBS has really been a strength for us. To enable, to really clearly define what is the topic on which we should work on. “What is the question that we need to address”. And this is a very powerful tool, for example speaking about the A3... To really define what is the focus of our work, and where are the next actions. So I see here also, the EBS and the Lean as an enabler, even if you are already more in the exploration side.”*

...

[For advanced R&D and incubators] *In that part, we are fully in what you call exploration, it's thinking fully out of the box. And even there, when we are being developing the road maps for these kinds of areas, we have been using tools from EBS to assure we align and we are moving in the right direction. So I think... I always see the EBS and the Lean as an enabler for doing our job, but different level of intensity, I think. Of course the more you put Lean and EBS, the less you let space for creativity and thinking out of the box. But nevertheless it helps to frame and to ensure you are in a continuous process where you plan things, when you do, and you check, and react. So that's my vision of the EBS Lean versus the innovation in our R&D organization.”*

However, EBS is not a way to generate new ideas outside of the core business areas, or a way to foster an entrepreneurial mindset.

H: *“you cannot standardize your way to new thoughts or other solutions to old challenges or new technology.”*

A: *“...but EBS by itself is not a way to be creative and to open. It's a way where you have the road, and you have to follow the road. It's difficult to go outside, and from time to time you need to be agile. And EBS is not very good to be agile. You are efficient, but not agile.”*

D: *“...you will have to make some decision without having all the answers, and that is the problem with EBS. And therein lies the issues with the strategic choices you make: They must... It cannot be researched to death before you make the administrative decisions. You have to believe in something. You have to believe in Solar. And then maybe that was not the right thing in the end. You have to believe in Battery, or 3D printing. And whatever you are to do; you need to go for it.”*

5.6.2 Continuous improvement

The company values give a good indication of the desired direction for employees' mindset. Continuous improvement is evidently highly valued, while traits or orientations such as creativity, entrepreneurship and innovation did not make the top four list.



Figure 5-4 From Company presentation 2019: Introduction to Elkem Business System.

J: “I think that is probably a culture. You have EBS which is very strong. And EBS is typically incremental innovations. We need to build all the time, improve. That’s the improvement principle. And then you need to point to a potential for improvement all the time, to move forward in the loop. So I guess there’s something about our culture. We have EBS. We are quite prudent. That [Prudence] used to be one of our core values.”

5.6.3 Risk-taking

Another cultural aspect, by several of the interview subjects referred to as connected to continuous improvement, is the attitude towards risk. Attitude towards risk is partly a personal trait, but can also be part of a company culture.

J: “There are many technologists and realists who want to see numbers. Economists too. There are probably not many who are very willing to take risks and willing to take a chance. You risk having to answer for it later. So you say “This is the business case

we have worked with”, and you refer to that afterwards. I think the culture is pretty strong in that respect.”

G: “It’s an engineering mindset. There are technocrats [In Elkem] who try to sort of deliver hundred percent. So they are a little careful. You need to be completely sure. And especially to be good at risk assessment.”

D: “I come from two cultures. In Materials we were pretty much alone. And then I think we probably had... were a little more crazy. We did a little more things, we do a little more things. If we look one level above me, he [Divisional Manager] comes from a production environment and has EBS high on the agenda. And of course, his way of taking risks is different from mine, to start with. I’m not criticizing him, he’s very good. But just what he stands for, that is continuous step by step improvements to make things better. Making a step change is probably more difficult. The battery project for example. I have tried: “Let’s just gather four or five people and then go ahead and see how it goes.” That was my way of doing it. And then the divisional manager: «We must be able to document that the business cases are hundred percent. And then we have to double-check before we move ahead, and then you never get started. Because it will demand too much work to get started. Decision refusal perhaps, if you do not have all the CPIs in place... If it’s EBS versus something else, or if it’s a personal trait about risk-taking, about using an intuition instead of documenting... It lies within there somewhere.”

A tendency of risk avoidance can also be the result of previous failures. Lack of financial success, especially in the Solar project, seems to have created a precedence for avoiding risk.

A: “But for sure there is something at Elkem, the oldest part of Elkem, which is the Solar syndrome. (...) the technology for doing the silicon for solar is fantastic, and it’s the lowest cost, good quality and so on. (...) [But] it’s not because of the technology it doesn’t work, it’s because of the market itself. So time to time we can be reluctant to develop some new technologies.”

In the domain of reluctancy, there are examples of EBS tools being “misused” in as means to delay decisions:

A: *“There is something that is funny at Elkem, which is when we don’t want something happening, very often we say “you have to follow the EBS process”. (...) It is something I saw a few times. Typically for one project. When I presented what we can do between all the division of Elkem, what would be the target, the interest, why we have to do it from a social point of view, from an economical point of view and that it’s a way also to strengthen the divisions and to have the divisions working together. One SVP of one division said to me: “We need a better business case, and we need an A3”. And so, with exactly the same message, exactly the same things; it took two months. So it’s the reason why I say it’s a way to slow down.”*

Yet another dimension of risk-taking that was pointed out as being relevant in Elkem, is that it may be linked to the company’s reward systems.

E: *“He [a previous Technology Director of Elkem] was giving a lecture and presented a slide and said “I have lost faith in innovation in large companies in Norway”. He explained this with reward systems. (...) ”If you sit there as a manager and are presented with an innovative project of a certain size, then you have... The first opportunity is that you can go for it. Or you can refrain from going for it; say No. If you go for it, and it turns into a success, then it's a star. If you go for it, and it does not turn into a success, then you get kicked, and it turns out badly. But if you do nothing - judge it to be a failure in the first place, then you will not get kicked either. So if you want to survive in this system, it is best to just sit quietly and not take any chances. And come up with clever and good arguments for why this should not be invested in and not spent a lot of money on.”*

5.6.4 IP protection

Perhaps in contrast to the tendency towards open innovation, there has been a high focus on protection of intellectual properties in Elkem in recent years.

G: *“Elkem has been characterized by confidentiality and a strict regime for many years. I come from the paint industry, I worked for Jotun and has been around in Scandinavia in various positions and various tasks. When I came to Elkem, I was*

shocked by the “confidentiality hysteria”. Just to get from this department to another, you must have an access card.”

5.7 Market conditions for different Elkem units

When investigating cultural aspects and strategic choices of the different Elkem units, considering their surrounding environment is also useful.

Based on Elkem’s annual- and quarterly reports (Elkem, 2020) and input from the interviews, an overview of market conditions for the different business units is presented in table 5-1. The conditions are listed according to the framework of “Porter’s five forces” (Peng, 2014), describing an industry’s competitive environment.

Table 5-1 Market conditions according to “Porter’s five forces”.

Source: Elkem’s annual- and quarterly reports (Elkem, 2020) and interviews.

	Silicones	Silicon Materials	Foundry	Carbon
Market condition	Competitive	Competitive, cyclic, conservative	Competitive, cyclic, conservative	Stable, conservative
Bargaining power of suppliers	Moderate - Many integrated players	Low - Mainly commodity raw materials	Low - Mainly commodity raw materials	High: - Few qualified suppliers - Elkem Carbon is a smaller buyer
Bargaining power of customers	Moderate - Limited number of suppliers	Commodity Si: High Specialties: Low	Commodity FeSi: High Specialties: Low	Low - Few suppliers - No substitutes
Threat of new entrants	Low - Cost intensive equipment, technological know-how	Low - Cost intensive equipment, technological know-how	Low - Cost intensive equipment, technological know-how	Low - Cost intensive equipment, technological know-how
Threat of substitute products	High - Rapidly evolving markets	Low	Moderate - Increasing use of aluminium in automotive industry	Low - Conservative technology and market
Internal rivalry	High - Large portion of the product portfolio is commodity	High - Large portion of the product portfolio is commodity	High - Large portion of the product portfolio is commodity	Moderate - Low degree of specialization; products are interchangeable
Management orientation	Focus on sales from new activities	Continuously improve commodities, increase specialties	Continuously improve commodities, increase specialties	Continuous improvement, avoid risk

5.8 Summary of findings from interviews

Evidently, there are differences among the business units of Elkem when it comes to all of the investigated aspects. As summarized in table 5-2, there is a range from strong exploitative orientation in Elkem Carbon, to a more explorative and less mature exploitation orientation in Elkem Silicones. The similarities and contrasts will be further discussed and analyzed in different contexts in Chapter 6.

Table 5-2 Summary of findings from interviews.

	Silicones	Silicon Materials	Foundry	Carbon	Technology
Encouragement of explorative ideas	Actively through sales targets	Actively through sales targets	Encourage ideas in general, but most of the captured ideas are exploitative	None in particular	Encourage ideas in general, but most of the captured ideas are exploitative
Idea management system	Wazoku and “Incubator”	Wazoku	Wazoku	None	Wazoku
Project management system	Stage gate Prioritization and follow-up	Stage gate Follow-up	Stage gate Follow-up	None	Stage gate
EBS maturity	Low	Medium	High	High	High
Marketing strategy	New activities	New activities	Defend and specialize	Defend	-
CPIs on product development?	Yes	Yes	No	No	No

Chapter 6 Discussion

6.1. Why explore?

For a well-established, successful business that is continuously adapting to customer needs and incrementally improving their efficiency and product offering, is it really worthwhile to take risk and spend resources on uncertain, explorative projects?

In the following, this question will be looked at from different angles.

6.1.1 The market environment

Market competitiveness

A company is placed in a certain competitive environment. In order to succeed, the company needs to adapt to the environment. Except for situations of perfect monopoly, the firm needs to apply some sort of strategy to compete with other players. Different environments call for different strategies, as for instance described by the classic frameworks of Porter (Peng, 2014). By assessing a given market described according to *Porter's five forces* (bargaining power of suppliers, bargaining power of buyers, threat of new entries, threat of substitutes and rivalry among competitors) a suitable strategy may be proposed according to *Porter's generic strategies* (cost leadership, differentiation or focus).

The same applies for Elkem. As illustrated by the simplified overview in Chapter 5.7, the market environments of the individual business units are quite different. Naturally, this will influence the business units' market strategies, which again will affect their prioritizations concerning production, development etc.

Use of silicones and the silicones industry are rapidly evolving, and a successful player in this market needs to have product innovation and exploration high on the agenda. This is also the case for Elkem Silicones, where product- and market development is closely followed-up by management.

For the traditional part of Elkem, which is operating in conservative, cost-oriented markets, one could question whether it is justifiable to bother with exploration, or if the best way to assure profit is to concentrate the efforts on exploitation. In many ways, the latter has been the case since the mid 1990's (Songer, 2004). This is illustrated by the observation that unlike Elkem Silicones and Elkem Silicon Materials, the metal- and carbon producing Elkem units do not have any CPIs (Critical Process Indicators) of product development.

Innovative orientation

A market or an industry can be further categorized according to their innovative orientation. Building on the work of Schumpeter, (Schumpeter, 1934; Schumpeter, 1942), the labels *Schumpeterian Mark I* and *Schumpeterian Mark II industries* have been proposed (Nelson & Winter, 1982 and Kamien & Schwartz, 1982) to distinguish between industries oriented towards *creative disruption*, and industries oriented towards *creative accumulation*. Mark I industries are characterized by technological ease of entry and a continuous arrival of new entrepreneurs that disrupt the current solutions (ways of production, organization or distribution). By contrast, Mark II industries have high barriers to new entrants, and consist of large, established firms with high level of accumulated knowledge.

Given these classifications, one can argue that the different divisions within Elkem are associated with different types of Schumpeterian industries.

The traditional Elkem – metals and carbon

The surrounding industry for the traditional part of Elkem, the metal and carbon producing plants, can be classified as a Schumpeterian Mark II industry. The players are mainly large, established firms with capital intensive operations and high technological know-how. It is a conservative industry, where change is approached with caution. The consequences of a possible failure could be large, and will in many cases outweigh potential benefits of experimenting with a radical innovation. Given such a market, customers will be asking for incremental improvements within the existing technological regime, rather than new solutions involving an element of risk.

Within this frame, it seems appropriate for the traditional part of Elkem to focus on exploitation rather than exploration. This also seems to be the current orientation. The metal producing units can be said to be innovative, since they have idea generation on the agenda

and with the Wazuko system bringing up a large number of initiatives. However, the majority of the ideas are related to existing technologies and existing products, which fits well with a Schumpeterian Mark II industry. Elkem Carbon is perhaps even more focused on exploitation, and seems to be run according to a “cash cow” strategy. Even investments to maintain the current level has for some years been limited.

H: “... *Something that I never managed to get acceptance for, and that I doubt they [divisional management] devoted lot of consideration to, is this aspect of defending existing volumes in a development context. Because when we consider the value of innovation, we almost only talk about new sales or new customers. And then, the case is that if you do nothing, not only do you not sell anything new, but you also lose the market you have, if you do not continue to develop, continue to innovate towards markets and in all the directions where we are able to. And for a traditional business such as Elkem, at least the metallurgical side of it, it is very easy to forget that not growing, but staying where we are, is in a way an implicit growth. Which is almost impossible to assign a value to.*”

The new Elkem – silicones

Elkem Silicones appear to be in an industry approaching a Schumpeterian Mark I type. Their market is more dynamic, and application areas for silicones are rapidly growing and developing. In order to compete in this environment, new product development is essential. Indeed, the silicones division has a well-established system for idea management and project prioritization, through their use of the incubator and mature adaption of Stage gate. Idea generation seems to be part of the daily work.

Elkem Materials

Compared to the other units, the Materials group has a considerably more diversified market. Their products are applied in different industries with different dynamics, such as construction that could be recognized as a Mark II type industry, and oil field that would rather be characterized as a Mark I type.

The Materials unit comes from a highly explorative background. This has slowed down over the years, as the focus has shifted from exploring application areas for microsilica and other powders, to exploiting the developed businesses.

Still, they seem more market oriented than the rest of the Norwegian base. Both explorative and exploitative ideas are encouraged. However, there seems to be a challenge related to resources and structured follow-up and implementation of ideas.

6.1.2 Motivations for exploring

It could be argued that even though the traditional part of Elkem operates in conservative, cost-focused industries, maintaining some explorative ambition is still important.

Globalization

One argument would be the general trend of globalization. Factors such as increasingly efficient transportation and digital solutions are breaking down barriers and bringing the world markets closer together (Peng, 2014). With this comes a tightening of competition. Innovations, both incremental and of step change character, are necessary to maintain a competitive advantage.

Commodities and cyclic industries

The metal business of Elkem is strongly exposed to cyclic markets. That is, markets that fluctuate between periods of high demand and high prices, and periods with low demand and low prices. A way to assure stable, high income is to develop specialty products that are less impacted by the swinging market dynamics. Developing specialty products involves innovating new solutions.

Organizational learning

Engaging in an explorative activity means building new knowledge and new capabilities. Regardless of possible eventual financial failure or success of the initiative, there is an important effect on the organizational learning. Both in terms of increasing the level of knowledge and accumulated competence in the company, and in terms of training personnel to operate in unknown territory and dealing with tasks where the solutions are unknown.

Truly explorative initiatives in Elkem over the last couple of decades have been scarce. Apart from the two or three that are currently ongoing, the Solar project is perhaps the only one of a certain dimension in later years. Interestingly, although the business success was limited, the

Solar project brought with it knowledge that is used in other areas of Elkem today. Also, the current Battery project is a spin-off of some of the ideas behind the Solar project.

J: *“It [the Solar project] was very educational, we see that a lot of the knowledge that we developed in Solar, is now used elsewhere in Elkem. (...) Everything from the digital system that was implemented in Solar, to the injection of fines that we are now working on in the rest of the Silicon division, or within surface chemistry that we are now taking further.”*

J: *“I’m just thinking about how the Battery got started. (...) Actually, it was sort of an extension of Solar, because we saw that some of the learnings from Solar, could also be used for batteries on silicon. There were a lot of similarities.”*

Product life cycles and insurance policy

Yet another argument for exploration, would be to regard new developments as an insurance policy. According to Levitt’s framework (Levitt, 1965) a product will go through a lifecycle consisting of market development, growth, maturity, and finally decline. In order to maintain profitability, a company should therefore have this in mind when developing a portfolio of products, ideally spread over different spans of the life cycle.

Life cycle considerations may be less relevant for the metal industry. It is not believed to expire anytime soon. As long as there is population growth, the world will continue to use metals in the foreseeable future, for infrastructure, buildings, cars etc. Nevertheless, disruptive innovations are just that: innovations that disrupt the way things are done today, that “nobody” expected. A radical innovation could come along – for instance motivated by environmental regulations - that entirely changes how metals are manufactured or utilized. Therefore, having a portfolio of ongoing explorative projects, or “probes” into the future, can be regarded as a form of insurance policy.

E: *“You might look at business development and innovation as an insurance policy: Paying an insurance policy is not profitable. That’s how the insurance companies stay in business. But the consequences of a fire are so severe, that you pay it anyway. And this is true also for business development.”*

For Elkem Carbon, a possible game changer is the European ban on use of coal tar pitch, a key ingredient in the Søderberg electrode paste, and a central part of the famous Søderberg patent from 1919. While Elkem is still relying on political exemptions from the regulation, a competitor is already on the market with a pitch-free solution. Elkem Carbon has been forced to step up the pace and make up for the “unpaid insurance policy, in order to reclaim a leading market position.

6.1.3 Elkem’s position

It can be debated whether explorative orientation is necessary or beneficial within different business contexts. On a strategic level, what is Elkem’s current attitude towards exploration and innovation?

Looking at Elkem’s official webpage, the word “innovation” has been granted its own headline (Elkem, 2020). Both incremental and step change innovation are put on the agenda:

“Elkem’s innovation strategy covers both incremental and step change innovation. The core of Elkem Business System (EBS) is continuous improvement.

EBS keeps the company equipped to meet future challenges. By always looking for new potential, by using EBS tools to describe the potential, by finding solutions and measuring results Elkem gains a steady progress.

However, to keep our position as a world-leading producer of silicon, silicones and carbon-based materials Elkem also seek innovation and new improvements.”

The statement points to a management desire to engage in both exploitation of existing solutions and exploration of new potential. This orientation seems to have strengthened in recent years.

I: *“More has happened over the last 2-3 years, than during the previous 28 years I have been here. We have been running some tests etcetera before, but now, there is some pressure behind it.”*

Another strong indication of a strategic intent in this direction, is the establishment the Elkem innovation team a few years ago - a team which mandate is to work towards a culture change and a more innovative mindset throughout the company.

6.2 Barriers to exploration

It has been argued that there are in fact good reasons for exploring and innovating, even when operating in conservative markets. The newcomer Elkem Silicones is already up to speed, presumably due to a combination of market environment and management focus. On the traditional side of Elkem, some momentum seems to be lacking. Lack of momentum, or a perceived need for more momentum, is also evidenced by the fact that corporate is putting more emphasize on innovation.

What are the barriers? What is hindering explorative ideas and limiting the pursuit of explorative opportunities? In the following, both external and internal factors are discussed.

6.2.1 External factors

Development and innovation in Elkem be can be seen in a larger context, influenced by megatrends and other external factors. The topics below are taken from the interview with subject E, who builds these reflections on a forty-five-year long carrier within Elkem, combined with external board memberships and other roles related to R&D and business development.

E: "What has bothered me late years, is that we have not succeeded in developing any new applications. And I have asked myself many times; why is this? (...) The essential there, is that the culture in Elkem changed. And I think I will start my explanation at a higher level, and say that there are a number of structural things behind it."

Shift in macro economy towards short-term focus

Over the last twenty to thirty years, there has been a shift from real economy towards finance economy. Investments are turning away from production and flow of goods, and towards purely financial assets. With this comes a change towards focus on short-term gains. For

industrial owners, short-term gains are rarely found in explorative directions, which are typically both expensive and slow.

Trend of mergers and acquisitions

The global trend of company mergers and acquisitions is also evident in Norway, where a substantial part of the process industry now is under foreign ownership, as exemplified by Eramet, Wacker, Bluestar and FerroGlobe. These companies often have a structure where the plants are instructed to focus on production, and where development is centralized in the group's home country. Of the ten silicon and ferrosilicon plants in Norway, only one is today domestically owned.

Long time-constants

While macroeconomy is shifting towards short-term gains, the traditional industries in which Elkem is operating generally have long time-constants. That is, the timespan from introduction of a change to a detectable result can be weeks or months. Development of related products and processes are thereby by nature slow. With long delays comes slow results, a poor fit to short-term gains.

E: "And the time constant is also quite important. I have met Bjarne Skeie [a leading Norwegian serial-entrepreneur], and he said that: (...) "I cannot remember anything taking less than five years"."

With long time-constants, it can also be difficult to relate specific actions and changes to an actual result. When it is difficult to pinpoint the cause of a success, it is less motivating to search for new solutions. In some ways a parallel to gaming, where quick results seem to be more addictive than delayed results.

6.2.2 Internal factors

Reward systems

Employee incentive schemes are often used to define specific targets and motivate employees to work towards these. What can be an unwanted side-effect, is that focus on these targets hamper other potentially beneficial activities, since there are no direct personal rewards related to them. Since incentive schemes also need to be defined within a certain time frame,

long-term thinking and long-term effects may also be set aside at the benefit of short-term activities.

On a broader level, one can argue that there are at least two aspects of rewards hypothesis that can impede exploration. One is related to risk-taking, as described in Chapter 5.6.3. Another is related to time constants.

E: “And I have discovered throughout the years, especially since the eighties and onwards, that those who constitute the management, they get their salaries dictated based on the annual profit and the share price. And that means optimizing on something other than long-term business. Long-term business means large innovations and development, and requires a lot of resources. It takes time, you will not get the result this year. The top managers would typically hold the position for 3 years and optimize the business. And then they would move on to another superior position. Herein lies a dangerous trap. This is a cultural aspect that has developed the last years, in my opinion. It is all down to time constant for innovations versus reward systems of management.”

Recruitment

Elkem has a tradition for recruiting senior management from plant managers. The plant managers are trained to focus on production, managing a capital-intensive operation where limiting cost and pursuing efficiency is essential. The main target is to overcome day to day challenges, and keep the operation running in an efficient manner. The plant manager needs to be efficiency- and cost oriented. Measures of success are for instance amount of goods produced per month, production cost per ton of goods, and number of employees per tonnage produced.

When a successful plant manager is recruited to senior management, for instance as divisional manager, it is natural that the previously learned and adapted mindset is brought along. If left unchallenged, this can bring on a self-reinforcing cycle of focus on exploitation, and where exploration is less familiar to the organization. It can be argued that this is parallel to one of the propositions advanced by Benner and Tushman (Benner & Tushman, 2003), that exploitation has a tendency to propagate throughout an organization.

D: *“All divisional managers are former plant managers. (...) That is the tradition. This means that, at least in our division, the way we are measured is by EBITDA per plant.”*

F: *“We have a good philosophy. But then I think our tools are very just shop floor tools, that’s all we use. I think that maybe that reflects something about Elkem. That Elkem is very much focused on the technologies, very much focused on production. Center of gravity in Elkem is the plant manager.”*

History and tradition

The traditional Elkem is building on a hundred year long tradition of metal production for conservative markets, and a twenty-five year long tradition of EBS. It seems quite natural that this will lead management focus in an exploitative direction.

The Silicones unit is by contrast only a few years old in Elkem, and is still in a process of adapting EBS tools and EBS philosophy. Impacting an entire organization’s culture, with something that might be regarded as quite different and maybe even bureaucratic and cumbersome, will take time. On the other hand, this organization is much more up to speed when it comes to innovation, which is also explained by their background and exposure to more competitive and dynamic markets.

B: *“I think they [Elkem Silicones] have longer history with working with innovation. In a way they have been forced to be innovative, due to the competitive situation in the past. And yes, I think somehow, they are more on the international market than old Elkem, they are closer to the customers. And a lot of innovation today is considered customer driven.”*

The origin and early history of **Elkem Materials** is trading rather than production, and exploration rather than exploitation. With EBS consisting of mainly shop floor oriented tools, the EBS practices has to a less degree been implemented in Materials.

D: *«I come from Materials which is less rigid in that respect [business case and CPIs to decide whether or not to go for an activity]. It's easier to make decisions. You don't break any standards, because there aren't standards for everything.»*

Company culture

As described in Chapter 5.6, there seems to be a strong company culture in Elkem, especially related to EBS and the traditional part of the company. It can be argued that some aspects of this culture can directly impede explorative behavior. Strong focus on continuous improvement take away resources from explorative activities. Short-term focus and a degree of risk-avoidance lead to prioritization of exploitative activities over explorative projects. In many ways, this echoes the propositions by Benner and Tushman (Benner & Tushman, 2003). However, where the current findings differ from the work of Benner and Tushman, is that process management or EBS practices is not necessarily seen as the cause. Rather, the company culture is the sum of several factors, both internal and external.

6.2.3 The role of EBS

EBS is an important basis of the Elkem culture, and as formulated by subject F, they are probably reflective of each other. Is it possible to define which role, if any, EBS plays for the balance between exploitation and exploration?

The benefits of an overarching system

An interesting angle to this is presented by Ingvaldsen and Engesbak (Ingvaldsen & Engesbak, 2020), through their discussion of bureaucracy and its link to organizational learning. They summarize the conventional view of bureaucracy (defined by the extent of specialization, formalization, standardization and hierarchy) as being an organizational form that hampers collaboration, prevents experimentation, slows down decision making and cripples local autonomy.

In contrast to this conventional view, they argue that the overarching control of a bureaucracy is a prerequisite for both exploitation and exploration in certain types of organization. That is, in complex organizations with high degree of interdependency between subunits. This is typically the case in production-oriented industries where the product outcome is the result of many interlinked process steps. High degree of complexity needs structure to be handled successfully, without risking that a local improvement in one area has an adverse effect in others, potentially leading to a large failure.

These ideas are parallel to many of the interview statements reported in Chapter 5.6.1, that development work in general should follow the guides of EBS structure. That is, EBS is viewed as an efficient tool for assuring structure and control throughout the development process.

C: "I think it's really interesting because we are always saying: "Yeah it's a drawback for Elkem (...) to have this strong EBS and Lean competences." But I think it's really the foundation to go towards innovation excellence. And I think perhaps what we are more missing, is the mindset in the company to go there. And that's something really different."

In many ways, EBS can be regarded as an overarching system. There are systems for how ideas should be explored, and for instance the A3 tool can be regarded as a checklist and follow-up template for any task. Also the important topic of process flow, with continuous communication towards both the "supplier" and the "customer" of any given process step, assures that local, potentially suboptimal solutions are not implemented without considering the overall benefit.

Company code and organizational learning

March (March 1991) represents a different angle to the impacts of an overarching system, when discussing organizational learning in the context of company codes. A strong company code, such as an overarching system, can be both positive and negative. The EBS philosophy can be said to represent a strong backbone of today's Elkem, and is as such a strong culture or a strong code. Viewed in March's perspective, this is positive in the sense that employees rapidly adhere to the code, they speak the same "language" and share common attitudes. But based on March's work, this can also be a reason for alarm. A strong code favors exploitation, but comes at the expense of diversity and deviating views that are essential for exploration. Translated into relevance for Elkem, this would imply that the strong culture in itself, of which EBS is part, is positive for exploitation, but may inhibit exploration simply because people are thinking too alike.

March suggests organizational diversity and a balanced combination of "slow and fast learners", i.e. individuals that adapt both slowly and rapidly to the code, as the best way to ensure balance between exploitation and exploration.

6.3 Ambidexterity in Elkem

The balance between exploitation and exploration can also be managed by applying an ambidexter organizational form, as proposed by literature. Is Elkem successfully adapting an ambidexter strategy?

There are traces of ambidexter organization in Elkem, but apart from the larger, strategic projects this doesn't seem to be a pronounced target or recognized dilemma within the company.

What rather seems to be the case, is that the different areas are good at *either* exploitation *or* exploration. Or to use a metaphoric parallel, they are either left- or righthanded. Elkem Silicones successfully manage exploration, but is lacking the maturity of EBS to exploit the full potential of their sales and operations. For the traditional metals and carbon areas, it's the other way around. They excel at exploiting and continuously improving, but are lacking the mindset of searching for new horizons.

When it comes to contextual ambidexterity, it is interesting to compare aspects found within the Elkem culture with factors pointed out in literature as inhibitors or enablers. Some main factors found to have a positive impact on ambidexterity, is cross-functional communication, shared vision, and horizontal and bottom-up communication (Alizadeh & Jetter, 2019). At least the latter two, and to some extent also cross-border communication, can be recognized as aspects or outcomes of the EBS philosophy. As such, although perhaps not a conscious organizational strategy at present, the company should hold a good basis for being able to develop contextual ambidexterity. In order to get there, some of the adverse sides of the company culture - with risk aversion as probably the predominant one - need to be challenged.

A different way of viewing the interaction of exploitation and exploration, as referred to in one of the interviews, is to look at the two orientations as building blocks on the way to the ultimate company performance. In such a framework, *operational excellence* would be the

basis. The processes need to be under control, and to be governed by a regime of continuous improvements.

The next building block is *sales and marketing excellence*. Developing specialized solutions and specialty products make room for higher margins. Sales will be based on perceived value for the customers, rather than price of raw materials and production costs.

The last building block to assure optimal performance, is *innovation excellence*. Idea generation and selection of future projects are well managed, together with a general entrepreneurial mindset.

Again, the different divisions in Elkem are at different levels on this metaphoric ladder. Silicones has perhaps started on the middle, but lack some of the solid EBS-base to fully exploit all benefits associated with operational excellence. As for the metal part of Elkem, there is a strong operational excellence base, and they have in some areas reached or are approaching the sales and marketing excellence level. However, there is still some way to go to get to innovation excellence.

An observation from the interviews, as mentioned in Chapter 5.4.1 is that representatives from Silicones and Silicon Materials seem more concerned about potential revenue, and less concerned about cost. Although those can be two sides of the same thing, and perhaps a coincidence, it could also underline a difference in philosophy, being more oriented towards development and overall earnings, and less preoccupied with cost. This points to being in the area of sales and marketing excellence.

Elkem Silicon Materials is the area that appears most conscious about the ambidexterity dilemma. Interestingly, this unit also has the most diversified markets and value chains in the company; ranging from traditional metals production, to trading and exploiting benefits of microsilica related products that were disruptive some twenty years back. Dilemmas encountered in this area, and their solutions to them, could perhaps be an inspiration or guide for the other units.

6.4 Is EBS itself evolving and adapting?

6.4.1 The risk of EBS biting its tail

Throughout the interviews, many references were made to scarce resources. Not surprisingly, since this is a feature probably recognized by most commercial firms today, in the pursuit of efficiency and profitability.

The idea of EBS is to work smarter, not harder. And in order to work smarter, some organizational slack is requested, since finding a better solution in most cases involves trial and error and some degree of “worse before better” (Repenning & Sterman, 2002). However, some of the interview responses indicate that the organization is becoming too lean for this. Today’s problems are taking away from tomorrow’s solutions.

F: *“You have to have slack in some places in order to be able to improve. If you have exactly enough people required to do a job, as soon as you have a problem, or as soon as you want to improve something, you can’t do it.”*

I: *“...we are streamlined. (...) We don’t employ more operators than necessary to produce today’s level. But of course, when we come up with something new, it often demands manual handling. Then there is a lack of resources, because the operators are really busy with the everyday life.”*

I: *“As I was saying; crises generate creativity. But to have a culture, and an arena for bringing up new ideas and input... you need to allocate time with operators. Organize meetings and brainstorming sessions with them and the team around them. But the day to day work-life is getting more and more hectic, and it often becomes difficult to find time for these types of creativity-spurring activities.”*

It could seem that EBS, at least in some areas, is reduced to a problem-solving tool for “taking out operational fires”, rather than a tool for continuous improvement and incremental development.

Is this a warning sign to management?

6.4.2 EBS into the future

EBS has been developed primarily with production focus. Over the years the EBS philosophy has become part of the company culture, and spread into many areas of the organization. However, the tools are still shop floor oriented, and one can question whether it is useful to apply such tools for explorative activities.

For a while, EBS, or at least the EBS support center, seemed to stagnate somewhat, being less open to inputs and new ideas.

F: “Every EBS University [Internal EBS training] at the end, they ask for feedback, and we got the same feedback again and again. And a lot of it was for example people working in sales, saying “This doesn’t make sense to me. I think it’s great, but I don’t translate that to my daily job.” And you hear things like this year in and year out and we don’t do anything about it. Where’s the continuous improvement in EBS?”

F: “... because for the longest time, the central EBS coach said “We don’t need all this innovation stuff, we have EBS”.“

As of lately, this is changing. The EBS center is building new competence in the area of Agile methodology, and training of employees is being rolled out.

6.5 Is EBS inhibiting exploration?

An underlying angle to this study has been literature hypothesis about possible negative effects on innovation, in particular transformational, radical or disruptive innovation, by the regimes introduced along with Lean practices. Throughout the investigation, the aim was to study the balance between exploitation and exploration in a wider perspective, by looking into possible aspects that may influence that balance.

6.5.1 The resource issue

Elkem Materials represents a case within the case. It started as a highly explorative unit, and then matured into a well performing business. In many ways, the Materials unit can be compared to a small start-up company that has evolved into a larger and more established enterprise. Increased focus on efficiency and needs of existing customers are taking away resources from exploration and investigation of new markets.

How does this comply with the EBS philosophy?

Elkem Materials has traditionally been less oriented towards EBS and follow-up than the production based Elkem units. But with a widening product portfolio and a growing base of customers that need attention, EBS tools are becoming more useful and more applied.

However, as this growing base that needs exploitation demands more and more of the resources, the available resources for maintaining an explorative momentum becomes scarcer. The problem is not really that EBS tools are taking over or inhibiting explorative innovation. It is merely a question of resources.

Is there a parallel to Elkem as a company? In the beginning, Elkem was a highly explorative engineering company, inventing and developing furnace technology. Over the years, the company has grown into an established and mature stage, and is now rather excelling in exploiting the former innovations. EBS is a tool that enables the success.

6.5.2 Application areas of EBS

EBS tools are developed mainly for production, and are so far less adapted for other areas. This is not an issue per se. But it might entail a negative effect, if the tools are applied too rigorously into other areas. The interviews indicate some issues in this direction, for instance too wide use of the A3 tool as basis for decision making. An A3 for a new activity demands a pay-back calculation, a defined business case and defined action plan. This is useful for a setting where the solution is known, but falls short for uncertain, explorative projects. The tool itself is not to blame, it is rather the adaption of it.

Interestingly, the Silicones division can provide a healthy counterbalance to this issue. Being rather new to the EBS philosophy in an Elkem perspective, and having an established culture

for explorative behavior, they should be able to pick out which tools are useful and relevant in different settings. This was reflected in the comments of subject C in Chapter 5.6.1. EBS tools are seen as enablers for all types of development work, but with different degree of intensity. For explorative R&D projects, some of the tools would be too operational, while others are valuable for aligning and framing the process.

6.5.3 Attitude towards risk

New ideas are both welcomed and encouraged in Elkem, either through work in improvement teams, or through idea management systems. But if the target is to become more explorative, the employees also need to be encouraged to take some risk. This is perhaps especially important when it comes to middle management, who are making the majority of the day to day choices and prioritizations. This is not the culture in Elkem today, as expressed throughout the interviews.

Is risk aversion connected to EBS? There are examples of EBS tools being misused as a means to delay decision making, as reported in Chapter 5.6.3. But other than that, there is no reason that application of EBS tools should entail risk aversion. Avoiding or minimizing risk seems to be more of a cultural aspect, especially in the traditional part of the company. A culture that could stem from a combination of factors:

For many years, one of Elkem's defined corporate core values was *prudence*, something that has probably colored the collective mindset to some degree. Prudence meant paying attention to cost, and to follow a defined and well thought-through path. This was certainly a necessary move, given that the company had been close to bankruptcy some years earlier, with a too extensive expansion strategy as one of the reasons. However, prudence is not a core value that encourage risk-taking and exploration, rather the opposite.

Another factor is related to reward systems, both directly through incentive schemes, and indirectly through more unintentional mechanisms. As pointed out in Chapter 5.6.3, for a person that aims to ensure a solid position within the company, it is more important to avoid failure than to succeed with something risky. Chapter 6.2.2 presents an additional angle, related to time constants. Since incentive schemes have rather short time frames, there is little

personal bonus to gain from devoting efforts to tasks that will give results sometime in the future.

In sum, it seems unfair to blame limited entrepreneurship in some areas of Elkem on the EBS philosophy, or to imply that EBS is an impediment to innovation or development. It is rather that EBS is mainly adapted for production, and it has not been developed further into other areas, such as sales and marketing, R&D or administration. This differs from the propositions of Benner and Tushman (Benner & Tushman, 2003), where process management is seen a direct inhibitor of exploration. The suggestion from this work is that the hindrance is more likely to be found within the company culture. And that the company culture and collective mindset is the sum of several different factors, both internal and external. The application of EBS practices is one factor, but other aspects such as industry profile, megatrends, management orientation, reward systems, history and tradition may be equally or maybe even more important.

This is summarized in figure 6-1, that illustrates how Benner and Tushman link process management directly to the undermining of exploration, while this study suggests that observed tendency towards exploitation at the expense of exploration (predominantly in the traditional part of Elkem), is rather connected to the sum of both internal and external factors. The overarching EBS system is one of the factors contributing to the culture, but EBS is also in turn impacted by the culture.

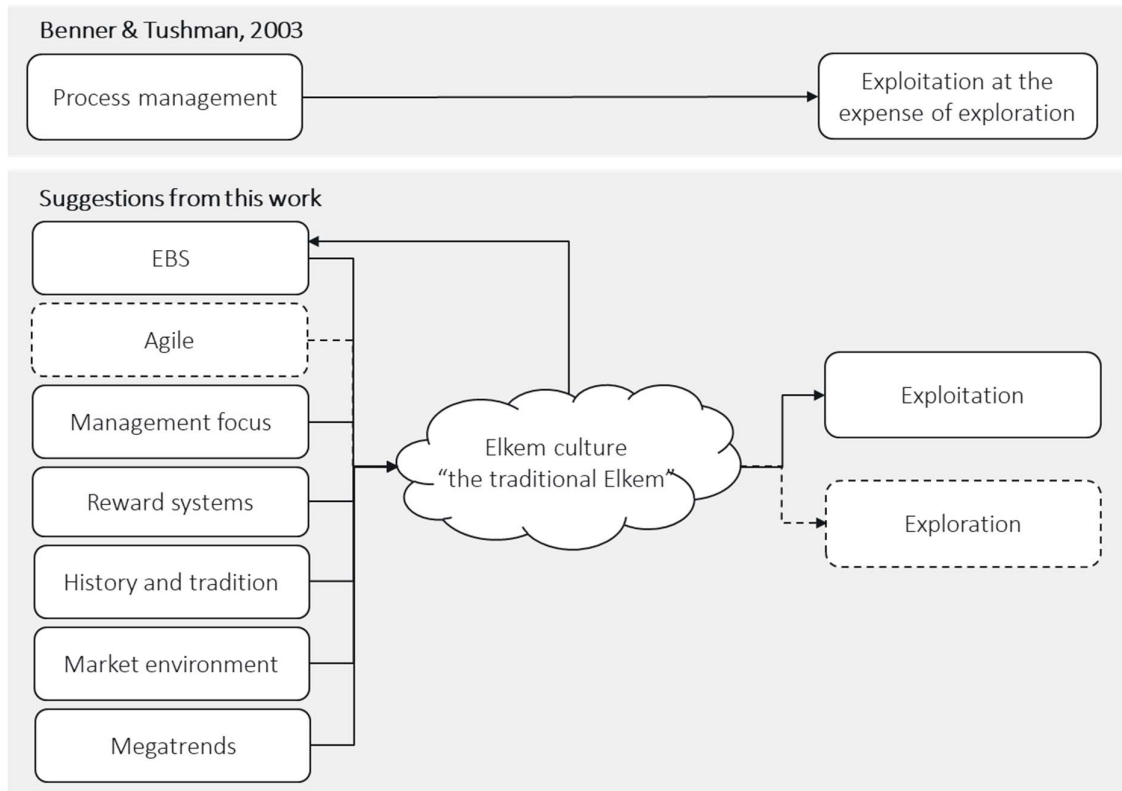


Figure 6-1 Suggestion from this work compared to proposition from Benner and Tushman (Benner & Tushman, 2003).

6.6 How to train the left hands?

As it appears, Elkem Silicones' "left hand" is today exploitation, while the "left hand" of the traditional Elkem is exploration. What would it take to achieve more exploitation in the "new Elkem", and more exploration in the "old"?

For Silicones and partly also for Silicon Materials, it would probably be to continue building and applying EBS competence. At the same time, attention must be paid to resources, and avoid the dilemma stated by Elkem Materials of today's problems taking away from tomorrow's solution. And equally important: Maintaining a positive management attitude towards engaging in new activities and embarking on uncharted territory.

For the traditional side, the deep understanding and constructive use of EBS tools must be sustained. But at the same time, it would probably be beneficial to relax the application of EBS tools in areas where they are less adapted, such as development of totally new markets or

tasks where the solutions are complex or unknown. In these areas, an Agile methodology would probably make the necessary passage. Evidently, the EBS philosophy is already in the beginning of a transition phase, where Agile methods are starting to be implemented.

For both areas, the dilemma of resources will always be present. Sharing R&D with external partners through open innovation, or in-sourcing of competence through corporate venturing, are efficient ways to move rapidly to a new technical solution or a new market. The negative side to this is that the organization is deprived of an opportunity to develop collective knowledge and being trained in innovative thinking.

6.7 Evaluation of applied research method and data interpretation

6.7.1 Qualitative method

A qualitative study will by nature hold more possibility for interpretation and bias than research based on quantitative methods, although also quantitative research must be evaluated with care. A qualitative study will also be based on a lower amount of data, or rather, the gathered data will be deeper and more complex, compared to that of quantitative methods which can cover and analyze large datasets with the same resources.

In the present work, the gathered data is limited, being based on the opinion of only ten persons in a firm of 6700 employees. It is impossible to claim that their views represent the entire and only perceptions found in the company. However, the subjects were selected so that there were at least two opinions from the same work area. The replies differ, but large contradictions were not observed, indicating a certain consensus. Within the given frame, the data is considered sufficient to bring up interesting findings, although it is important to bear in mind that the entire picture has not been painted.

6.7.2 Interview as research technique

When reading through the transcribed interviews, it appears that some of the mentioned potential problems with interviews are present. Some of the responses do not align with the question posed, indicating that the question was unprecise or simply misunderstood. In some

occasions, the interviewee also seems to have been stopped in a line of thought, since the interviewer was expecting an answer to a different question.

Indirect questioning techniques were not applied, something that might have increased the potential for social desirability bias. This bias could also be strengthened by the fact that the interviewer knows and has been a colleague of several of the interview-subject. However, there are also positive sides to these relations, such as easy access and willingness among the subjects to dedicate time and effort. There is an established level of trust, that is believed to have led the interviewees to talk freely. From the responses, it can be noted that the respondents mentioned both positive and negative sides of the discussed topics. The replies seem balanced, as they report both positive and negative aspects and perceptions of the company structure, processes, organization, culture etc. It is therefore assumed that the responses can be trusted, and that they reflect quite sincere opinions of the subjects. The potential bias of the interviewer can be difficult to avoid in this case, having been part of the case organization for twenty-five years. It was considered important to keep this in mind throughout the process, but it may still be difficult to avoid all together on a subconscious level.

The situation with video meetings represented a possibility to also communicate visually, although to a less degree than meetings in person. On the other hand, it was found quite convenient to have recordings of both dialogue and expressions. This was helpful when transcribing, and reduced the risk of mishearing. The recording as such also eliminated the problem of poor recall.

All aspects considered, the research method, the applied technique and the quality of the data are deemed adequate for analysis.

Chapter 7 Conclusion

Inspired by literature pointing to Lean manufacturing as a possible hindrance for innovation and exploration, this study has investigated how Elkem, a company with a mature adaption of Lean called Elkem Business System (EBS), is balancing exploitation and exploration. The research was based on interviews with ten employees, selected in order to represent all business units of Elkem and cover the fields of R&D, marketing and sales and production support.

The current balance between exploitative and explorative projects has been mapped for each division and for the company as a whole. Organizational and contextual factors that may influence this balance have been collected, analyzed, discussed and compared to relevant theory.

7.1 Exploitation and exploration

The current balance is clearly in the favor of exploitation for the traditional part of Elkem. The Silicones and the Silicon Materials divisions have more attention to exploration, as demonstrated by their quantified targets for “transformational” projects, i.e. new products in new markets. At the same time, there seems to be an intent towards a more entrepreneurial orientation on a corporate level. This is exemplified by implementation of Agile methodology, the establishment of the Elkem Innovation Team, and statements about innovation on the company web page.

However, innovation and exploration are not necessarily the same thing. Elkem is not highly explorative, but can still be said to be an innovative company. The main part of the innovation is incremental, and is to a large extent governed by EBS principles. But there are also other types of innovation in Elkem. *Open innovation* is applied for development projects in Elkem Technology, and for the two explorative corporate programs. While within Elkem Silicones, inhouse development is supplemented by *corporate venturing* as a means to add competence and reach new markets.

7.2 Idea generation

New ideas are encouraged in Elkem, and there are established systems for collecting and evaluating them. The recently introduced idea management system, Wazoku, has proven successful in the sense that a large number of ideas has been captured. Most of the ideas are found within an exploitative direction, i.e. improvement of existing processes and products.

Although the Elkem organization successfully generate and capture ideas, there seems to be a challenge related to allocation of resources for follow-up of the initiatives. On a longer term, there is a risk that this can inhibit creativity and motivation for further contribution.

7.3 Project management and prioritization

Projects are mainly prioritized according to economic considerations, where the business case and calculations of net present value play important roles. This is a tradition that makes it difficult to get acceptance for projects where future profit is difficult to quantify, which is often the case for explorative projects for unproven technology or unestablished markets. Reflecting this, most of the ongoing projects in Elkem are short-term, and in exploitative direction. The exceptions are Elkem Silicones and Elkem Silicon Materials, where explorative, “transformational” activities are pushed and followed-up.

The Stage gate system is widely used in Elkem, for both prioritization and management of projects. The Silicones division seems to have a balanced and efficient way of using the tool, while in other parts of Elkem, the system is rather perceived as adding bureaucracy. A common opinion seems to be that Stage gate – or the way it is being applied – demands too much time and resources before a project can get started. Implementation of Agile methods for initiating and running projects was by several of interview-subjects pointed to as a possible solution.

7.4 Ambidexterity

In the context of this study, ambidexterity is understood as an organization’s ability to perform both exploitative and explorative activities at the same time. This is seen to a rather

limited degree in Elkem today. An ambidexter approach is taken regarding a few large, explorative programs, which are lifted out of the daily operation and organized as separate units. But on lower and broader levels, there is no adaption of structural ambidexterity. Rather, it seems to be one or the other: The metal and carbon producing units are quite mature when it comes to operational excellence, but lack an explorative momentum. On the other hand, the Silicones division seems to be focused, mature and successful when it comes to developing new products and new markets. However, financial results are hampered by less maturity on exploitation, presumably related shorter experience with EBS.

It would seem that the traditional and the new part of Elkem have things to learn from each other. Retrieving such synergies would be a good way for the company to assure another century of success.

7.5 Company culture

Elkem does not express any ambitions concerning ambidexterity, perhaps with the exception of Silicon Materials. Still, the organization appears to hold many of the cultural aspects that are associated with contextual ambidexterity, such as cross-border communication, shared vision and bottom-up.

On the other hand, other cultural aspects seem to be limiting a more extensive explorative direction. The fact that continuous improvement is selected as one of the core values, sends a clear signal about this being a focus area. But that itself does not prevent anyone from exploring. What is perhaps the most limiting factor, is the attitude towards risk. Although new ideas are encouraged in Elkem, reward systems and traditions do not encourage risk-taking. Without some element of risk, it is difficult to advance in an explorative direction.

7.6 Don't blame the tool...

In contrast to literature pointing to Lean and similar philosophies as potentially harmful for a company's ability to explore (Benner & Tushman, 2003; Chen & Taylor, 2009; Lewis, 2000) the results of this study rather propose that the tool or the philosophy itself is not to blame for limited entrepreneurial orientation.

EBS as a tool and an overarching philosophy is supporting exploitative activities. But that does not mean that it is a hindrance to exploration. The observed hindrance is rather due to the ever-existing issue of scarce resources, combined with an overall company culture. The company culture is here regarded as the sum of many factors, both internal such as management orientation, attitude towards risk and reward systems, and external such as market competitiveness and megatrends.

7.7 Suggestions for further work

A limiting factor in this study is the number of interviews, something that can be strengthened by simply performing similar interviews with more representatives from the case company.

A more interesting approach would be to use the findings from the present work to design a questionnaire, and perform a survey among a larger part of the employees as well as within other companies with long tradition for Lean practices or operational excellence. Suggested topics for such a survey would be reward systems, attitude towards risk, prioritization mechanisms, and external factors such as market environment and competitive landscape.

A questionnaire could also include predefined questions from literature, for instance the scale developed for measuring entrepreneurial orientation (Covin and Selvin, 1989). It is important to note though, that this scale only attempts to measure the degree of entrepreneurial orientation, not the causes for it.

An alternative angle could be to study individual explorative cases within the same case company, or in companies with comparable history and market environment. The cases could include both successes and failures. The aim would be to investigate what factors were supporting, and what factors inhibiting the projects. Candidates from Elkem could be the Elkem Solar project and the ongoing Battery project.

Such further work would constitute a valuable addition to the interesting research on how companies can learn to master the challenging balance of exploitation and exploration.

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Appendix A. Guide for interview questions

Timeframe:	Last 5 years
Scope (process):	From idea generation to initiation of project (i.e. not the execution of an activity)
Scope (person):	Specify: the projects you are directly involved in, or in general for the division/group.

1. Classification

- How many development projects are currently/typically ongoing?
- Where in the ambition matrix?
- What is driving new development? (production/process, customer needs, selection of attractive markets, crazy new ideas, ...)

2. Prioritization

- What type of projects are normally prioritized? (strategic fit, short/long term, customer oriented, process oriented, ...)
- Why?
- Who are making the decision/prioritization? (where in the organization)
- Who or what decides if a project should be initiated? (strategy, organization level, ...)
- If a “promising” project is not initialized; what are the main reasons?
(lack of personnel, equipment, other? Same question, but from different angle=> same response?)

3. Formalities

- What type of formalities are requested to get approval for a project?
(strategic match, business case, market potential, A3, NPV, other?)
- What type of formalities does it take for an activity/project to get started?
- What is the typical time frame for decision making (days, weeks, months?)

4. Idea generation

- Where in the organization do new ideas come from?
- How are ideas generated?
- How are ideas captured?

- How are new ideas welcomed? (Management, co-workers)
- What is a typical path from an idea to start-up of project

5. Ambidexterity

- With reference to the ambition matrix: Are core activities followed-up differently than adjacent or transformational? How, why?

6. Communication

- Degree of internal communication
- Degree of cross-border communication (groups, departments, division, outside of Elkem)

7. Culture

- To what degree are new activities depending on personal initiative/personnel with entrepreneurial orientation?
- How are new ideas welcomed?
- Degree of autonomy in decision making?
- Attitude towards risk taking?
- Do you think EBS is influencing how we work with innovation? How? Why?

Appendix B. Summary of interviews

Summary of interview with A

1. Classification

Development work in Elkem is defined through a few, long term strategic programs, and a large number of projects; either related to the programs (mainly), or independent of these. The ratio is about 1/100: 3 strategic programs, and more than 300 projects.

Of the long-term programs, two can be characterized as explorative (new products, markets or technology), while the third is more exploitative and focusing on value stream optimization. However, also this one has an element of exploration, given that technologies new to Elkem, such as AI, are being employed.

The programs have time frames of at least 5 years.

On the project level, a broad estimate would be that around 80% are exploitative.

2. Prioritization

Programs

The programs are directly linked to strategy.

Projects

Prioritization between projects is done mainly at top management level. Typically by divisional management, or by divisional innovation boards. The most important factor when considering a new project is pay-back. Other evaluated criteria are: Fit with strategy, link to megatrends, fit with current technology (or defined as gap to current technology), and market considerations (for instance competitors/customer demand-needs).

Project pay-back

Since pay-back is the main decisive factor, it is difficult to achieve acceptance for projects where this is difficult to calculate (although it might be technically or otherwise promising). Factors such as long timeframe, high risk and high complexity all contribute to uncertain pay-back calculations. As an indirect consequence, short term projects are often favored.

Crises mode

Another factor favoring short term focus within Elkem, is “times of crisis”. (Operating in a cyclic industry, this is something that happens regularly, typically every 4-5 years – Heidi’s added comment). The organization is expected to take actions to improve or secure immediate operational results. Given the short time frame, this only calls for actions on existing products, markets and technologies/processes. However, SVP Innovation questions whether this is the best remedy: *“Crisis mode favors short term, not really due to allocation of resources. Speeding up the process means current products and current markets. But it is not because you speed up something that you will be successful. When it’s too late it’s too late, and you just have to jump to something else. During crisis mode, I would prefer to prepare long term partnerships and discuss how we would work for the future with a partner, rather than to say: What do you want tomorrow?”*

From “The solar syndrome” to “Open Innovation”

It is well known that the Solar business of Elkem has had a bumpy road. Despite a unique low-cost technology, and an exponentially growing market, the pay-back has been poor, and at times catastrophic. SVP Innovation refers to this as a trauma that clearly has colored decisions that came later: *“The technology for solar silicon is fantastic. It’s the lowest cost, good quality and so on. And it’s not because of the technology it doesn’t work, it’s because of the market itself. So we can be reluctant to develop a new technology. For me, it was a great decision to go with Solar. I’m sure that any person, any other CEO, would take exactly the same decision to go.”*

SVP Innovations has a clear vision for how this sort of risk can be mitigated and overcome; namely by turning to “Open Innovation”:

“... This is where we also have to be more explorative. But we don’t have to do everything by ourselves. If you go outside and find someone that are developing a technology and is able to develop something new, that’s great, and you can collaborate and partner with them. It’s a way to also mutualize the risk and to be very explorative, and it will not cost too much. There

is one draw-back: If it is very successful, you have to share the benefits. But why not? And if it's a failure, it just means that OK, you didn't invest so much. So in the end, it's a good compromise. It is the reason why I like so much "Open innovation". It is a way to speed up, and to mutualize risk."

3. Culture, idea generation/triggers and idea management

Most project ideas brought up to divisional level are already filtered by the business units. Many of these are not new ideas as such, but rather responses to market needs (products) or regulatory restrictions (affecting potentially both products and processes; volatiles, green binders etc as examples). Finding new markets does not seem to be a priority within the business units. But there are exceptions, such as silicones for health care and silicon and carbon for batteries.

There are differences between the division as to how development work is organized and executed. Some division have idea management systems or incubators, some do not. Some have well-functioning project execution, other are less successful. For one division, process development is part of R&D, while it is organized separately in others.

There are also differences in how ideas, once presented, are managed. For the units that don't have a (formal or unformal) idea management system, there seems to be a general problem of feed-back. In a well-functioning idea management system, new initiatives will be evaluated, and a justified answer with either "Yes" or "No" will be given. For some business unit this is lacking, and lack of feed-back seems to generate frustration. *"In one division, you receive a Yes or No. If No, it is explained why. And the people can be disappointed, but at least they will not be frustrated. To be frustrated is something else. I played the game, I lost, that life. To not get an answer; to be in something gray, is the absolute worst."*

An important aspect of having an idea management system, is to train the organization to be creative and explorative. It may be less important in times when the business is running and growing well. But in difficult times, when the company really would need new ideas, to go out to employees and say "Now we want your ideas", probably will not give much result, unless idea generation and idea management is part of the daily work environment.

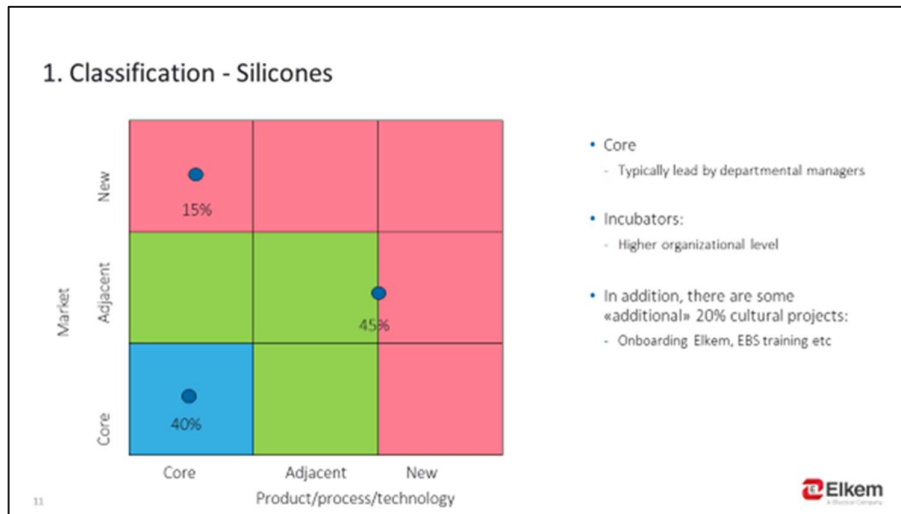
4. EBS and innovation

In the opinion of SVP innovation, EBS tools and philosophy are useful also in managing innovation projects. However, they are not contributing to creativity or open-mindedness. “When you have a road, EBS is a way to follow the road. But sometimes, you need to be agile. And EBS is not very good to be agile. You are efficient, but not agile”.

When used in it’s intended way, EBS is very good to fix a process. But there are examples where apparently the “EBS card” is pulled (such as asking for a business case and an A3) with the intent to slow down a process or to buy time.

Summary of interview with B

Focus area: Silicones and Foundry division



Today's innovation culture in Elkem has its roots in the Silicones division. There is a distinct difference between the “new Elkem” (i.e. the Silicones division) and the “old Elkem”.

The Silicones division has a stronger culture for innovation than the traditional part of Elkem. Their markets are more competitive and more international. This has forced them to be more innovative in terms of product development. Over time, this has built a culture where new ideas are part of the daily work. This culture is supported by structural tools: An incubator system (idea management) and the Stage Gate tool (project prioritization).

The Stage gate tool is applied also by other Elkem units, but Silicones is using it in a perhaps more mature way. Especially considering good ideas that are put on hold; rather than simply being forgotten, they are parked and actually revisited at a later stage.

Silicones has also used interventions to stimulate more creative thinking. The “Be innovative!” initiative in 2018 was a highly professional, well-structured, large scale and focused project that created a big momentum in their organization.

At present, the management of Silicones seems more welcoming towards new ideas than other divisions. Lower-level project leaders are given trust to move forward with their ideas. There is also more eagerness and willingness to go forward compared to other parts of Elkem;

initiatives are driven by curiosity and the “will to do well”. There is also more cooperation across geographical units. In general, it seems that higher autonomy in the development work within the Silicones division contributes to a higher momentum than in the traditional part of Elkem.

Prioritization between projects and allocation of resources seem to be based on sound evaluations of both strategic link and profitability, to a large extent supported by the Stage Gate tool. The ongoing projects also seem to be well-balanced between short- and long-term targets, and between market-, customer- and process orientation.

On the other hand, Silicones are quite new to the EBS philosophy, and some 20% of the projects are connected to EBS introduction and onboarding of newly acquired units.

The Foundry division has an opposite situation; a strong EBS culture, while innovative thinking is still evolving. What has been done to spur a more innovative culture?

Innovation has been put on the agenda by top management. Introduction of Stage Gate and the idea management system Wazoku are pulling in the right direction. A consultancy intervention teaching the employees “Growth mindset” has in BSB’s opinion helped create momentum, and very importantly; has led to a broader involvement from both management and employees, something that used to be lacking.

“In Foundry, there was an absolute turning point when they brought in a consultant to help them with the culture in the company - maybe 3 years ago. They got highly focused on growth mindset. They had a program around it, they were training their people, and you could see an absolute shift in people’s mindset.”

Reasons for previous lack of involvement are not evident, but are part of the historical culture of Elkem. Perhaps linked to the Norwegian base?

The Carbon division seems to have less interaction with the Elkem Innovation Team. This may be because the production process is very stabilized, and that they have other priorities. They are more focused on EBS tools and critical process management.

The EBS philosophy can be regarded as a good foundation to build innovation structure on:
The organization is already sharing concepts, language and tools.

“I have seen that the foundation of EBS and the thinking of EBS, you know, empowering your people, eliminating waste, and working towards your true north, that’s really a good foundation for your innovation thinking and innovation culture.”

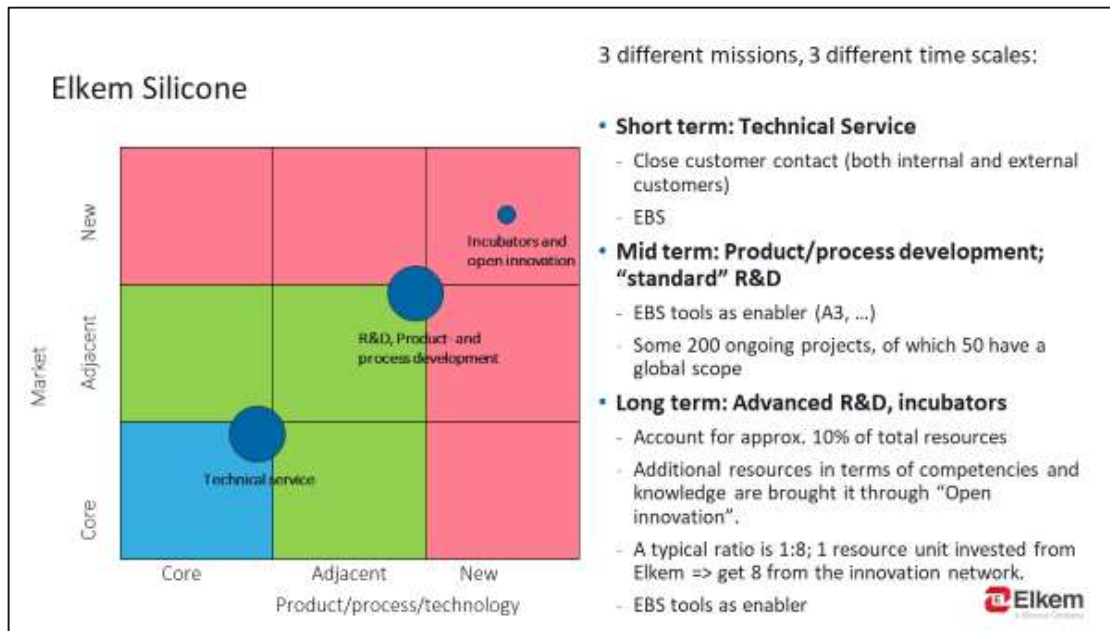
The EBS center and the innovation board also have an important role in bringing people together, and to encourage cross-departmental cooperation.

EHS projects; in general less innovation, mostly continuous improvement.

Some general comments; ways to further improve

- The different divisions are today using different versions of the Stage Gate tool. It would be a benefit to Elkem to have only one.
- Innovation rooms; physical rooms facilitating brainstorming sessions are being installed at several sites. Would resemble the “KPI rooms”, but with focus on creative sessions.
- Empowerment of people:
“The most important thing for me, and it should be one of the most important things for Elkem, is how we empower our people. We need to use everybody in the company to get the good ideas, to work on improvements. That’s the way to improve.”

Summary of interview with C



R&D and EBS in Elkem Silicones

R&D in the Elkem Silicones division may be summarized as three different missions on three different time scales:

The short-term scale is typically technical support and close customer communication. In this area, the EBS philosophy provides good tools for structure and efficiency.

The medium time scale involves traditional R&D, in terms of process- and product development. In these areas, EBS tools are good enablers. Helps *"to really clearly define what is the topic on which we should work on."*

Even for long-term projects, although these might involve working on completely unknown territory, EBS principles are useful in order to align and frame the tasks:

"I always see the EBS and the LEAN as an enabler for doing our job, but with different level of intensity. Of course, the more you put LEAN and EBS, the less you let space for creativity and thinking out of the box. But nevertheless, it helps to frame and

to ensure you are in a continuous process where you plan things, when you do, and you check, and react.”

Operational excellence -> sales and marketing excellence -> innovation excellence

According to a study by Deloitte on chemical companies, the most successful firms are those who build excellence successively in 3 different areas; operational excellence, followed by sales and marketing excellence, and finally innovation excellence.

The traditional, ferroalloys-oriented divisions of Elkem are strong in operation excellence, but less mature on marketing excellence, and perhaps even less so on innovation excellence.

This is in contrast to the Silicones division, which is rather strong on both marketing and innovation. On the other hand, this “newcomer” to Elkem does not have the same base of EBS as the rest of the group, going at least two decades back.

I think for Elkem Silicones, we have mostly started on the middle, sales and marketing, and moved towards innovation excellence. And we have been adding the foundation about the operation excellence when we joined the rest of Elkem. But most companies are developing this way: First EBS/LEAN and operational excellence, then sales and marketing, then coming to innovation excellence.”

Two main reasons for different levels of excellence on sales and marketing and innovation were pointed out: The market, and the top management.

The market

The Silicones division (also before becoming part of Elkem) has been forced by the market they operate in to be innovative, to a much larger extent than the other parts of Elkem which operate in more conservative environments.

The top management

A culture for innovation has to be developed and maintained continuously by the firm, and it needs to be pushed from top management. In Elkem Silicones, there are for instance specific

targets for how much of the income that should be generated from new activities. This is followed-up and monitored, creating a real pressure and motivation for such activities.

“For Elkem Silicones it’s like that. We have a clear target. We have to each year generate sales with new products, so today we are generating 20% of our sale each year with new products. That means that we have this pressure, and this is a KPI which is monitored and looked at by the boss of the company. So that makes the pressure there.”

In the other divisions (perhaps with the exception of the Microsilica unit), there is a strong focus on EBS (which is in itself a good thing!), but there are less pronounced targets or missions in explorative direction. As an example, in Elkem’s strategic presentation about one year ago, the term “innovation” was not mentioned. The presentation also mirrored a culture for exploitation rather than exploration. And although the expressed focus on specialization could be interpreted as search for new products and markets, the culture is still to improve and develop existing business rather than searching for new possibilities:

“I think specialization could be really exploration, because you can go to specific markets, specific technology. But I think here, when you look at this [the Elkem strategy], you really feel like you are in a company where you only want to do exploitation.”

Even with the Elkem Innovation Team, changes cannot be expected to happen readily unless clearly stated and pushed by top management:

“You know, the Elkem Innovation Team, we have been working during five years, inviting Helge Aasen, by trying to promote and push at the corporate. And we were, as you say, not able to diffuse in the full company. But at a certain point of time, if the leaders of the company does not make the decision that this is where they want to drive the company, it is very difficult for a group that is not driving the company, to drive them there.”

EBS philosophy as basis for innovation and agile

EBS and innovation should not be regarded as in opposition to each other. What is needed, though, is a clearer mission and willingness to move towards the next steps; i.e. sales and marketing excellence, and innovation excellence.

“The performance of a company is most likely linked to the fact that the company is able to evolve towards sales and marketing and innovation excellence, not staying only on the EBS/lean.”

“I think it’s really interesting because we are always saying “Yeah it’s a drawback for Elkem (...) to have this strong EBS/LEAN competences”. But I think it’s really the foundation to go towards innovation excellence, and I think perhaps what we are more missing, is the mindset in the company to go there. And that’s something really different.

“But really, I believe that we need to keep this EBS part. It’s for me mandatory, it’s the foundation. We should try not to put innovation and EBS in opposition. We need EBS to operate well. But we also need to evolve and to add other layers in our... I don’t know how to name them – competencies or mindsets or ways of working towards more innovation.”

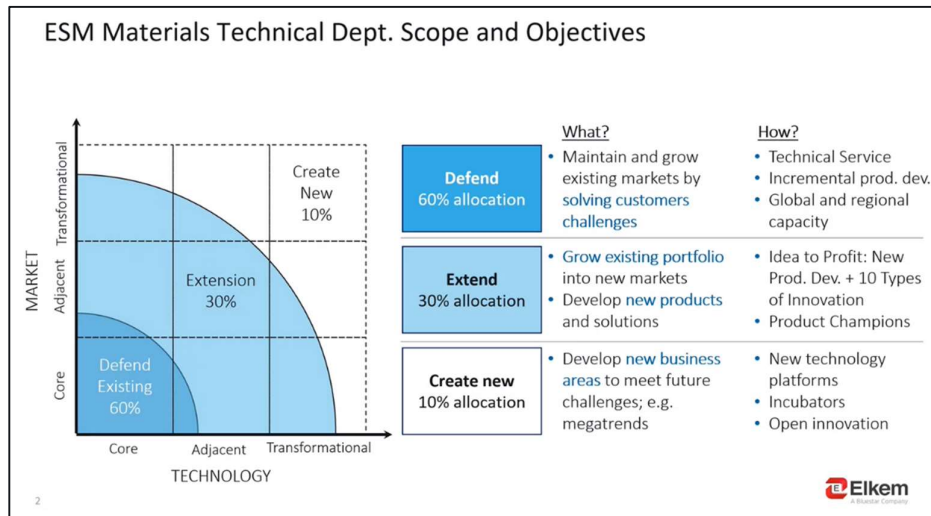
The Agile philosophy has not yet been fully implemented in Elkem, but the target is to incorporate this as a culture over some time, as an extension of the EBS philosophy.

“EBS, I think it’s quite good. Of course, we can improve. I think EBS will have to jump in the agile methodology. But I think they are going there also. And they will have an additional block in their area. And I think really the agile methodology being integrated in the EBS, I don’t know how far it will go, but this will also enable to promote more the innovation part.”

Within Elkem Silicones, the methodology has been tested on two different projects. The results have been very good, meaning reduced time to market for new products.

Summary of interview with D

Focus area: Silicon Materials / Materials technical department



Strategy – targets for explorative activities are clearly stated

Elkem Silicon Materials has a clearly stated strategy of being innovative and market oriented. The current 5-year strategy states that only 60% of the profit shall come from existing activities. Each of the Business Directors has a quantified target for how much of the future profit that shall come from new activities; i.e. new technology in new markets. Overall for the division, these new activities shall account for 10% of the profit within the next 5-year period. There is also a clear expectation that new markets must expand outside of Europe, which means involving the organization in the other regions.

This creates “a pull” on the rest of the organization for developing new ideas, and assures a focus on market oriented development activities. This explicit market orientation is probably somewhat different to other parts of Elkem, where market and sales is seen more as a support function; not the driver itself for development.

However, the organization is also sensitive to the argument that if everything is customer driven, one might lose out on potential products that customers would not come up with on their own.

Organizational structure – critical mass

An underlying challenge is critical mass in terms of available personnel. Technical Department (no longer called “R&D”) is covering technical customer support, product development, and technical development towards Microsilica production, i.e. the plants. And being a rather small unit, these tasks have to be shared between the same technical resources. In theory this is a good combination, but the resources easily become stretched. In order to assure a good balance between the tasks (avoiding that personal preferences lead to some areas being more focused on than others), it is necessary to have good KPIs. And also to use deadlines; “even if something is not finished; it will be as good as it got within the deadline”.

This brings in a dilemma; how to balance between strict KPIs, and at the same time provide enough freedom for researchers and technical staff to be creative? Applying an “Agile” business model is thought to be a step in that direction.

Being a small unit, the operation is too small (below critical mass) to engage in fundamental research. It is clearly stated from management that all development work must have some hypothesis of profit.

Structural tools – adapting a more agile approach

Stage gate – project prioritization tool

In practice, new ideas are already filtered by business directors before reaching the stage gate process: Business directors and segment responsables are involved at an early stage, in order to select and prioritize at a lower level in the organization. Therefore, the number of cases presented for stage gate are low enough to not having to prioritize, and projects are rarely turned down once reaching the stage gate.

If there should be a competition of resources between the different business segments, one would call for a stage meeting.

A positive effect of the stage gate tool is that it gives the persons involved a chance to present their idea, and to be “seen” by the management.

However, a weak point in the development work has been commercialization of new products. Although the stage gate tool has been in use for some years and has been improved along the way, the process is still bureaucratic and demands a lot of work up-front. There is an expectation that the entire business case should be sorted out before launch. As a result, too much time is spent from idea to profit.

Agile business concept

A response to this is to look at the Agile business concept.

«Agile started with software development. The easiest way to put it is «Try fast fail fast». We are used to Stage gate, and the way we work; that everything has to be in place before you move on. You need to have the entire business case ready, everything has to be sorted out, and you spend a lot of time up-front. Here, we talk about trying out something a bit faster.»

The Materials business unit is open to allow «short cuts» if an idea is promising. One example is a promising new additive that would improve an existing product:

«...but then we by-passed the entire system; Go for it! You make some short-cuts, if something looks really good».

The Agile thinking is being looked at in different parts of the Elkem organization. While this is positive, there is also a risk that it is implemented differently across Elkem. A presentation is planned for corporate management, to try to get a consensus around how to apply it in Elkem.

Open innovation

Another way to improve time to profit is looking at Open innovation, which implies cooperation with external resources rather than only relying on inhouse development.

Wasoku idea management system

The idea management system Wasoku has been implemented to support the strategy on adjacent and new activities. The idea is that this system shall also improve communication

around the ideas. It has been a positive experience in the way that many new ideas have been registered. The challenge however, is how to make sure the ideas are given enough attention and feedback, and to allocate enough resources for prioritization. The weak point is the development of the business cases. For the system to bring positive results,

“The ideas need to be followed-up. Not only asking the innovators to “please use your spare time to develop this further.”

Work patterns, management and EBS

Work pattern

Within the Materials Business unit, follow-up of plants seems to have a different work pattern than market-oriented work. Towards the plants, there's a traditional use of EBS tools. Toward markets, there is a process of adapting more agile thinking. EBS philosophy should still be the basis, but with more openness to test and experiment with new ideas. Working towards customers demands more flexibility:

“You must be able to scrap ideas and turn around quickly if something doesn't work, or if feedback from customers tell you so.”

Follow-up

The tradition in Elkem is to follow-up on EBITDA per plant or per operations unit. In Si Mat and Silicones, the focus is rather on market segments, in order to see the entire value chain. The traditional way would be to regard the market and sales unit as a support function, with selling out the production capacity as main target. In contrast, the Materials part of the Si Mat division strive for pull, where the market dictates what should be produced.

Culture

The divisional managers in Elkem typically come from positions as plant managers. In these positions, the traditional focus is on cost reduction and continuous improvements, and the importance of having all aspects of a business case checked out before initiating a new activity. Step change is difficult, and slow.

Continuous improvement and risk aversion go together, and seems to be a culture in Elkem.

In order to be more explorative and investigate possible new profit areas, one would have to “take some administrative decisions without having all the answers”. This is a contrast to EBS thinking. *“You need to believe in something.”*

However, the concept of agile thinking seems to spread around in Elkem. For instance, the CX project (implementing a new customer relation management system) do not follow standard Elkem project management method; it uses an agile approach.

Summary

- Explorative activities are defined in strategy, and shall account for 10+30% of business during next 5-year cycle.

- The organization is customer and market oriented
 - o Business directors are prioritizing activities
 - o Business units/market segments, as opposed to production units, are being measured and reported.
 - o Challenge: critical mass: Technical personnel are shared between tech support, product development and technical dev towards production
 - o How to overcome challenge: The right KPI's to assure balance, and implement deadlines.

- Tools:
 - o Stage gate for prioritization of projects. However somewhat bureaucratic and leads to slow progress and too much time from idea to commercialization
 - o Wasuko for idea management. Thought to spur generation of, and improve communication around ideas. But challenge to have enough resources to follow-up.

- Agile thinking and open innovation are means to overcome slow progress and to be more explorative.

- Elkem in general: has a have a strong culture for production orientation and continuous improvement, which also goes together with risk aversion.

Summary of interview with E

R&D in Elkem Silicon Materials

The origin of Elkem Materials was a need to develop commercial applications for silica fume derived from off-gas, a by-product from production of silicon and ferrosilicon. The task at hand was to develop applications, products and markets for about 100 000 – 150 000 tpy silica fume (“microsilica”).

The first 5-6 years, in the 1980's, was an enormously creative period. More or less everything that has been developed later are extensions or improvements of this. Around 300 different applications were considered, in the sense that some simple testing was performed. Out of these, 20-25 were developed into projects, meaning that around at least around 1 mill NOK was spent to explore each of them. Today, there are 6-7 fully commercialized applications.

A considerable amount of money was spent in this time period; around 300 million NOK, which translates into 600-700 million NOK in today's currency. However, break-even was achieved around 1987-1990, and ever since 1990, there has been a positive revenue. Economic results for 2018 were gross sales of 1,4 bill NOK, and a net gain of 270 mill NOK.

R&D philosophy in Elkem Materials – portfolio and risk management

Before the merger with Elkem Silicon Division into Elkem Silicon Materials in xx, Elkem Materials had a portfolio structure of R&D projects. The development programs were split into short term (0-3 years), medium term (3-5 years) and long term (5-10 years) projects. As for the resource allocation, this was said to be around 50% to short term activities, 30% to medium term and 20% to long term activities.

The different ideas or programs would be presented as a plot of economic potential (in terms of NPV) vs probability of success. It was a point not to put “all eggs in one basket”, but to have projects of different nature, including also potential “billion NOK projects” with low probability of success.

In order to maintain momentum and secure critical mass in terms of R&D personnel, the organization was split; both structurally and partly also physically. The more administrative tasks of running the daily business, such as of sales and logistics, was placed in one unit, while R&D activities had a separate organization.

Investments were regarded as a sort of insurance policy. As is the case for an insurance policy, business development is expensive. But since no business concept will continue to run with high profit forever, failing to develop something new will be even more expensive in the long run.

“You might look at business development and innovation as an insurance policy: Paying an insurance policy is not profitable. That’s how the insurance companies stay in business. But the consequences of a fire are so severe, that you pay it anyway. And this is true also for business development.”

Somehow though, the initial mode of creativity and development has slowed down:

“What has bothered me late years, is that we have not succeeded in developing any new applications. And I have asked myself many times; why is this? ... The essential there, is that the culture in Elkem changed. And I think I will start my explanation at a higher level, and say that there are a number of structural things behind it.”

Macro trends influencing R&D

Development and innovation in Elkem Silicon Materials (ESM) and Elkem as such, must be seen in a larger context, influenced by macro trends.

External trends:

- ***Shift in macro economy -> short term focus:***

Over the last 20-30 years, there has been a shift from real economy towards finance economy. I.e. there are less investments related purchase and flow of goods, and more investments in financial assets. With this comes a shift towards focus on short term

gains. For owners of Elkem, such as Orkla, short term gains are not to be found in investing in new industry, which is both expensive and slow.

- ***M&As: -> larger companies, increased specialization and centralizing***

The global trend of company mergers and acquisitions is also evident in Norway, where a substantial part of the process industry now have foreign owners. These companies often have a structure where the plants are instructed to focus on production, and where development is centralized – for instance in France or Germany – not in Norway. Of the 10 silicon and ferrosilicon producers, only one is domestically owned.

- ***Critical mass and in general low R&D expenditure in Norway***

Statistics show that Norway has lower R&D expenditure as a per cent of GDP than other comparable OECD countries. MD's experience is that in order to get anywhere with a development project, the management has to be willing to allocate more resources than a modest investment of 1-2-3-4 million NOK. Since pilot operations often require substantial more capital, industrial development may be self-suffocating. *«The most expensive thing you can do is to invest too little. You should rather focus on fewer things. So throw in a lot of money, because it is going to cost a lot.»*

- ***Long time-constants***

The industries in which Elkem is operating generally have long time constants, i.e. the time lag from introduction of a change to a detectable result can be weeks or months. Development of related products and processes are thereby by nature slow. To quote Bjarne Skeie, a leading Norwegian serial entrepreneur: *“I don't remember anything taking less than 5 years.”*

Cultural factors:

- ***Reward hypothesis I – risk of failure vs doing nothing (Alf Bjørseth)***

Whenever a new idea comes along, the leader has to decide to go for it or not. If the idea is developed, both potential success and potential failure will reflect on the leader.

On the other hand, if the idea is deemed not interesting, there is no risk of failure, and the chance of maintaining the management position is greater.

- ***Reward hypothesis II – long time constant vs short term management focus (Magne Dåstøl)***

Later years, there has been a tendency of rapidly shifting management. In addition, top management reward systems are normally linked to yearly results, stock value etc, leading to short term focus. However, large innovations demand a lot of resources and take long time to develop.

«The top managers would typically hold the position for 3 years and optimize the business. And then they would move on to another superior position. Herein lies a dangerous trap. This is a cultural aspect that has developed the last years, in my opinion. It is all down to time constant for innovations versus reward systems of management.»

How to develop a market - Agile thinking rather than Stage gate:

With stage gate, you are supposed to present a cash flow over 10 years, perform a risk analysis for all critical aspects, and then present it.

“It is very unrealistic to sit down with a small piece of paper and evaluate the market 10 years from now, and to make decisions based on such prognosis. If there is one thing you can be sure of, it is that your assumptions will be wrong.”

...

“I cannot remember one single project that went through there, that actually succeeded. It rather worked like a sieve: It was those who were good at selling, often those who spoke American, that succeeded in getting through the steps of Stage gate. I cannot remember a single success story that came from this.”

The Agile concept represents a different philosophy and a different way of leading, and to a large extent, this was actually how the Microsilica business was developed.

EBS and innovation

- *“EBS is very reasonable when it comes to production, rationalizing and streamlining etc. But in the shape I have seen it in the Stage gate system, I believe it is a direct obstacle for further development.”*

Some efficient tools for business development, that have proven successful in the commercialization of Microsilica and related products:

- ***The Agility aspect: go out and try, and change and adapt as you go along.***

- ***Concentrate on key customers and demanding customers.***

Large and demanding customers will have realistic demands, and the customer needs will be clearly defined. With a large size, it also means that you can grow into the market simply by working with them.

An example is how Microsilica for the refractory market was developed, a business area that today has a turnover of around half a billion NOK. The start was towards demanding customers, and all sorts of problems were encountered. By sorting them out one by one - some easy ones and others more complex, including for instance advanced surface chemistry - a unique product was developed, that is today the industrial world-standard.

- ***Be ready to take some risks, be open and share information.***

- ***Build personal relations***

- ***Stay in touch with the market to seize new opportunities.***

This demands technical presence, not only commercial. Technical insight is required to understand problems and possible solutions, that may eventually turn into new business opportunities.

- ***Advanced technical support (PhD level)***, to assure contact and respect at a central level in the customer's organization. This will motivate the customers to present their “problems.”

Summary of interview with F

1. Development and EBS in Elkem Silicon Materials

Background – Elkem Silicon Materials

Elkem Silicon Materials (ESM) has a somewhat different history than the more traditional part of Elkem. The original goal was to find and develop commercial markets for the silica fume waste product, now known as Microsilica. The first years of the business were highly explorative, and more than 200 different possible applications for Microsilica were investigated. A handful of these proved successful, and over years ESM has grown into a highly profitable business unit. ESM is today sourcing raw materials both internally and externally, and has a well developed product portfolio for different markets.

This background, paired with being more of a trading like business with very little cost bearing production equipment compared to the rest of the company, has left the organization less preoccupied by EBS tools (which are to a large extent shop floor oriented).

Inherent problem with growing business: “Today’s problems taking away from tomorrow’s solutions.”

As the ESM business has been growing, more resources have been allocated to existing customers and existing products, and there is less time and personnel available for new activities:

“... and you get to a point where you are making 300 mill kroner and you’re almost the size of a small division. So then maintaining that, milking the cow or whatever, becomes really important. Then new product development and new exploration becomes harder and harder. Even in the 4 years I’ve been here, I see that it’s getting more and more difficult every year because the customer base of existing business becomes bigger and bigger and demands more attention.

....

We end up spending a lot of our resources on sort of defending. Dealing with Synergy cases, and dealing with technical support for existing customers and existing products, and formulations that are within the core knowledge. That stuff's urgent but not always the only thing that is important. So then our new product development takes longer and longer time."

Organization and resources. Dilemma of staying interconnected versus focus on development

Today's technical resources of ESM are stretched, and the same group of people are in charge of both customer support, production support, and new developments. This has a very positive side, assuring that the technical staff has overview and first-hand information about customer needs and production limitations. On the other hand, in order to develop new business areas, it is necessary to assure enough focus. A solution could be to separate development from running business.

"Because I think if you want to either grow specialties by exploring new market segments, or if you wanna grow new technology or something, you need to set aside resources for that in a separate group, like the battery project in Carbon I guess. And that makes sense. Because I see that there's a really tough interplay. But the conflict there that you run into is... It's really nice to be connected all the way along, so I think it's very nice that we have the same people working on product development that are also working on customer support and also technical support for the plants, because then you really understand what's possible even with our production constraints, you understand what the customers need, and you understand how the product development is moving along."

EBS and structural tools in Elkem Silicon Materials

There is an EBS structure for labs and standard operations. For development and sales and marketing, EBS is applied in form of customer value management and Stage gate. Apart from that, the Materials part of ESM do not do a lot of EBS.

The Wazoku idea management system has brought up a lot of new ideas, but the process to develop them remains slow. A solution is believed to be to apply more “Agile” thinking and to work with just a few selected topics at a time – a kanban.

“We come up with 100 ideas and then they sit there for 3 years. We talk about them for a little bit, but we never progress any of them. We just have lot of new ideas.

....

And I think this is part of agile as well, and scrum. I see that this is the same. You sort of create a kanban. You’d say “We can only work at two ideas at the time. Once we dismiss those two ideas, we will take two more off the que and go through it”. And there’s systems and tools like that, that keep you moving forward. But you can still do it in a sort of loose creative way.”

Cultural aspects

Risk taking

ESM management (represented by Erik Bergsmo) is supporting a culture for moving faster, allowing more trial and error and encouraging early market testing in cooperation with customers.

“... Erik is doing a lot to leading the culture. What he provides a lot of times, is quick decision and not a lot of bureaucracy. A culture where it’s ok to try something else. And fail. It’s ok to take risk.”

Trading vs production

Most of the traditional units in Elkem have a large capital binding base, that needs to be kept in operation to assure profit. As a result, changes in products or processes will typically demand large investments. For the ESM unit, this is different, being a more like a trading activity.

“You mentioned in Carbon you have the big expensive calciners. We don’t have this in materials. A million kroner is a huge investment for us. We don’t have a lot of assets, which I think probably makes it easier for us to explore more business segments and things. We don’t have this giant capitalized base that we have to keep fully loaded.”

2. EBS in Elkem

The EBS is a very strong culture in Elkem, that has been pushed and encouraged by top management over more than 20 years. This is certainly an important competitive advantage for Elkem, which over the years has brought the company to world class operational excellence and a strong cost position compared to competitors.

But is EBS itself evolving and continuously improving?

There are examples suggesting the opposite, for instance a reluctancy from the EBS center to incorporate innovation, and to explore the potentially complementary concept of “Agile”.

“... because for the longest time, the central EBS coach said “We don’t need all this innovation stuff, we have EBS”.“

Elkem is traditionally focused on production, something that is also reflected in EBS: EBS is very much shop floor oriented, and to a less degree developed for other parts of the organization such as sales and marketing and R&D. And despite consistent feedback after EBS training sessions about need for tools for departments not directly involved with production, none or very limited effort has been put into accommodating this.

“And I noticed, at every EBS university at the end, they ask for feedback, and we got the same feedback again and again. And a lot of it was for example people working in sales, saying “This doesn’t make sense to me. I think it’s great, but I don’t translate that to my daily job”. And you hear things like this year in and year out and we don’t do anything about it. Where’s the continuous improvement in EBS?”

“I think the EBS culture is colored by Elkem, and sort of amplifies and reflects. Like I was saying yesterday, I’m a little bit disappointed by EBS. It’s very nice that EBS is philosophy based. I think we did a very good job with that. We have a good philosophy. But then I think our tools are very just shop floor tools, that’s all we use. I think that maybe that reflects something about Elkem. That Elkem is very much focused on the technologies, very much focused on production. Center of gravity in Elkem is the plant manager. Maybe that’s reflective of EBS, I don’t know.”

The dilemma of available resources vs waste reduction

EBS is about reducing waste, but not at all costs:

“You have to have slack in some places in order to be able to improve. If you have exactly enough people required to do a job, as soon as you have a problem, or as soon as you want to improve something, you can't do it.”

“I would say that there's maybe a little bit of it is misinterpretation of LEAN by EBS. Or misinterpreted by persons using EBS. Because in the main principles, from most programs, you start with customer needs. Then you're designing the system to meet them. I think LEAN talks about minimizing inventory, but not about minimizing inventory at all costs. It's about getting rid of the right level of inventory, because a customer doesn't care about inventory. And what's the minimum inventory to achieve the highest service level”

This is also a parallel to how running business comes to be at the expense of R&D efforts.

“It's the same thing. Like how technical support takes away resources from new product development, it is the same here really. Fire-fighting takes away resources from improvement work.”

EBS needs to be managed in a balanced way

The right level of management involvement is important. Also, the importance of the management setting the goal for improvement work should not be overlooked:

“In Elkem we have all kinds of cases; management is disconnected, or it could be the opposite; overly micromanaging. But there are also examples of the right balance. What is typical for them, is setting the targets and letting the organization sort out how to achieve them.”

“There has to be an overall target, to make sure the right areas are being improved and that they are pulling in the same direction. If people are just all around improving little things here and there, you are not seeing any net gain, if you're not having an

overall strategy. So it's much better to say that "We wanna increase the capacity of our line by 20%", or "We want to reduce defects by x", and you have some goal and then you do continuous improvement that work toward that goal, and you ignore the work that don't work to that goal. Because if you do a million small improvements that all contribute to different goals, you may never see any benefit from it."

EBS and Agile, the way forward?

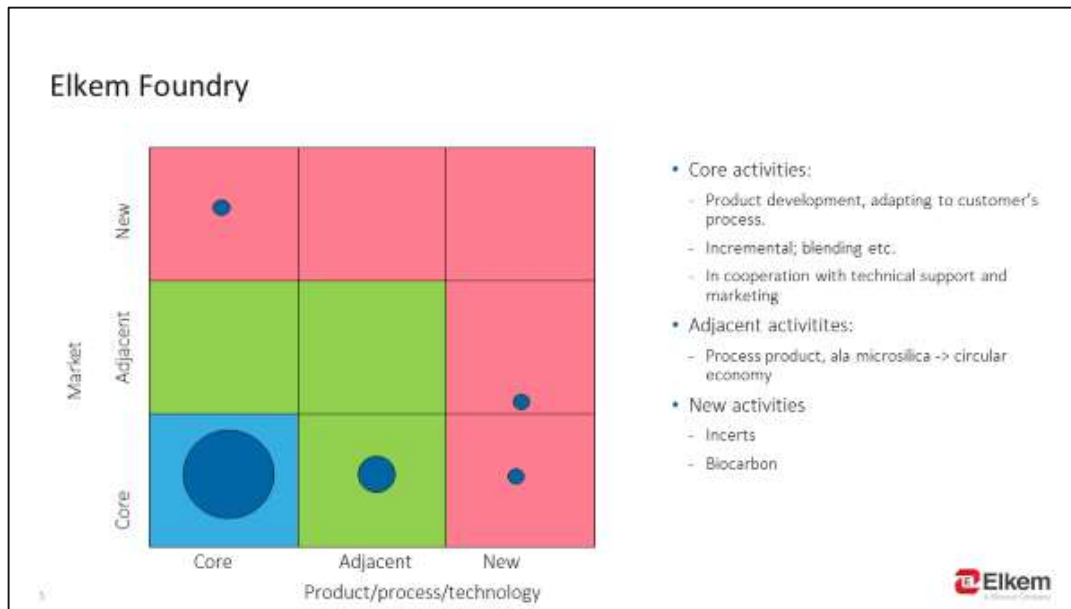
Despite some reluctance to embrace the Agile concept by the EBS centre in the past, this philosophy now seems to gain terrain in different parts of Elkem. Being based on much of the same principles, Agile could be seen as an extension of EBS, and perhaps supporting Elkem in bringing more focus and speed into development work.

"...but I think that there is no conflict between EBS and innovation and agile, it really isn't. It's all about interpretation underneath it. Like "Scrum", which is like the most popular flavor of agile. If you read the scrum manifest or whatever, it's all based out of lean actually. Its stolen from lean and it's just the language you speak it in. It's all the same principles, it's just spoken in a different language. And one is a little softer and easier, and the other one is about procedures and structure and one-point lessons and... But the underlying principles are very similar. There's no conflict, very little conflict actually. It's all about the culture side of it, how you package it and how you communicate it and how it's used within the organization.

...

If you really wanted to be simplistic about it, I think about Agile as EBS for sales and marketing and product development."

Summary of interview with G



Development projects in Elkem Foundry

... are mainly in the categories of “core” and “adjacent.”

An example of “adjacent” activity is the Process product development. In a similar fashion as Microsilica, this initiative comes from challenges related to process by-products, and the target is to develop this into a product with market value.

One true “new” activity is the biomass project, originating from a personal initiative. It has now been lifted to corporate level and separated from the Foundry organization, but is still managed in cooperation with Foundry personnel.

Change towards more market orientation and value creation

Since 2014, Elkem Foundry has changed towards a more market oriented strategy. The result has been good growth, and importantly, it has helped creating a distance to “commodity suppliers”. The products are not necessarily new, but blends or a different use bring higher value to the customer.

The strategy shift was accompanied by an organizational change, where the organization was divided into geographical regions with individual business managers. The business manager for each region is responsible for both marketing and sales and production.

In 2017, Arianeh established Critical Pprocess Teams for various process areas, i.e. a typical EBS tool. This also included one team who's task was to focus on customer demands, and to be the interface between customers and production. For instance, technical support personnel would give training for operations on how their products are used by the customers. More understanding of the customer needs has improved focus on delivering within spec, rather than only focusing on yield and production output. With time, this will also increase the customer's confidence in the product, and improve the overall customer experience.

Understanding both real customer requirements and our own productional limitations, and be able to find solutions, is key to being successful, and to be able to propose products that are more than commodities. Even claims and quality problems can be beneficial in this respect, if they are treated as possibilities for improvements.

This is an example of how an EBS tool has been used to structure the important communication between customer and manufacture, and how this has brought value to the company in terms of more specialized products with higher margins.

Selection and prioritization of projects

Structural tools used by the Foundry division:

Wazoku idea managements system

is used to capture ideas. It is also a system where you can invite colleagues to come up with ideas or solutions to a specific problem or an area of interest.

Stage gate

is used to sort ideas and follow-up on project status.

The Global Innovation Board

is a team that decides on prioritizations and allocations of resources. The team is centrally managed in the division.

These systems are somewhat bureaucratic, and can slow down progress. Some suggested improvements, not – or to a limited extent - practiced by Foundry today:

Portfolio management

Rather than evaluating projects individually, it would be better to evaluate them in a larger context. The different ideas should be sorted according to value, strategic targets etc, and then the division can make sure that resources are allocated to the right projects.

“I believe there is room for improvements in many areas, because we look at initiatives one by one, in stead of seeing them in connection to each other.”

Open innovation

Most ideas are generated internally, or communicated from customers through several layers in the organization. An improvement would be lean towards the “Open innovation” philosophy, by working together with research institutes and other players, and maybe outsource some of the tasks to them. Also, one could imagine introducing an open site where customers could post their challenges.

“What we are good at, is developing technical solutions from A to Z. But we are less good at seeing... to have an entrepreneurial mindset. (...) to see opportunities outside of where we are, and be able to turn that idea into something that can create value. (...) You move all the time within the area that you know well, and it is difficult to get out of the box. (...). But to get out of the box, you need to work with more people who are external, who think differently than you, in order to invent and to be able to create something new. We have some challenges that I think could be solved by being more open. There are always some IP issues that you have to consider, but not everything is IP.”

Agile

A solution to stretched resources, and a way to optimize efficiency, could be to adapt more agile mindset. I.e. move away from the rather bureaucratic regime that is seen today, where everything is expected to be sorted out before launch, and move towards more testing and

experimenting with semi-finished ideas and products, preferably in close cooperation with customers. This involves frequent assessment of resources and ongoing tasks, instead of project management and project steering committees. Often, a steering committee consists of persons with little knowledge about the topic; their participation is often only based on their position within Elkem.

Applying more agile concepts is a way to free resources, which can then be allocated for more medium- and long terms tasks. The development process will be more transparent, and bottlenecks easier to detect. In addition, it will ensure focus on stakeholders' needs and value creation at all times.

Cultural aspects

As reflected in many of the structural tools, Elkem has a culture for demanding a high degree of certainty and predictability before a new activity or product is launch. Also, *“there are too many technocrats in Elkem”*.

But there is movement, and change is coming. An agile way of working is important in order to develop something new and to stay in the forefront:

“... But if you are going to create something new, then you need to navigate all the time, with compromising and adjusting the course all the time. And this will be the agile way of working.”

The role of EBS

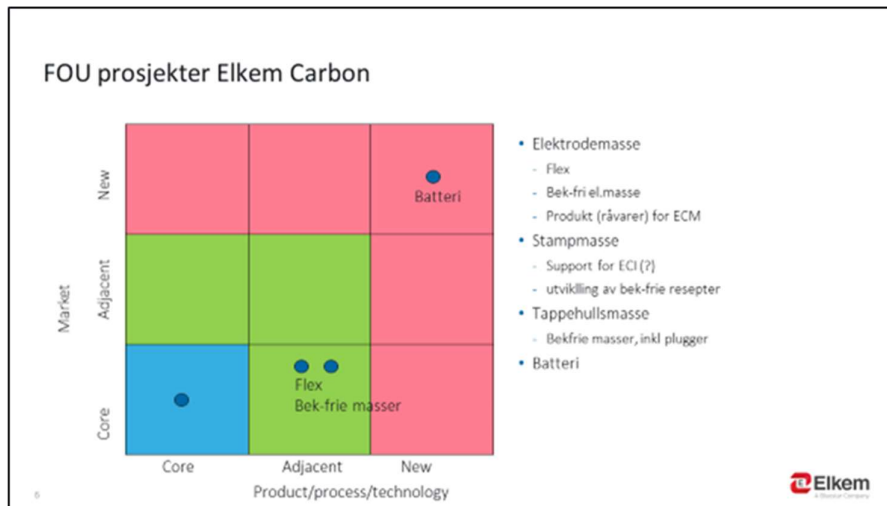
It may be unfair to blame lack of entrepreneurship on our EBS culture, or to imply that EBS is an impediment to innovation or development. It is rather that EBS is mainly adapted for production, and it has not been developed further into other areas, such as sales and marketing, R&D or administration.

Rather, limited entrepreneurship could be linked to Elkem's strong tradition for IP protection and confidentiality.

“Elkem has been characterized by confidentiality and a strict regime for many years. I come from the paint industry, I worked for Jotun and has been around in Scandinavia

in various positions and various tasks. When I came to Elkem, I was shocked by the “confidentiality hysteria”. Just to get from this department to another, you must have an access card...”

Summary of interview with H



Strategy and development projects in Elkem Carbon

Elkem Carbon's strategy is operational rather than principal, meaning that it is strongly oriented around financial results and not directed towards market- or product development. The reasons for this are probably tradition, and that the business is more or less defined as a "cash cow" in the Elkem system.

Market development projects are not on the agenda, apart from the battery project that is organized as a separate unit, on the basis of being fundamentally different and operating at a very different pace than the rest of the division.

Development projects are mainly oriented around production. Product development is done mostly in response to external factors, when these become critical. There are three such external factors that can be defined as driving force for most product development in Elkem Carbon: Variation in raw materials, environmental restrictions (with PAH and Sulphur emissions as main concerns), and when competitor products outperform those of Elkem Carbon.

One could say that Elkem Carbon's strategy is to defend existing market position. On the other hand, there has also been limited acceptance for R&D activities related to this in recent

years. Maintaining the position as market leader demands continuous improvement which requires a certain amount of R&D resources.

“... Something that I never managed to get acceptance for, and that I doubt they [divisional management] devoted lot of consideration to, is this aspect of defending existing volumes in a development context. Because when we consider the value of innovation, we almost only talk about new sales or new customers. And then, the case is that if you do nothing, not only do you not sell anything new, but you also lose the market you have, if you do not continue to develop, continue to innovate towards markets and in all the directions where we are able to. And for a traditional business such as Elkem, at least the metallurgical side of it, it is very easy to forget that not growing, but staying where we are, is in a way an implicit growth. Which is almost impossible to assign a value to.”

“The point is that there is no real cash cow in a market like this, that can just stand there and do nothing, and deliver the same product and deliver the same amount of money. That's not the way it is. (...) Development is continuous. Look at raw materials for instance. It is simply not the case that our raw materials remain unchanged over a long period of time.”

The strategy is to focus on core activities, but there should be potential for more activities in “adjacent areas”, for instance to develop solutions for the steel industry. Reasons for not doing so, is maybe linked to culture and top management’s attitude towards risk. Probably also combined with large production infrastructures that are capital intensive to change.

“That is probably the biggest criticism I would raise against Elkem Carbon; that we have been pursuing an anthracite strategy for all these years. And that is easily explained by the fact that we have not seen the possibility of raising capital to have a more flexible raw material set-up. And in hindsight, I think that both Elkem and Elkem Carbon has lost money due to that.

(...)

Here I think, if you raise the question about possible conflict between LEAN and innovation, I think that there is actually a link between that, and the case of strategic thinking versus operational thinking. In order to make an investment in Elkem, simply

put, you must have a positive business case for the investment. And that business case must be concrete. And that means you cannot accept risk when considering an investment. And that means you are excluded from making big changes, because big changes involve risk. So it means that if Elkem Carbon believed that being flexible on raw materials beyond anthracite, in the long run would provide a better market situation for Elkem Carbon, and a better technical performance for Elkem, then it will not be possible to calculate this business case. Because you do not have any exact figures to base the calculation on.

(...)

It's about system, and it's about attitude towards risk, of course. Both.”

The Agile philosophy that is spreading throughout the other divisions in Elkem, has not been explored by Elkem Carbon so far. But more intuitively, some areas have partly been using this approach.

- A few years ago, there was a shift in working methodology towards focusing at only a few items at a time.
- The use of Stage Gate as tool was faded out, partly due to a reorganization, but perhaps mostly because a more focused approach did not require a system for handling a large portfolio of projects. It is also a bureaucratic, perhaps too rigid system.

“... if you are going to solve a problem that has a completely unknown solution, then it will be foolish to make an elaborate plan with many stages of actions that you will do one after the other. Because you cannot know what the next task will be, until you have an answer to the first. This is entirely implicit in such a task.”

The target now is rather to implement the Wazoku idea management system. This could help Elkem Carbon increase maturity and ability to execute projects.

Stage gate vs agile:

With an agile approach, the person deciding when to start and stop an initiative is normally somebody else than the idea generator. Although a flexible solution, you risk a situation where you are simply told to stop, or not getting any answer at all which is a real motivation killer. By applying Stage gate on the other hand, the initiative will be thoroughly evaluated,

but the downside is that you risk putting a lot of effort into something that will not be fulfilled.

LEAN/EBS and development

EBS is all about standardization, which is well suited for operations with repetitive tasks. For development projects where everything is new, one can standardize certain frame activities, but

“you cannot standardize your way to new thoughts or other solutions to old challenges or new technology.”

On the other hand, EBS principles are useful in ensuring structure in the development work:

“If you didn’t have the LEAN mindset with structure and systems and procedures, it would be very much harder to learn. Because then you could have done something, but you don’t remember exactly what it was. And then maybe you do it slightly differently than the last time, and then you don’t know if you can compare.”

But then again, a regime based entirely on procedures can be dangerous in the sense that it undermines the need for deeper knowledge and understanding:

“I would say that the most dangerous thing about LEAN and making procedures for everything we do, is that you don’t need to understand. You carry out a procedure, but if you don’t understand the basis for the procedure, you will be helpless in a deviating situation. And you will also be helpless towards unknown changes that may come, that the procedure doesn’t cover.”

(...)

“It’s all about knowledge transfer that is wider than just a procedure transfer. And I don’t know if we are very good at that.”

(...)

“I remember when we systematically started to implement procedures for everything in Elkem back in the mid-1990s. Then each procedure was almost the size of a book. They were huge, with scientific justification for the content of the procedure, reports

on testing, and documentation about how the procedure had been arrived at. And all this was included in each procedure. A consequence of that was that nobody read the procedures, because they were too difficult to penetrate. But it is quite interesting nonetheless, that today we have some work recipes that are very effective in terms of understanding how to perform the task correctly, but they don't ensure retention of the knowledge that they are based on."

A solution to this would be to have more demand for knowledge implicit in different job roles. Process engineers for instance, have an important role in ensuring continuity and development of knowledge, and should be able to allocate time for academic work. But these roles have become very operative, to a large extent due to a lean organization with stretched resources, and a strong focus on production output and efficiency. The consequence is that the organization ends up accepting risk, although probably not intentionally.

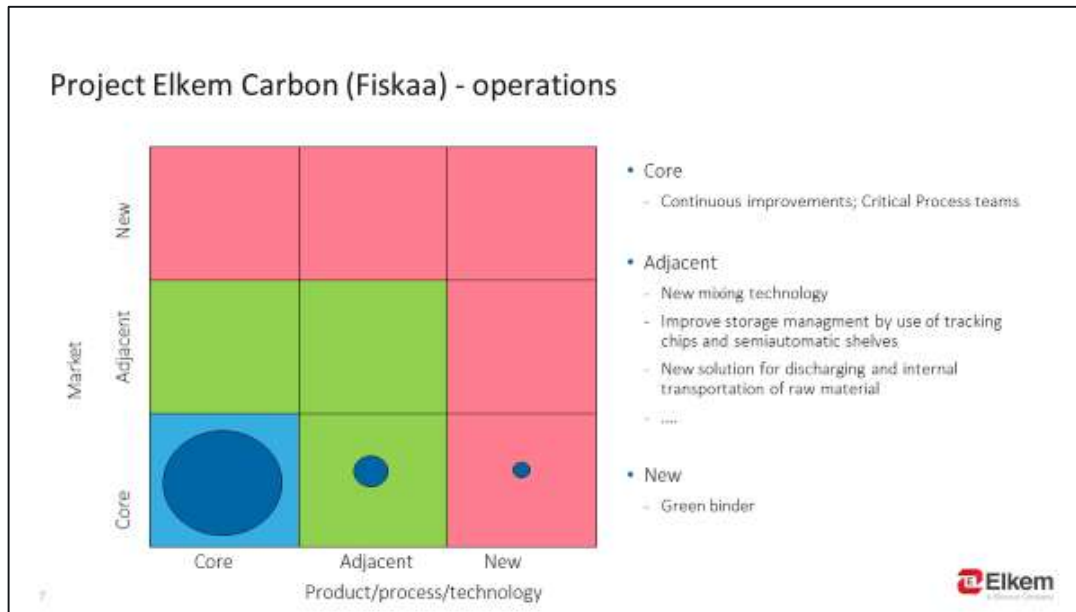
"If your task is to get as many tons as possible through a production step, and you don't understand the consequences with regards to the function of the product when you make changes to increase that tonnage - that is a very risky situation".

(...)

This is also an interesting discussion with regards to risk. That is, where do we take risks?"

Summary of interview with I

Improvement and development work at Elkem Carbon Fiskaa



Work patterns and structural tools

Instead of a specific idea management system, Elkem Carbon Fiskaa (ECF) rather rely on several “Improvement teams” to come up with both critical issues and possible improvements. This is an efficient way to involve and assign responsibility to employees, and has proven successful in many occasions. However, there is a trap. The groups typically work well in the beginning, and the motivation is high. However, over time the tasks and projects suggested by the teams may become too extensive and demand resources and investments beyond the mandate of these groups. It may be difficult to bring these tasks further, and progress can slow down.

Another factor that may limit progress, is the requirement of presenting an A3 with business case. To some operators, this can be a hindrance, and they may choose to drop it. To overcome this, it is important to dedicate enough time for support and encouragement.

Culture, idea generation and communication

ECF has a sound culture for continuous improvement, and employees in general seem to be well aboard with the thought that “everything may be improved”. On the other hand, many examples of improvements seem to be necessity driven:

“...it turns out that if we get into a crisis situation, then the creativity is bubbling, new ideas are flowing. Because then, everyone sees that we really need some innovations. But when things go well, all is good and “we are world champions”. The thing is though, that if we do nothing, those [competitors] who are number 2 or 3 or 4 will catch up on us and overtake us.”

This is also the case for product development. From being more reluctant to invest in new possibilities, a more challenging external market has brought about more pressure and willingness from top management to allocate resources for development projects:

“More has happened over the last 2-3 years, than during the previous 28 years I have been here. We have been running some tests etc before, but now, there is some pressure behind it.”

For discussion: One might therefor be tempted to question if EBS is used as a problem solving tool, rather than a philosophy to ensure continuous improvement and development.

Another cultural factor is that some senior employees are perceived as skeptical and negative towards new initiatives, something that slows down development. However, this is partly counteracted by a plant manager that is open to explore new ideas, if there is potential for increased production or financial benefit.

ECF has had a tendency to focus on cost, rather than benefit.

Communication between different departments and different carbon plants seems more or less sporadic, and not organized. There used to be process teams across the plants, but there has been less activity in this respect later years, perhaps with the exception of the “calcining team”.

Communication across the internal plants are supposedly mainly done by the plant managers, or based on more “random” personal connection. Not structured.

The dilemma of streamlining versus allocation of resources for exploration of new solutions

In order to assure progress also “in times of peace”, i.e. ongoing, continuous improvement (as actually dictated by EBS), it is necessary to allow enough slack in the organization, something that is often a dilemma. In the same manner, it is also difficult to find enough time for proper follow-up of improvement teams.

Improvement work inevitably demands some trial and error. The management is open to this, and testing of new ideas is welcomed. However, are there enough resources?

New activities will always demand extra effort, whether it is to test an improvement or to adapt to a customer requirement. With limited time available for operators to do this, the extra tasks fall on daytime workers, whose resources are already stretched - for instance for follow-up of improvement teams.

“As you say, we are streamlined ... We don't employ more operators than necessary to produce today's level. But of course, when we come up with something new, it often demands manual handling. Then there is a lack of resources, because the operators are really busy with the everyday life.”

“As I was saying; crises generate creativity. But to have a culture, and an arena for bringing up new ideas and input... you need to allocate time with operators. Organize meetings and brainstorming sessions with them and the team around them. But the day to day work-life is getting more and more hectic, and it often becomes difficult to find time for these types of creativity-spurring activities.”

A possible solution to this, is to allow temporary hiring of personnel during projects, either directly for the project, or in order to free internal resources for participation. To what extent this would be supported from management is not known.

The automation project is in some ways also moving along these lines. The main thought is to automate operations, and thereby free personnel for other activities.

Some examples of ongoing improvement activities related to production:

- Paddle-mixer: Was used by previous sister plant in US, but new technology to ECF.
- Exploring possibility of adding tracking chips in bigbags
- Semiautomatic, movable storage shelves, coupled with tracking chips for traceability: Will be able to know the exact position of each individual bigbag.
- Collapse of one of the two docking cranes: Will use the opportunity to explore alternative solutions for discharging of raw materials, for instance by suction rather than traditional use of crane with grab. Also evaluate options for inhouse raw material transportation by for instance conveyer belts instead of trucks.
- Pushing truck suppliers to make them produce electrical versions of their vehicles, suitable for Elkem Carbon.

A common denominator for these activities is that although the involved technologies are not new, they are new to Elkem Carbon.

Summary of interview with J

Organization of R&D in Elkem

Elkem Technology is responsible for long term research, while the individual divisions are responsible for more short-term activities. There is some financial support from the Elkem group for the long-term development tasks, but rather limited amounts. The main part of the funding comes from other types of support, such as governmental funds, the Research council etc. It is Elkem Technology's responsibility to apply for such support, and in this way be able to fund their own projects. The applications are often done in cooperation with external entities, such as universities and research institutes.

As for new ideas, the Elkem group would allocate funding once an idea has a proven potential. For the initial explorative phase, Elkem Technology needs support from the divisions, or they need to turn to public funding or join open research projects for support.

Over the last few years, Elkem has developed the Elkem Innovation Team. This is something new and different in Elkem, brought about by the incorporation of the French based silicones division. Still, the Technology group is headed by the SVP Technology, and not by the SVP Innovation. In a situation with pressure or heavy workload, the prioritization will typically follow the organizational line, and one could expect less focus on innovation and explorative activities.

Innovation and EBS in Elkem Technology

New explorative projects, i.e. new products or new technology in new markets, are not frequent in Elkem. Such projects involve much more risk than conventional continuous improvements, which is the prevailing mode of operation in Elkem. Over the last few years there have been two such projects of a certain scale; The Solar development some years ago, and the ongoing Battery project today. Another potential development of explorative character is silicon for 3D printing.

They way Elkem deals with explorative, higher risk activities, is that once decided to engage in the activity, the projects are lifted out of the regular organization and defined as a separate entity. This was also the case for the Solar project:

“Elkem took a big risk, and said that “We do this by taking it out of the organization”. In order not to continue this in the ordinary organization, because then you would be restrained by the ordinary operation and more incremental innovation. It was taken out, and it eventually became a separate business unit. And we took a much higher risk than we normally do in Elkem. So when you look at it, I would say that we are on the "explorations" side. And it was very educational. We see that a lot of the knowledge that we developed in Solar, is now used elsewhere in Elkem.”

It is an important point to note that such explorative activities, although not necessarily successful, bring about new knowledge and generate a base for new ideas.

Idea generation and idea management

Different systems for idea management have been used. As of lately, the web based Wazoku system has been applied, and several hundreds of ideas have been collected. The ideas are distributed to the corresponding divisions, or to Elkem Technology for those that don't belong in any specific division. There is a budget for exploration of these ideas, but very limited. The major part of the ideas are incremental improvements.

Wazoku has a function where employees can be asked to come up with ideas for certain topics. Apart from this, often the daily tasks and workload takes all of the time, and there does not seem to be an extensive culture for encouraging employees to be creative and come up with ideas in Elkem in general. There's a platform where you can post your ideas, that's all.

However, in the Technology division, coming up with new ideas is expected to be part of the job, and is normally a topic during the annual “co-worker interview”.

“A least in my department, it's always part of the yearly co-worker interview. Have we received any new research projects? Have we received any new ideas? What new

things have we done? This is probably not the case everywhere in Elkem. I do not think so, so it is probably not very widespread.”

The ideas generated within Technology normally evolve around existing business, and can be said to be mostly in “exploitative” direction.

In contrast to this, the battery project is of an explorative nature. The origin was a spin-off from the Solar project, and came more or less as a personal initiative within Elkem Technology. It started up as a small technical project, and then the market and potential technical challenges were investigated. But to be able to initiate such activities, you need employees with both the entrepreneurial orientation and sufficient flexibility in their work situation. Something that can be a challenge in Elkem: *“But there are not many people who have that kind of job; who have time for it”*.

Added by from MD: «I probably forgot to mention that we work according to Stage gate, as sent per e-mail.”

R&D and EBS tools

In order to get support for a new idea, one would be asked to present an A3 and a detailed description of the business case. But this is an area where these tools, although used with success in other areas, don't fit very well.

“And this is – I would not say a problem - but a challenge. How do you make a good business case for an undeveloped market? Because to do so, you need to present a NPV, and it is very difficult. I have read some research literature on this. When it comes to radical innovation, one should rather use other indicators than the financial ones, and rather look at match towards strategy; How does this fit into our portfolio? Do we have the necessary expertise within the group? Such type of arguments should be used, rather than the financial concepts.”

“It is very difficult. They ask about business case. In a way, I understand that too, because you want to have a market, or to know that you have a market that will come.

But it's a challenge. If you can't refer to the business case in your A3, then it is very difficult to get money for the project."

Also in Elkem, there seems to be a tradition for ensuring each step, tending towards risk aversion.

"I think that is probably a culture. You have EBS which is very strong. And EBS is typically incremental innovations. We need to build all the time, improve. That's the improvement principle. And then you need to point to a potential for improvement all the time, to move forward in the loop. So I guess there's something about our culture. We have EBS. We are quite prudent. That used to be one of our core values. I am not saying that we still have this value, but that we always want to evaluate based on facts. And then... There are many technologists and realists who want to see numbers. Economists too. There are probably not many who are very willing to take risks and willing to take a chance. You risk having to answer for it later. So you say "This is the business case we have worked with", and you refer to that afterwards. I think the culture is pretty strong in that respect."

The prudent principle also includes focus on cost, which is another strong culture in Elkem. Although important for an industrial company in a global market, it may inhibit development if not balanced right:

"I think maybe there an issue related to cost. We are very cost oriented. I see when the divisions consider whether they will run trials or not. "How much does it cost? Oh, that much. OK, then I don't think we will run those tests after all». So it may be part of the culture again, that we are cost oriented."

Despite these challenges, one must not forget that both operations and products are continuously being developed, and that Elkem remains a strong player in the market. There are research initiatives, and Elkem Technology has a pilot plant and laboratories for building of new knowledge.

Appendix C. Transcribed interviews

Interview with A

1. Classification

What projects are you involved in?

I am involved in the battery project for the ESM, involved in Bluelco which is a collaboration between ESM, Elkem technology and ESD, and involved in 3D printing silicones. It's the 3 main projects I'm involved in. So it can be projects or programs. By programs... it's a mix, you have a programs and different projects below. So I can say the 3 main projects, when we speak about product or process, and I'm involved also with also more soft projects. Typically what we are doing on Elkem innovation team or things like this. But I think it's out of your scope

What do you mean by soft projects?

Soft projects are for development the idea management system, it can be how to deal with a better communication, corporate communication, it can be these types of things.

So interpersonal oriented?

Sort of. I call it soft because it is not linked to a product or process. But they are important projects, but never for me.

Do you have any idea of how many projects that are going on in Elkem?

In Elkem, in general we can consider more than 200... certainly more than 300 projects.

If I'm looking at the projects like Bluelco, Batteries and 3D printing, it is linked to the strategy and it's long term. So it's clearly... it was clearly prioritized. Also to prepare the future. But for many projects, there are quite short term, and even if the time to market can be long, it's mainly because there are too many projects, so not enough resources to solve with the right timing. But the short-term focus is too often prioritized.

So for the strategy it's OK, there is a strong link. But the short term is always preferred.

OK, who are making these prioritizations?

The prioritizations are done mainly by innovation board or by something similar to the innovation boards, so typically for Si Mat it's done between Eric, Jordan and the business director. For ESD it's done during the innovation board. For Carbon and for Foundry I don't know. So its done mainly at the top level.

It's quite interesting the long term projects are defined out of strategy...

No, its... You can have some long term projects, but I just think that there is mainly short term focus. But it doesn't mean that there is no long-term thinking, typically 3D printing is long term, and battery also, so we are able to have some long term projects, no problem with this.

But it's always the same story. If the business is going well, you can have more and more long-term projects. And if the business is not going so well, the business would prefer to prioritize the short term. So it's always this type of balance that we have to look at, and typically during a crises. Normally during a crises, we have to prepare more the long term. And too often what is done is the contrary, which is to prioritize short term

Whereas you think it should be the opposite? Why is that?

Because for the short term, it has to be done with current product, it has to be done with current product and current markets, to speed up the process. But it is not because you speed up something that you will be successful. When it's too late it's too late, and you just have to jump to something else. I would prefer to prepare long term partnership and to discuss during crisis mode on how we would work for the future with a partner, rather than to say "what do you want tomorrow".

2. Prioritization

Tools

Different divisions have different procedures or norms for the projects, but for your standing point – what typical formalities would have to be in place for a project to be accepted?

For the big projects, and during the innovation board, and there will be an innovation board as ESD tomorrow. And there are some proposals that are done during this innovation board, and there is a validation on or not. So and the way it is structured, the fit with the strategy, the link to megatrend, the fit with our current technology or the gap to do with the technology is done, And a first business plan is proposed with a comparison with the competitors.

It's not according to the pyramid you showed me the other day?

No they are not using this. But more or less it's the same idea.

Do you ask for EBS tools like A3?

We can have some A3s. the people like to use the.. how to sy.. the A3 form, with what is the business case, current situation, target and action. Yes, they have that in use.

So what the innovation board would ask for is "show me the strategic fit or the link with megatrends?"

Yes, but I will show you something.

Here is a project called xxx. The start date was November 2017, so it is already a quite old project. You have the key partners, you have the business case with the business plan, the volumes and so on. The target state with the project scope, the necessary resources. The action plan, the risk analysis and the structure of the project. So it's not exactly an A3 but it's more or less the same. It's a dynamic A3, with update of current situation.

So do you call this format something?

I don't know how they call this.

Is this typical for the silicones division

It is for the silicone division yes.

And if you receive something similar from the other divisions, it would be an A3 I assume?

Yes, because I also typically... I will show you.. Business case, current situation, target situation, action.

But it functions the same way

Yes, exactly.

Is it possible to say something about, still being on the prioritization part, what kind of projects are prioritized? If we split between customer and market, product, process. Is there a balance?

I am much more involved with new projects that processes or development of process. I have nothing to say about some... even on furnaces and so on, I have absolutely no competencies. But clearly there is a balance between the process and the products. And for the process, there are the main... they develop some new process for different reason. But what is typically is regulation. So when there is a new regulation with some demand on volatiles for instance, or to save some energy, this one can be prioritized, because if it is regulation you have to do it. And if it is to save energy, you can very easily calculate the pay-back to the process.

Another way of asking that I guess, is what is driving our selection of projects?

For silicone, its mainly new products. But if I am looking at the balance between process and products, I will say... 25% process, 75% products.

And that is silicones?

Just Silicones

And for the others would you say its's different?

It is not managed exactly the same way. If you are looking at process, it is diluted between the different teams. And there is something that exist in the other divisions. In silicones, the process is in the R&D, which is not the case in the other division. Typically, Arianeh is in charge of new process or innovation of new process. It doesn't go thorough R&D. So how it works I don't know.

Because it can be two sides of the same story. If you want a new product, you have to adapt your process. And if you adopt your process you can have a new product. That is clearly linked in the Silicone division, bit not in the others?

Or, I don't see the link.

That's quite interesting I think, it's a different structure. And I think it's traditionally like this in Elkem, and maybe in the new part of Elkem it's different.

So looking at things the other way around. If a project is declined. Because I guess there are some initiatives coming up, and then you prioritize some, And those that are not prioritized and we say let's wait, What is typical for those?

There are different cases. There are the French case where if we say OK it's not prioritized. it just means it's stand by. They don't have to work on it.

If you do the same in China, at least it was the case before, when we said, don't work on it. They said OK, but finally they worked on it. The main difference is... In Europe... between the business and the industrial and the R&D, it was very well balanced. And I think it's still quite well balanced. In China, the prioritization is done by the business. And the R&D just have to execute. They just have to do.

Selection criteria

And then if somebody gives an idea to them, if something is not prioritized? Why is it not? Because it is not too risky, no strategic fit?

When it is not prioritized, it's mainly because the data are too fuzzy, we don't have a clear vision, we don't know exactly what we want to do. So it's mainly based on the data. And if it is not, if the data are correct, it is just because the pay-back is not enough.

So what about time frame or risk? Complexity?

It will be part of the pay-back. Because if the time frame is too long, it will be very difficult to... it is difficult to project, it will cost a lot of money, and it's difficult to get a pay-back.

So that in order to have a long term project, the pay-back has to be.. It has to be a very good case?

Absolutely. And it has to be really the willingness by top management to do it. Without the agreement and the full validation of the top management, no way.

What is a long time frame? How many years?

More than 5 years.

And would you say... How open to those long projects is the top management of Elkem.? Now it's... I guess with new management and new CEO maybe that is changing?

It would not change so much I think. Because... you know him. But there will be things that will change because Michael is more product oriented than process oriented. That's the first point. Michael often says "I have deep pockets but short arms". So if the pay-back is not relevant, he would say no, we don't go.

That's a good expression. Deep pockets but short arms

Then, perhaps you see the announcement for circular economy yesterday. So we decided to launch a program on circular economy. And he just said "Yes, we have to go. So he's able also to take fast and good decisions.

To me that is something new to Elkem. I'm not really sure what it means. It just read the headline. But to me that is quite innovative, how we are doing things.

Yes, it was a two years work , with work shop and so on, but finally, we succeeded. But it was more difficult with Helge, I can say. Helve was more traditional.

Yes, that can be interesting going forward

I hope so. And again when I say when Helge was more traditional, it is not a criticism, it was just the way he was managing. And he did a good job.

I'm trying to grasp – I have a picture in my mind. We have a few long-term projects that are well defined with strategy etc, and then we have some shorter-term projects. But is it also possible to have some smaller projects that are also long term, that are probes in a way?

It's interesting your point Heidi, because what has been for me a big disappointment, was a project called TEG. Thermal electrical generator. And there was a thesis launched about this, Then at the end of the thesis, Morten and Helge said, "OK wat is the pay-back?". And it was not possible to calculate from this. So in the end it was so OK, we have to stop. And they stopped. And for me, I'm not saying it was... They can be right, I don't know. But for new technology to stop after one thesis...

But for sure there is something at Elkem, the oldest part of Elkem, which is the Solar syndrome. Because the technology for doing the silicon for solar is fantastic, and it's the lowest cost, good quality and so on. And it's not because of the technology it doesn't work, it's because of the market itself. So time to time we can be reluctant to develop some new technologies.

Would you say the Solar syndrome is like a trauma?

Yes, it is a trauma for me. It's what I feel when I speak with some people. All the consequences when you have to fire people, when you have to close labs. So it was difficult.

Do you think that has colored decisions that came later?

Yes. For me, it was a great decision to go with Solar. I'm sure that any people, any other CEO, would take exactly the same decision to go.

That's something I heard once. There are no bad decisions, there are just bad presumptions. And if you don't have the whole picture you have to guess...

But it's where we have to also be more explorative. But we don't have to do everything by ourselves. If you go outside and find someone that are developing a technology and able to develop something new, that's great, and you can collaborate and partner with them. It's a way to also mutualize the risk and to be very to be explorative, it will no cost too much. There is one draw-back. If it is very successful, you have to share the benefits. But why not? And if it's a failure, it just means that OK, you didn't invest so much. So in the end, it's a good compromise.

It the reason why I like so much "Open innovation". A way to speed up, and to mutualize risk.

Is that something that we are looking more into now?

Yes. Something that I am doing every week. Looking at new technology, create a start up, develop some new topics. What about energy storage, resin, and many other. Not only myself, many other people

This is not something I hear about at my level. But is it something that is being pushed or that people are being invited to think more along these lines?

There are mainly two, It's done at Elkem technology and a lot at Elkem Silicones. So it's the e two places where you will find a lot of open innovation. If you are looking at typically what is done with the pilot catapult. It's based on open innovation. At the end, if there is success, it can open some new technologies and some new markets. And finally it doesn't cost so much.

That 's true, and the risk its lower, it can be quicker.

3. Culture

A little bit about culture... That's maybe difficult to say when you talk about all of Elkem, because there are many local cultures I guess. But if people come up with new ideas... If you compare to other companies you worked in. How are ideas welcomed? What happens when people come with a new idea?

If you are looking at Foundry, it is very open. There is an idea management system. They are looking at new ideas. And all the new ideas goes through the global innovation board with the selection and so on, and it works very well. Rannveig is managing that.

If you are looking at ESM, they introduced the idea management system, and I think it will be not so far from Foundry, So ideas comes again, and its done with the new system Wazoku that was launched and it's quite positive

If I'm looking at silicones, it's slightly different. Because if you have some new ideas, first it has to fit with some road map. It has to fit with what we call the incubators. And in this case it can be prioritized in the incubators. So it is not a project. To see if the idea is OK or if it is stupid. But very often, what's happening is, the project comes from the business, or comes from the industrial if it's a process issue. So it is a demand already filtered by the business or the industrials.

Does that mean that it is market and product oriented mainly?

Yes

What about carbon, do you have any feeling about that?

No. Not enough, I would say stupid things. What I can say for example is for the green binder, they are just doing it for the regulation.

Where in the organization does most of the ideas come from; not division, but where in the organization

The demand of the prioritization is done on the business demand. But it doesn't mean they have the idea. It means it is an analysis of the market and an analysis of customer demand. But for the new ideas, I would say that it is quite poor at Elkem silicone. There are some ideas for new technologies and so on. It like I explained through the incubators. But there are already too many projects. So giving new ideas doesn't give some new.. There are no resource in fact. Then there is something additional. If you have an idea, but don't have answers or the ability to develop your idea. It's very difficult. Why, because people are more and more frustrated. So if you launch something based on the idea management system or based on new ideas, the challenge is how we answer to these ideas.

Are people encourage to come up with new ideas, or is it more like it's not so much welcomed since there are already so many projects going on?

It would depend. For the incubators, the more academic research, with new scientific challenge and so on, it is welcomed. If it is... a new idea for doing product for health care. Yeah, ok way not. But no it is not very encouraged. It's not my feeling at least, no it's not encouraged.

But is that an issue? Do you think it will weaken our position in the future, or is it good, well balanced?

There are some pros and cons. I think that if the business is going well and growing well, it is not an issue, but if there are more problems in the business, to ask the people: "Now we need your ideas". So "Why?"

So, we have to find also a way to encourage the ideas, the to select the best ideas. Meaning that we are looking at all the ideas, and we decide, OK, this one we can decide to work on it. And then allocate the right relevant resources. Which is exactly what Foundry is doing.

And Foundry, you present the idea, they say it would be.. we would like to do this, and we need this level of resource. It's a Yes or No: If it is a No, it is explained why it is a No. And the people can be disappointed, but at least they will not be frustrated. The worst is to be frustrated. To be disappointed is something else. I played the game, I lost, that life. To not give an answer, to be in something grey, for me I think it's the worst.

And it doesn't encourage for a second round of ideas

Foundry it's funny because the idea management system works well, and I think that the project management doesn't work. They are very good to generate new ideas, but they don't have big projects.

Maybe some divisions learn from each other?

Definitely, yes.

The best equilibrium for me is at the Si Mat, between ideas and current projects.

4. EBS

In your personal opinion, is EBS a hindrance for us; are we too locked into that type for thinking?

EBS is very good to fix a process. Even for innovation, we are using EBS from time to time. Typically, if you want to develop, to propose a new project, we are using A3. If we want to develop KPIs, we are looking at focus system. So we are using some tools of EBS, but EBS by itself is not a way to be creative and to open. It's a way where you have the road, and you have to follow the road. It's difficult to go outside, and from time to time you need to be agile. And EBS is not very good to be agile. You are efficient, but not agile.

Is this the case in Elkem, or different around the different division?

There is something that is funny at Elkem, which is when we don't want something happening, very often we say "you have to follow the EBS process".

So we used it as a way to stop?

It's a way to slow down.

It is something I saw a few times. Typically for circular economy:

When I presented what we can do between all the division of Elkem, what would be the target, the interest, why we have to do it from a social point of view, from an economical point of view and that it's a way also to strengthen the divisions and to have the divisions working together. One SVP of one division said to me: "We need a better business case, and we need an A3". And so, with exactly the same message, exactly the same things; it took 2 months. So it's the reason why I say it's a way to slow down.

And EBS is a fantastic tool when you already master something. Because it's really the way to see the deviation, to see how to have something under control and so on. So EBS is also useful for innovation, because we can have some deviation, and also have some stupid projects. And to have a process like EBS to see why the project is not under control, I fully agree on this.

But for me it's "process under control".

And that, and may not more?

Definitely, EBS is not everything.

What about our market. Elkem is in many different markets. But compared to many other companies, we are in a traditional market; at least the traditional part of Elkem. How much innovation is needed?

About the market, I saw many new developments in new markets, typically what is done around batteries. It's for electrical vehicles, so for us it's a new market. And I start to see, some organization around this market, with Stian discussing with Tommy and from time to time they start to discuss with Silicones, so I see some improvement on this.

Nevertheless, the structure to really develop new markets, is not yet at the right level. The main focus right now on marketing, is done the customer experience, so how to improve the customer experience, to better understand our customer. But its not develop new markets so it's something missing, yes.

So we are focusing a lot on our existing market and understanding our existing customers?

Yes.

Again, its not black and white. If we are looking at typically health care, we were not at (present) all 20 years ago, now we are doing a business at 100 million. So yes, we are able to develop new markets But it doesn't look like a priority to me. It's like for new technology

But is that a strategic choice?

No, I'm, not sure. It's just because we are not organized for this. At least for technology, we are more or less well organized. But for markets, there is still some improvement to do. And normally, the role of Asbjørn, would be to develop these new markets or propose these new markets. Is it done? No, we are looking at even in terms of strategy, it's OK, we will have a new direct synthesis plant at Xinghuo, so it's improving current technology for current market.

If you were to guess, Why do we focus like that?

- I can have an answer, but I will not give you my answer. It's tricky.

Interview with B

(...)

We speak about old Elkem and new Elkem, before and after Silicones. Both the culture, and I think, when Silicones came into the company, they brought with them so many good things.

This culture of innovation, I think it came more or less with them. At least we didn't speak so much about innovation. Even though we had the Söderberg and all these very good examples of innovation in old Elkem. But I think the terms and the frame, that came with Silicones.

What is different with the Silicones culture?

I think they have longer history with working with innovation. In a way they have been forced to be innovative. Due to the competitive situation in the past. And yes, I think somehow, they are more on the international market than old Elkem, they are closer to the customers. And a lot of innovation today is considered customer driven. We are not talking about all of the 10 boxes of innovation, so it is very much market and customer driven.

In the Silicones division you mean?

Yes.

So that is something that is driving the silicones innovation. How do people work differently from traditional Elkem?

They have this history of incubator thinking or incubator system. I have seen it in work in Silicones and it's fascinating. They work across units; between France and Asia, and Americas and Europe. And it's really fascinating how they work together and in teams. I think this is something that old Elkem has been lacking, but is very fast improving.

So there is a structural difference in how it is organized?

Yes I think so.

It should be possible to migrate this into the traditional part of Elkem?

Yes, and you can see examples, especially in Foundry. I have been working with Rannveig who is the innovation champion in Foundry. From my perspective they are doing really good, and they are going really fast. In all of the areas in Foundry; nobody is left out.

My background is from Elkem Foundry, I started there, and I moved to the EBS center in 2015.

So you have a solid background in the traditional part of Elkem?

Yes, very much. And actually, it was one of my... There is a reason why I work so much with Silicones. It's because I enjoy it also very much. It's very fun to work in Silicones, and take part of the work that is ongoing there.

It must be very valuable to Elkem to have someone like yourself that is bringing the old and new part of Elkem together. Or seeing both worlds.

And connecting people. Because sometimes there is people in different corners of Elkem doing the same things, but they don't know about each other. So by bringing them together, we can eliminate a lot of waste.

And also it's unbelievable how much improve we have done just by bringing in the correct people. Just making the correct people talking together.

How long back does this go? It's rather new?

Yes, somehow. But even within the Foundry division, before I joined the EBS center, it was fascinating to see people connect and solve issues on the spot. So I think it was in 2011-2012 that Foundry division started this cross-unit benchmarking, and with that work a lot of things have happened in Foundry.

Within the EBS spirit?

Yes. Benchmarking and sharing info and learning from each other. Today, it is called CPM benchmarking teams or something like that.

Sometimes we are spending a lot of energy to learn from external companies, and that is really good. But we need to start within the company. My background is very much

from the shop floor, it's very practical work. Even then, just by giving my employees the chance to visit other areas in the plant, and speaking with employees in different units. That has given so much. This is what I try to bring it on a larger level within the company. Connecting people.

1. Classification

Place projects within the 9 boxes – is it hard?

It's Challenging

How many projects are you involved in?

It's different how I am involved in the projects. We are giving support to groups or to units. And that support can be highly involved, or just supporting, or just facilitating a workshop. It is very rare that we are leading a project. Currently I'm not that involved with that many projects in silicones.

Let's just think about development projects in Silicones.

Core: I don't have the full picture about what's going on in Silicones. I guess we are probably looking at 40%.

Where would the others be?

Some projects working on new products, new market

They are also working on a lot of cultural projects. They are getting used to the EBS system and the EBS thinking. They are still doing the onboard training within the company, so there are a lot of those projects.

I guess you will talk to Sophie Schneider. She will give you exact numbers.

The incubator projects: Very different between projects

Where they are placed?

I know there are some projects going into new markets but with the current product portfolio.

I hear a lot about interesting projects and something that is ongoing. Then I revisit it two months later, and it's gone. Because there was a marked study or something like that, and it's not ongoing anymore.

Most of the innovation projects are happening on this incubator cross-unit board, so that is very cross-divisional.

But the core projects..?

There is also some work ongoing, bringing in the products from Basel. And the portfolio from Xinghou, bringing that into Europe. They are not in a very regular state now. Because they have been buying companies and bringing them into the company and bringing them onboard.

Sometimes I think that the incubator projects take place on a higher level within Silicones division. But the core projects are more run by the departmental manager or something like that, so it is on a little bit lower level. And they have great responsibility, and they have the trust to go forward with the projects. And I think that is really good.

It is key.

Yes, exactly

And it's fascinating to see... My main interest is culture and people and people responsibility. And it's really fun to see these people. It's no problem for them to connect to different units in Elkem and just go forward with their ideas and the work they are doing. There are no limits.

Because they have the trust?

Yes, they are driven by curiosity and the will to do well

And sometimes, I have the feeling that this is not the culture within old Elkem, But it's not necessarily because they don't have the trust. They probably have the trust to do it, but they are just not doing it.

Why?

I don't know.

And this is something that is part of the culture in Silicones

Silicones; Is it French culture driven, or Chinese culture, or a mixture?

I think it's mainly French and southern European culture. I don't see much of the Chinese culture yet, in Silicones.

2. Prioritization

Focus on silicones, but also interesting to see contrasts to Foundry for instance.

I guess this stage gate model they are using; they have high impact there.

And I would say it would be a strength for Elkem if we would use only one version of the stage gate model. But currently we are using 3 versions, probably more. Because there are different settings of each gate. The thinking is more or less the same, but there are different criteria.

So, each division has their one version?

Yes. And I think this is something where Elkem can highly benefit of standardizing

Does it meant that for each of the different versions of stage gate, there will be different aspects that are focused on?

For Silicones for instance: what projects would typically be prioritized; what is important when prioritizing?

Strategic fit is number one for sure. I could talk all day...

A short story: There was this innovation contest ongoing in Silicones. It was called "Be innovative". It was a very good contest, and they split it up into diff focus areas It was very professional. The contest even had their own web page and own logo and they created a big momentum in that division. And Materials division tried to copy and do something similar. And they didn't have any specific focus in that way.

Afterwards they were trying to categorize the ideas that they got though this contest. And what amazed me, was that – I think they got 700 ideas or something like that, and they categorized only 3 of them into EHS. But actually, the winning solution was highly connected to EHS. So in a way, when you are working on improvements, it's

all about how you categorize them, and how you think about your improvement. So I think sometimes, if some solutions or ideas are connected to strategy or profitability, they also touch up on EHS issues or process related projects. It's all about how you categorize it.

If you want a project to win in the state gate funnel, what is important to focus on if you want your project to be prioritized?

Broad involvement

In what way?

If I would had an idea, then I would bring as much people to the table as I could

To get their attention?

Yes, and also to get different aspects. Because usually when you have an idea you bring more people into the table and you brainstorm and the ideas get stronger it gets better by time.

If there are 5 projects and only resources for 1; which one would win? Are there any tendencies

I think it's always strategy and profitability.

What about long term/short term focus?

Good question. I guess it's just a very good mix. That's my feeling at least. I probably don't have any numbers to back that up, but that's my feeling.

The type of projects mostly going on, is there also a balance tween how many for the process, for the product, or the market - I think you said that much is customer oriented?

It's also – we are thinking about innovation.

I don't want to go into the philosophy of discussion what is continuous improvement and what is innovation. That's a never-ending story and we never will agree on something. So if you would mix continuous improvement and innovative projects, then I guess you would have a very good balance.

That would be my impression for the Silicones division, and maybe not so much for the traditional part of Elkem?

Yes, that's true.

You gave an example about EHS. I think improvements in EHS, they are more or less always considered to be continuous improvement, there is not so much innovation in how we are approaching EHS.

If there is a promising project, and it's not initiated; what would be the reason?

Many... I cannot give any specific answer to that.

Or would it just simply be prioritized, if it promising?

Yes, I think so.

But you cannot do everything, some projects will have to wait

Yes, and that's why this stage gate in Silicones is so good. They have this parking lot where they put things on hold. And they are very prioritized, and they are very mature about it. This is perhaps also a difference between old Elkem and new Elkem; this level of maturity. To park good ideas or good project.

To park and not forget?

Yes, and I know, and I have seen examples that they revisit a project or an idea. So parking doesn't necessarily mean to kill the project.

To me, it sounds like this stage gate process in Silicones; you cannot say typical factors that are prioritized. It's not like it's always short-term profitability. Because it's difficult to say what is prioritized, it sounds to me like there's a good balance and a mix.

Yes, I would say so. Again, this is my feeling – and again this is something you would get a very good view from if you talk to Sophie.

If we compare to the Foundry division. Would that be different? Or in what way would it be different?

In the past, you could probably criticize the involvement in Foundry and on which level in the company the involvement would begin. But I think that is changing very

fast in foundry. They are bringing in more people and the involvement is getting broader.

Did you mean involvement from management or from employees?

Ehh. Both. And just simply working together, if you are based in Chicoutimi in Canada, you could be working on a case with the group of people in Nagpur in India. So that's a difference today in foundry.

So there was a lack of improvement, but that is starting to change?

Starting to improve, yes.

Why was there a lack of involvement? Was it not on the agenda?

I just have some conspiracy theories around that, nothing concrete. It's somehow a history of Elkem, and Norway versus the rest of the company, and something like that.

The most important is that it is starting to change.

Yes we are improving.

What is driving that development?

In Foundry, there was an absolute turning point when they brought in a consultant to help them with the culture in the company - maybe 3 years ago. They got highly focused on growth mind-set. They had a program around it, they were training their people, and you could see an absolute shift in people's mind set.

Interesting!

Yes, it's very interesting. It is something that I have been challenging people to actually investigate.

But..

It must be so fun for the people

That was a very good thing for Foundry.

If there's a new idea, how is it welcomed, in Silicones and Foundry?

I think they are getting closer to each other.

I have to say what is a big change now in Elkem, and started just now in November last year, is the Wasoku system. I have seen some ideas, they are getting so big momentum, and they are flying. And with this Wasoku system, we are getting more agile. Now it's only Silicon Materials and Foundry who are working in this system, and I know Silicones is just: We need this, give it to us, we need this tool. This would probably speed them up a lot.

What is the tool doing, how does it affect the process?

It's a tool that will help you with your Stage gate model. How to bring in new ideas and how you involve your ideas and how you work with them.

I know Foundry has a very structured way of selecting ideas and bringing in them to the next stages in the model. The same in Si Mat, they are taking the ideas, but still the ideas are mainly from management team and sales and marketing. But the plan is to bring this on a lower lever also.

For me being part of a corporate unit, its really fascinating to go in there and have a look at the ideas. I can give a vote, a can give a thumbs up or a thumbs down. Sometimes there is a voting session ongoing, and you can click on it an give it your vote. Then it's more likely to be prioritized if it's a good idea. So it very fascinating this system.

It's brand new in Elkem?

Yes. It is a very digital solution

Very 2020.

Yes, I guess in a way that has been one of the good improvements slash innovating program ongoing now in Elkem.

In your opinion, iss the EBS focus we have had for all these years, helping us when generating new ideas?

Yes, absolutely.

What EBS is first and foremost bringing in, is that we are used to some standardized business system. We are used using the same lingo, and the same language. And I guess EBS has built a very good foundation for innovation in the comp. I've seen in Foundry – because in Silicones, they have a much longer history towards innovation. But it's the other way around in Foundry, the history with innovation is shorter. And I have seen that the foundation of EBS and the thinking of EBS, you know, empowering your people, eliminating waste, and working towards your true north, that's really a good foundation for your innovation thinking and innovation culture.

So you can build on the EBS culture?

Yes, and we are even doing some tests to use some of the EBS tools for workshops and group work to go forward with the projects.

It needs to go hand in hand. If we are thinking that we are playing a symphony, then innovation and EBS need to be playing together and playing the same tune.

How much is the organization depending on personal initiative? Are there differences among the different divisions?

Probably

To what degree would it depend on individuals?

I'm not sure. It's probably a mix. Sometimes I can see that many ideas and many projects are based on just some individuals. And some individual have a great amount of projects ongoing. But I guess it's also dependent on the management. And on the managers. I don't have any concrete answer, I guess it's a mix.

In some areas, you have to push, whereas in other departments it is easier - do you see differences?

I see definitely a change in Foundry and SiMat on a higher level with this Wasoku system. But I think the culture in Silicones... They welcome the ideas, they nurture the ideas. Their culture is different. They welcome the ideas.

The opposite would be: "We already have too much, just focus on your daily work.."

But it's also nice what I have seen, it's a very good thing that you talk about daily life and daily work. You need to create this atmosphere and this opportunity to talk to people and to be creative. And what I'm seeing more and more of, are these innovation rooms.

Virtual rooms?

No physical.

Where they design a room in colors, and they have some posters, and it's a room to think i

In Elkem, do we actually have that in Elkem?

Yes.

Wow

Exactly. Because we are used to walking into a room and you have graphs, KPIs, and it's wallpapered. And I have seen more and more examples of these rooms where you have good colors and you have a great wellness when you walk into this type of rooms. In St. Fons, in France, they have a very large room for this. They have a computer, they have whiteboards and everything they need for a brainstorming session, and they use it a lot.

I have seen this in different versions, I think this is a very good example of how Elkem is changing.

What about carbon, I never hear anything about carbon.

I'm not so much connected into carbon. I'm working on very few projects within carbon, so I don't know the carbon so much. The only Carbon factories I have been to are China and Fiskaa. I'm not that familiar with carbon.

Because there is less activity in Carbon? Or you don't know ?

No, my background is shop floor management. And I guess in Carbon, this is a process that is very stabilized, and you have different priorities, so there is more focus on different EBS tools like critical process management and things like that.

Do you think we could learn from silicones and foundry?

We have a new divisional manager now.

The most important thing for me, and it should be one of the most important things for Elkem, is how we empower our people. We need to use everybody in the company to get the good ideas, to work on improvements and all this. That's the way to improve.

I absolutely agree, it all down to people. It's easy to say, but it's not always easy to act on it.

Yes, it's very interesting what has been ongoing in Foundry in past years. And with this Wasoku system, they are flying,

Interview with C

(...)

I'm sorry, I didn't ask about your responsibilities in Silicones.

I'm R&D leader and driving the R&D for the full division. We have today 350 researchers worldwide with 2 big legs: One in China where we have roughly 150 researchers, the second leg in Lyon in France where we have 150. So you see equal researchers in Asia and in Europe, and the remaining one is in Americas between North and South America.

I joined the company 15 years ago. My full background is R&D, starting from my studies where I have been doing PhD in polymers chemistry. And then starting in a start-up company in Switzerland, and then joining... at that time it was still Rhodia Silicone. And then Bluestar Silicone and then Elkem silicon, taking over different positions, first starting as a researcher and then becoming head of one department, and then taking European R&D, and since 1,5 years global R&D for Elkem Silicone. So my main competence is really in R&D. Of course including one part of innovation, but innovation as you know is much wider than only R&D. But being part of the Elkem innovation team lead by Louis since 4 years, I think also there we learn a lot, and we exchange a lot with the different divisions.

As you can hear I am French with a very nice French accent with my English speaking.

Well I have a very nice Norwegian accent so that's fine.

(....)

I would like to insist, innovation is not only R&D. The definition we give about innovation is that innovation is any new things that could create value. And I imagine you have discussed with Louis also about the 10 types of innovation, and R&D is merely focusing on a few of them, like developing a new product, developing a new

process and developing some of the new services. But there are many other types of innovation.

So for the R&D, if I focus now on the R&D part, we have 3 main missions. Which have different time scales. And I think the answer to your question about innovation in a company using EBS and LEAN, could be slightly different on the 3 different missions.

(...)

R&D:

Here, from my Elkem Silicone perspective, I think EBS has really been a strength for us. To enable, to really clearly define what is the topic on which we should work on. “What is the question that we need to address”. And this is a very powerful tool, for example speaking about the A3... To really define what is the focus of our work, and where are the next actions. So I see here also, the EBS and the LEAN as an enabler, even if you are already more in the exploration side.

Advanced R&D, incubators:

In that part, we are fully in what you call exploration, it's thinking fully out of the box. And even there, when we are being developing the road maps for these kinds of areas, we have been using tools from EBS to assure we align and we are moving in the right direction. So I think... I always see the EBS and the LEAN as an enabler for doing our job, but different level of intensity, I think. Of course the more you put LEAN and EBS, the less you let space for creativity and thinking out of the box. But nevertheless it helps to frame and to ensure you are in a continuous process where you plan things, when you do, and you check, and react. So that's my vision of the EBS LEAN versus the innovation in our R&D organization.

That sounds like a very sound way to think about it. I think it is how it should be

If I may, I would like to share with you something. I'm not really allowed since its proprietary from a company that tells us that we shall not share it. So I will share it with you and I will check with Louis if I can send it to you. But anyway if you use it, you cannot use straight forward the document.

I understand



So this is a way of presenting the development of different chemical company over the last 20 years, and what they have been doing to improve their innovation and become really the strong innovators. So as you see, what they described, that has been done by an external, Deloitte company.

So what they have seen, by gather information from many chemical companies, is that most of the companies have started with operational excellence. Continuous processes, and this is really the foundation of most of the companies. And then they started develop sales and marketing excellence, that was the next step, and most of them only after those two legs are really strong and they could rely on it, they moved to innovation excellence. I think it's really interesting because we are always saying "Yeah it's a drawback for Elkem, as you mention, all Elkem to have started and to have this strong EBS LEAN competences". But I think it's really the foundation to go towards innovation excellence, and I think perhaps what we are more missing, is the mindset in the company to go there. And that's something really different.

I think for Elkem Silicon, we have mostly started on the middle, sales and marketing, and moving to innovation excellence. And we have been adding the foundation about the operation excellence when we joined the rest of Elkem. But most of the company are developing this way: First EBS LEAN and operational excellence, then sales and marketing , then coming to innovation excellence. So I though it could be interesting to you to have this kind of input and to see that it is more Elkem silicone that has not been doing it the way most other have been doing.

But you have much more innovation I think, or maybe I should say product development or market development, than the traditional part of Elkem. So does it mean you have started in the dark green area?

What we have to keep in mind, is that you cannot compare two companies which are playing in fully different markets. You know, for Elkem Silicone, if I compare our activity in product innovation vs our competitors, we are the same even a little bit lower than our competitors. But we are investing 40% of our sales in R&D each year. And that's the base to be in this industry. Whereas in other industries like petrochemical, where you are more in big volume, you are only investing 1% of your sales in R&D. So I think you cannot straight forward compare Elkem Silicones with other divisions, because we are not playing in the same market. There is not the same need and not the same diversity. You know Silicone... when we speak about silicones, we are speaking about more than 2000 different products that we have within our range today. And those 2000 different products are from liquids to fully solids. Some could be cured with UV light or with temperature so it's many different properties and products for even more different markets and applications. So I think it also... We don't have to misunderstand, I think it's the market where we play that have also drivers and force us to so many innovations.

Yes, absolutely I agree to that. And the traditional Elkem is more like a raw materials provider which of course demands different things of the company.

And with all the furnaces of course, operational excellence for what you call the traditional Elkem is key, because the main activity around the furnace... If you lose the expertise around this furnace, you lose the value of the company.

Nevertheless I do see some traps there, in the operational excellence corner.

This could be a phase, it needs to be a phase. This needs to be a strong asset. This competence should be there, but then it should evolve towards innovation excellence. If you stay here, you will not be a company who performs. I didn't mention it, but on the Y-axis is the company performance. So only those who go through the full phase will be the winner in the industry.

Yes exactly, just thinking out loudly... I'm thinking about Elkem Carbon for instance, if our competitor is starting to move from operational excellence and surpassing us on the other areas, they will become a very strong competitor and we will struggle to stay..

Yeah, and I think this is about the mindset of the leader of a company, to... I don't know the right word, but to really push for innovation to become key driver of the company. And my feeling... I will just tell you one story. I remember the first time I joined the Elkem leadership meeting. You know the one that is once a year in Oslo. The first time I joined there, it was 4-5 years ago now, I didn't meet (hadn't met) anybody from the other divisions. And the first meeting I was sitting beside somebody from Carbon, I don't know how it was because at that time I discovered so many new people. It was not Asbjørn, because I know him, but it was a guy from Carbon. And then we started discussing and then he asked me what I was doing. So I explained R&D, we are developing 20 new products this year and then he starts laughing and he tells me "Ah you know, in Carbon that's not for us. In Carbon, the last product was 100 years ago". So I think really... It's about mindset because I'm sure there are innovations that have been done in Carbon also. Otherwise you would not have been able to survive. But perhaps people are not able to name them as innovation. And I think that's also really key

Yes that's a good point. But also about the mindsets. How would you say, would you say the mindsets are different in the Silicone division compared to traditional Elkem?

I don't know, I can only speak in general because I work only with a few people. I think the mindset is different, also linked to the fact that we are not playing in the same industries. And as I mentioned, I think it's also now the leaders to understand that if they do not move, they will not perform anymore. So I think in Elkem Silicone, this has been discovered already (...) whereas the pressure for other divisions in Elkem is coming only now, to make this change. And that's why the mindset is not there, because the mindset you will not make it alone, you need to work on it to make it happen.

Where would the pressure towards changing the mindset come from?

Form the top

From the top management?

Yes, and the top needs to explain why. The competitors, we need for innovation... You definitely need to create the sense of urgency, that the people around understand that if we don't change. we will not survive.

Is it coming, or do you think it should be coming; a pressure from the top management? I mean, is it like this now, or are you saying that it should be like that?

For Elkem Silicone it's like that. We have a clear target. We have to each year generate sales with new products, so today we are generating 20% of our sale each year with new products. So that means that we have this pressure, and this is a KPI which is monitored and looked at by the boss of the company. So that makes the pressure there.

Yes, that's very clear

And I'm not sure it exists in other divisions. I know that Ole, who was an internal at this EBS, tried to... When we developed this monitoring of those KPI on power BI, he tried to onboard the other divisions and that was not that easy. So I think that means also that the pressure to focus on this part is not really high in the other divisions perhaps.

No. I've seen this in the Materials part of Elkem silicon. They have something similar. Very clearly stated that this much should be from new activity.

Those are the most closest to Elkem silicone, ESM is really close to what we are doing.

Yes, and it also makes sense because it is also very much market driven. It has the Microsilica story, all the way from the start, so there is a common factor there. Well I'm not the one being interviewed here. But in Carbon, it's more the opposite. We have been told to stay with the core and focus on that, and not going into new areas. That has been the strategy.

So I think, even if the strategy is to stay in the core area, you can bring innovative mindset to do things differently. I'm just trying to find something else. Just to explain you also how we... I think the innovative mindset has been also created though different specific actions. So perhaps you can do large contests to find the best ideas, but you could also do a lot of other things. I imagine you have seen the poster we have developed about all innovators.

Maybe, I'm not sure. I've seen some of the posters, where it says Challenge the known.

Yeah, those have been developed to promote the innovation. That's one work of the Elkem innovation team. Did Louis introduce you the Elkem innovation team?

Maybe not in detail. Is Elkem Carbon present in that?

Trygve is there. You recognize Trygve here (showing presentation), that's the Elkem Innovation Team driven by Louis. It was started in 2016, and the idea at that time was that also to break silos between the newcomer which was silicone and the other divisions. But what we discovered by making this first meeting, was that there were also silos between the three of the other divisions in Elkem. It was not only the newcomer. So it's a group mixed of R&D of course, but also finance, HR, marketing, techno innovation. So it's a group of different people, different culture, different religion. We do not yet have Asian people there, but we are working together and our objective is to really accelerate the value creation through innovation. So that was our aim. And then we have delivered over the few years by working around four axis, and the one I wanted to highlight for you, was the culture. So we have different action to establish this positive culture about innovation, and in here it was about training webinars, the innovation campaign, the poster session, we have now a very powerful Share point of innovation on the intranet. The team has also been the one pushing for Wazoku which is an idea management system to collect and make possible for anybody in the company to contribute and share his idea. And of course, we have been doing and animating a lot of work shops across the different divisions to talk about innovation and to make this reality for all of us. And in the meantime, all of this, most of the time, is done using some EBS tool. We are using A3, so I think we should not put in opposition the two things, but we should rather work on the culture change that is needed so that people that are today focusing only on operation use this operational part as a strength to go to the innovation excellence part.

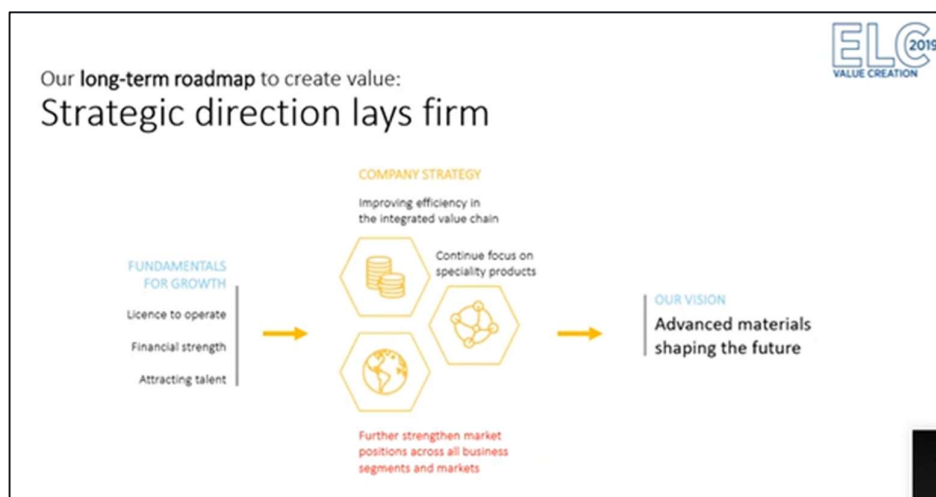
I think that is the key, and maybe where we are struggling a little bit, from where I stand and how is see it. I feel that there is a mindset very much oriented around operational excellence, and we are very clever to use EBS tools. And I think that has put Elkem in a really good position in the market, it's a strength. But then, it's how to move further from that. And we struggle to use EBS tools outside of the production area. And when we try to apply them to

other areas, it becomes just rigid and it doesn't fit. And that's my view on it, that we struggle to take this further. So it would be interesting to know how you apply it in the Silicone division. When you say that there are good tools to support the development, even all 3 missions that you talked about, you can use some help from EBS tools.

I just wanted to come back (...) to your question before. "How did you make it happen?". My comment is about Elkem strategy. Did you see the innovation word in the Elkem strategy?

No. The Elkem strategy?

This is the presentation. That was Helge Aasen's presentation. So that's the strategic direction. So what do you see on the strategic direction on Elkem Silicone?



You see improving efficiency, but I didn't see one word which I could link on innovation here on this slide. So if it does not come from the top... And that's for the Elkem one. But after, there is the division. But if it's not written by the top manager... If you look at the ones from Google, Tesla and all those very innovative companies, it would be in the first words of their presentation.

I guess the furthest stretch we have here is to focus on specialty products. That is very much just the exploitation tree, to strengthen what we already have.

I think specialization could be really exploration, because you can go to specific markets, specific technology. But I think here, when you look at this, you really feel like you are in a company where you only want to do exploitation.

So is that your view; that it has been a top... let's say strategy focus, or there's been....

For Elkem Silicone, yes. By the structure of the company first, as I mentioned. Because we are playing in a market where all competitors are doing it since long time, so if you do not do it, you die. So for us it's quite ignorant to our market so we need to do it. Whereas it seems as up to now, it is not the case for Elkem. But I truly believe that if we do not change, as you mentioned before, the competitors are changing so it will not help.

So when you saw this the first time, what was your thoughts around it?

I mentioned it several times to Helge Aasen. And you see here, the third slide, it's already here, EBS. So it's cool. But you have here the full management team of your company, and your third slide is EBS. So everybody knows where is the focus, and then you cannot bring the mindset change. You would have here some something about very strong message about innovation on the first or the second slide, then the people who are the leaders of the company, who are joining and listening to the boss, they are "OK, so that's where he wants us to go". Today each time each time I was coming out of this, my feel was "So, OK, we are still focusing on EBS and that's the main thing for Elkem". And I tell this because we have the chance to have Helge Aasen a few times in our meeting for Elkem Innovation, and I mention it to him, and I tell him "We do not see innovation as a strong message", when there is the strategy presentation. And where is the value or anything like this that is presented. So I think this is also a key enabler.

So that's also a mindset of top management. Because he has also been trained in the Elkem system. His "childhood" in a way, was in Elkem.

But really, I believe that we need to keep this EBS part. It's for me mandatory, it's the foundation. We should try not to put innovation and EBS in opposition. We need EBS to operate well. But we also need to evolve and to add other layers in our... I don't know how to name them – competencies or mindset or way of working towards more innovation.

But why do you think it's so focused on operation excellence. I'm not saying that its bad. But I guess that's very difficult to say. Why haven't this cone earlier?

I think the answer that I give... I see two main reasons. The first reason: The market of the old Elkem divisions has not forced them to go there. It seems that competitors were not moving faster. But from what I understood, but I don't know well, Carbon, they've moved, so now it's time. And I hope it's not too late for us to move, but others have moved.

And the second point: It was not a strategic decision pushed by the top management. After, explaining why they didn't do it... That's not for me to answer, you have to ask them. Perhaps there are many reasons why they thought it was not what they needed to do, and they preferred to focus on EBS before. That was where they were expecting most value for the company.

It's very clear in a way. If you don't have any real push, it's very natural to continue what you are good at.

It's even more, they tell you to do this.

I mean even the top manager, if there is not really any push from the outside market, or a pull, it's very easy just continue focusing of the same things that you know your company is good at. It's just a human... it's natural, I think. But then I must say, it's very good for Elkem to have grown and to have a new leg in the system which is Silicones, to maybe shake up a little bit the old thinking.

And you know, when we joined Elkem... For me it has always been presented like this to me. It was the Elkem Silicones division will get a big improvement thanks to EBS. And we have then to help the other divisions in sales and marketing and in innovation. And I think, you know, the more interaction that we have on those areas, with the sales and marketing council where we have today even common sales programs, and with innovation with Louis driving the cross divisions Elkem Innovation Team.

But from just from my personal point of view in my daily work, I don't see that at all. It's not influencing the medium part of the company so far.

That means it has not yet been enough pushed by the top.

I guess

You know, the Elkem Innovation Team, we have been working during five years, inviting Helge Aasen, by trying to promote and push at the corporate and we were as

you say not able to diffuse in the full company. But at a certain point of time, if the leaders of the company does not make the decision that this is where they want to drive the company, it is very difficult for a group that is not driving the company, to drive them there.

Maybe sometimes also management underestimates the importance they have, and the power.

No, that I don't think.

Everything a top manager will say and do will reflect in a way. But that's another story.

Another thing: Like we said, we struggle a little bit to adapt our EBS tools into something that is not production. And I have been to EBS training myself, and I have been thinking "Oh this is very nice, but I'm working with sales and marketing so it doesn't really speak to me".

I will not say this for R&D. We have been using 5S very efficiently for all the areas in the lab. We have been using A3 very efficiently even with incubators to define the road map and to structure our way of working. The PDCA was already the way of working for us. What we are starting now, is more about waste and things like this. But I think that really it is... I'm not sure we need to adapt many things. For me, I see EBS more as a mindset, and then you pick up the tool that you need, and then you adapt from it. It's really a mindset. If you have it everywhere, you have the efficiency.

One dilemma that I see, I think It's mostly related to production, is that we are very good at being efficient and lean, and we have continuous improvement, so that our processes are getting more and more efficient. So over time, there will be less resources allocated to these processes. Not because people are being laid off or anything, but just over time when people retire etc, there will be less people. And then all of a sudden, when something happens, there's a shift, or the customers need something else or whatever, we have become so lean and our processes so finetuned, that we don't have the resources to do actually the development work and the improvement work anymore.

So here again, that's clearly a strategic system. It's nothing to do with the system EBS. It's a strategic decision to either cash cow and make sure it delivers, or to further develop. But I think it's not linked to the system. EBS I think it's quite good. Of course we can improve, I think EBS will have to jump in the agile methodology. But I think they are going there also. And they will have an additional block in their area.

And I think really the agile methodology being integrated in the EBS, I don't know how far it will go, but this will also enable to promote more the innovation part.

Yes, when you speak about agile, is that a buzz word also in the silicones division?

It's not a buzz word, because we have one or two examples where we have been able to do it in a project. But we are not yet able to transform it as a culture. And that is really what we are targeting now. We have been developing... I have in mind two projects that we have shared and that we have used as show case where we have been really working with this spring mode where you make very quick iterations and you start to propose products even if it not the final one. And we have demonstrated it works, but it's still not in our culture. So there is still a lot to do. But I am convinced, and the one who have been doing the experience on two projects that I mentioned, they are convinced. And even more, we have been reducing the time to market dramatically, and the sales have been starting very fast with this kind of methodology. I am fully convinced about the agile, it is not a buzzword, but it is still very far from being our culture.

I think it sounds very interesting. So when I say buzz word it's not negatively meant. But I hear people talk about it. But how do you go about to apply it? Because it's a new concept, do you send somebody out for training?

I will have an information, not a training. I will have an information later on today, at 11, through the Elkem Innovation Team. And in parallel, I start to create the sense of urgency in my team. Yesterday we had our two times a year... I put worldwide R&D leaders together, so it's a team of 13 different people and 6 different nationalities and very different competencies. And we work together about how to decrease the time to market. And by making this, and I'm sure it will pop up, the methodology and the agility of our methodology comes up. So now they are expecting a lot, so I create the needs on their side and now I just have to find the path to give them the right tools. So it will be between EBS and external training. I don't yet know, but I think within a few months we can defined the good tools and the start deploying.

Is the EBS center being a support in the agile thinking?

Up to now, no. Because up to now, as I mentioned before, it was two projects which have been run like this, but more linked to the fact that people were willing to try. And

from one project even they discovered they run agile after the project. But that's not a big deal, I think it's always interesting. So we have those experiences. And now to make it really happen as a culture, I will need I think EBS support, but we are not yet there. But Benedict will be with me at the training at 11, so this will be things that we will discuss together.

Ok that's nice. From what I've heard from it, I think it will be very beneficial to us. It could help us come up to speed in many things. Maybe it could be a pathway from our operational excellence focus and on to sales and marketing and innovation excellence. At least it's one tool.

Yes, that could help to change the mindset.

OK, I see that time is running out.

I don't know if I have answered the question you addressed. And if I may, my conclusion is really, we need to avoid putting in opposition EBS and innovation, it is not an opposition. I think EBS is needed as our foundations, and now it's just about how we further develop towards innovation excellence. But not by stopping EBS. I think it's really key because I very often hear the, "Yeah are we sure we need the EBS?" "Do we need to innovate?" Yes, we need to innovate, but we need also to have EBS.

But is there also and understanding that we are – how should I put it – that... I couldn't say too concerned about our operational excellence, because we always need to do that. But, that we stop there, that there's a need for a push?

Oh yeah, that's clear. That's the diagram that I showed you before, the performance of the company is most likely linked to the fact that the company is able to evolve towards sales and marketing and innovation excellence, not staying only on the EBS/lean.

Interview with D

1. Klassifisering

(...)

Prøver å måle KPI'er

Strategi:

- Fordeling 60 - 30 – 10 %
- Prøver å dra megatrends; og så har vi splittet det opp i 4 ting som vi jobber med: Spesialprodukter, digitalisering og sustainability. Og så er det kulturen i seg selv som er litt challenging.

Aktivitetsplan 2020:

- Viser hvor ressursene brukes. En for Materials og en for Silicon (Fossegrenda).
- Har også tilsvarende hvor de ser på gross margins.

Har hold på med dette i et par år i SiMat.

Stage gate prosess, oversikt som viser hva som pågår. «Idea to profit»

- Viser oversikt over pågående prosjekter. Hvor de er i stage gate, og størrelsen på rundingen angir gross margin etter 5 år. Kan få kopier av Jordan.

Hvor mange mennesker kan dere trekke på? Hvor mange mennesker jobber med utvikling i Si Mat?

Jeg hadde intervju med Inge og Katja om den nye organisasjonen for en time siden. Da var et av spørsmålene, eller en av de tingene som jeg sliter med, er «critical mass». Og du sliter jo enda mer med det i Carbon. Hvis du er i Procter & Gamble, så har du 200 mennesker som kan jobbe med, og da kan du gjøre det på en litt annen måte enn når du har noen som skal dekke flere områder.

Og divisjonen er jo da at de som jobber med innovasjon -. Jeg liker å snakket om 10 types, men hvis vi tenker på bare product development et lite øyeblikk, altså den tekniske gjengen, så er det den samme gjengen som sliter mellom å jobbe med technical support som du sikkert også driver mye med. Og så er det å komme opp med nye ideer i product development. Men i product development så er det på den ene

siden mot kunde, og på den andre mot verkene; at du må fortelle den og den at «du må justere sånn og sånn». Så du stjeler mye tid som ikke er innovasjon mot kunder. Det er en utfordring som jeg ikke ser helt hvordan vi skal løse. Og da er det kritisk masse; hvor mange mennesker vi har. I dag er 4-5 stk i Jordans departement, Bjørn Myhre Hong, Odd, Muhammed og en til.

Så er det rundt regnet 1 i hver forretningsenhet?

Oilfield 2, Refractories 2 + et par som er flytende.

Er disse rendyrket til utviklingsoppgaver?

Nei, det er det de ikke er. Bjørn Myhre driver for eksempel samtidig med å utvikle og også å hjelpe til med tekniske problemer som våre kunder vi har. Og mye det samme, reiser rundt. Det en fin kombinasjon egentlig, så lenge du har litt KPI oppfølging, at de ikke bare switcher det ene og den andre - at det ikke blir personlig hva du foretrekker. Og der kommer du inn på.. det blir litt avstikker men, Magne Dåstøl, vi hadde mange diskusjoner på hvordan det skulle gjøres. Og Magne var jo «du må ha frihet for forskerne. Det er da de blir kreative, og de må ikke bli satt i båser, de må ikke ha KPI'er, de skal tenkte» ... og sånt noe. Så det blir en konflikt i diskusjonene vi har hatt.

Så har du Arianeh som var der at det er innovasjonsprosessen som er hovedprosessen, og at salg og markedsføring er en sideprosess, om du vil. Mens jeg kommer fra sales and marketing, og der var jo *det* som var prosessen, og innovasjon kom inn som en støtte til det.

Så da får du også en utfordring. Det er et organisasjonsdilemma som du må ta.

Det er veldig spennende akkurat det – det er egentlig ganske i kjernen av problemstillingen, Hvordan løser man det i Silicon Materials?

Vi er ikke helt der vi skal være. Men i og med at jeg kommer fra en business- og salgsenhet, så har jeg sagt at Business Director er sjefen. Den ansvarlige. Og så har jeg kuttet ut og kaller det ikke R&D lenger. Det heter teknisk. Fokus da må være faktisk å tjene penger, det er derfor vi driver med det. Det er ikke fundamental research vi skal gjøre. Så alt må være applikasjonsfokus, eller development fokus. Og da er det nødvendig at det er Business Director som styrer. I en EBS sammenheng: «at det er

pull». Og så er det en teknisk avdeling som har push ut. Og så prøver vi så mye som mulig å få fra kunde. Og så er det alltid argumenter; «det er noen produkter som kunder aldri ville komme med».

Men akkurat nå holder vi på med noe veldig spennende. Vi har en Stage gate prosess som vi har jobbet med noen år. Og så gjør vi litt bedre hvert år, og så er det – så har vi hatt litt problemer med å kommersialisere. Men det har vi tatt tak i. Nå jobber vi med å se på «open innovation». Det å få tak i ideer. Å få en kultur for å komme opp med nye ideer. Da har vi prøvd å bruke Wasoku, som nå er det standard programmet som vi prøver å få alle til å bruke. Og da tenker jeg at det er et interaktivt system som den yngre garde har veldig enkelt for å bruke, kanskje litt mer enn de mange av oss som har vært rundt litte granne, de synes det er litt ekstraarbeid. Men jeg tror at etter hvert så får vi dette inn som en rutine, at vi snakker med hverandre, ikke på e-post frem og tilbake, men det er noen ideer, og så blir det noen diskusjon omkring disse ideene. Vi har faktisk fått opp over flerre 100 ideer som har kommet opp via dette systemet. Og utfordringene nå, er å ta de videre til Business case. Og der er vi ikke helt rigga enda, for når vi nå har fått god entusiasme med nytt system og masse gode ideer, så må vi på en måte være der at vi er med tilbakemeldinger, og at folk føler at de blir hørt, at det er noe poeng å levere inn disse ideene. Og at de ikke bare for tilbake «please develop; bruk fritiden din på å utvikle»

Så den Stage gate prosessen; du skal lage Business case, og så tar det masse papir arbeid og så skal du over i en Development Stage og så er det Commercialization stage.

Så da ser vi på å bruke Agile. Er det noe du er kjent med?

Ja, det er jo LEAN, Agile, det litt i samme gate

Agile er noe kanskje du bør se på i dette prosjektet.

Agile er en utvikling på som begynte med software utvikling. Det enkleste å si det på er Try fast fail fast. Vi er vant med stage gate, og måten vi jobber på; alt skal være på plass før du går videre. Og du skal ha all business klar og alt skal være fixa og du bruker veldig mye tid up front. Her er det snakk om å prøve ut litte granne raskere. Så Agile for eksempel hvis du ser på hvis du har en app, en Iphone, når det kommer ut

nye apper, eller nye oppdateringer på appene - det kommer nesten ukentlig eller månedlig med litt refinements. Man sender ut noe i markedet før det er ferdig. Og så jobber man og forbedrer og forbedrer.

Så den prosessen der med å jobbe litt på den måten, hvor man har det som heter «sprints». Altså man kommer sammen en liten gruppe og så jobber og prøver å komme et hakk videre, slik at man kan teste ut noe hos en kunde til og med - gå og snakk med en kunde og lag et -kom med en hypotese; «Hva om vi klarte å lage et sånt produkt. Vi har en hypotese om at det kanskje går. Hvordan ville det impact dere, og hva ville vært viktig for dere?» Det er på en måte første steg. Men du begynner litt tidligere med å få tilbakemelding. Det er en prosess vi nå holder på å teste ut.

Du snakket om Louis Vovelle, så da prøver vi å få litt konsensus rundt, så nå skal vi presentere det i neste uke til Louis-s

Da tenker jeg at Wasoku er mer et strukturelt verktøy, mens Agile er mer en filosofi eller kultur?

Agile er en metode for å gjøre ting. Jeg tror vi er litt bundet opp hos oss i at alt skal være perfekt før vi går videre. Du fikk jo aldri, På hvilket tidspunkt snakker du med en kunden, når du har et helt ferdig produkt, eller når du er i prosessen med å utvikle det? Hvor mye tør du å snakke med kunden før du er ferdig, ift IP, så det er mye sånn vanskelige ting å tenke på.

Men jeg tror det å jobbe sånn; Vi er nødt til å gjøre det for å få litt raskere speed på innovasjon, at vi ikke bruker så forbaska lang tid fra ide til profitt.

Hvordan ser du EBS filosofien oppi dette; at man helst skal lage en A3 med business case etc?

Så det er akkurat det vi holder på med nå.

Jeg tror vi skal holde på det. Og så skal vi ikke overkomplisere ting. Og så skal vi prøve litt prototyping og teste ut uten at vi har alle svarene. Så hvis du skulle lage ny paste, i et sånt nytt regime, så tror jeg at hvis du har en ide om at noe ville virke, så: «ok la oss prøve å lage det», og så teste det ut på en eller annen måte i en lab eller lignende, og så det var kanskje ikke noen god ide. Eller. «la oss ta det et steg videre». Men at du ikke har alle teoretiske beregninger og blancks in the row før du begynner.

Men det oppstår en problemstilling hvis man har 10 sånne gode ideer som man gjerne vil teste ut med en gang. Men så har man kanskje ikke ressurser til å teste ut alt. Hva skjer da?

Der sier agile, ta en og en av gangen. Du lager deg en liste, og så tar du en prioriterings-rekkefølge. Du begynner på en, og så spiser du. De har noe som heter back-log, hvor du har en lang liste.

I CX prosjektet vårt som vi snakket om i går, så har vi en back log på 139 user stories som de kaller det. Du kan tenke deg at det – user story kan være en idé. Og så må du bare lage en liste - OK, men hvor begynner vi. Så at man ikke gjøre alt på en gang og være litt tydelig på det.

Vi må jobbe mer med deadlines tror jeg. At vi sier at innen den datoen så skal vi ha gjort det, og hvis ikke vi klarer det, så må vi gjøre det så godt vi kan, med det er fremdeles deadline som gjelder. Og så får er heller produktet være ikke fullt så godt som vi trodde, ikke «vi må ha noe for å kunne begynne å teste det ut på ett eller annet».

Snakker vi nå litt inn i fremtiden? At agile fremgangsmåte sikkert vil påvirke hvordan man gjør prioriteringer fremover? Og si å fall; hvordan har vi prioritert frem til nå?

Her er det teori og praksis. I praksis så er det sikkert sånn at de som er sterke de, får igjennom noe lettere enn de som ikke klarer å presenter det på en god måte. Det blir jo en kamp. Men i teorien så har vi jo en Stage gate modell hvor vi har Stage meetings; altså gate meetings. Og vi da går igjennom og prioriterer, men det har ofte vært sånn at det ikke har vært så veldig mange som kommer inn. Så til de som kommer inn, så sier vi stort sett ja, for da har det sikkert vært prosesser før det, som ikke jeg ser. At det på en måte i de som holder på med de blir promotert. Men det har jeg har gjort, er å involvere Business Directors og segmentansvarlige mye tidligere, slik at de siler ut prioriteringer. Slik at prioriteringer i Oilfield; det må være Adel som prioriterer hva han kommer frem til. Det har ikke noe for seg at Simon eller Dagfinn skal være den som styrer hva Adel skal holde på med, hvilke han skal prioritere. Du får da en konkurranse om ressurser mellom Oilfield, Construction, Refractories så må du ha et gate meeting, der man diskuterer det. Og gate meeting har også den funksjonen at du får dem som har holdt på med et business case, at de får presentere noe, at de blir sett. Og det er kanskje det viktigste. Eller, problemet vi har med teknisk avdeling, eller de

som holde på med det; de blir ikke sett, og derfor mister du entusiasmen, du føler at det er ikke noe poeng å drive med det. Da får du en kulturforandring. Det samme er jeg redd for med Wasuko. Kommer opp med masse nye ideer og at vi ikke klarer å ta det videre.

De prioriteringene; for at noe skal komme så langt som til stage gate, kan man si noe om hva som hva som typisk skal til for at noe blir prioritert? Er det knyttet til ønsket om at «det markedet er attraktivt», kjempegod profitt, strategi, HMS...Noen spesielle ting som er viktig?

I teorien så begynner alt i strategien vi har. Og i vår strategi har vi nå sagt at 10% av vår omsetning skal komme fra innovasjon, «10 types of innovation». Og har du i dag definert et nytt produkt, eller vi snakker om nye produkter i denne sammenheng. Så er det definert som fra launch date + 5 år. Da er det et nytt produkt. Det betyr at 10% av det vi har må være noe som har kommet opp de siste 5 årene.

Er launch date når ideen kommer?

Nei, eller det går fra developing gate over til commercialization gate. Da har du en driver.

Og så kan du da regne med at når vi har 5 milliarder i omsetning i divisjonen, så er det da 500 millioner kroner som vi må ha i nye produkter. Og så har vi da gjort en fordeling om at hvert segment må ta de 500. Det betyr at da får vi, da må – jeg husker ikke fordelinga - Nils Dybwad har 1 i polysilicon, og Robbie må ha noe, og så får han et mål. Innenfor hvert sitt segment. Og det er da en diskusjon; hvor mye er fornuftig å ha i hvert segment. Så hvilke skal vi satse på osv. Så det blir litt mindre inn til Construction for eksempel enn det det blir inn til Oilfield. Så det setter på en måte en dimensjon. Og da er det opp til Oilfield Business Director å i sitt segment, hvis han har fått og må få 50 mill, må han regne seg tilbake eller se åssen han skal gjøre det.

Og så er det en forventning om at dette blir gjort ikke bare i Europa, men at det blir spredt ut. Så da må han også komme opp med en plan om at av de 50 mill han har fått, så må 10 av dem være i Asia og 10 i Amerika eller noe sånt. Og da må han også jobbe og involvere organisasjonen i Asia og Amerika. Og det er på en måte driveren. Og da kommer det med å prøve å få ham inn i Wasoku. Han må være interessert for det som kommer opp ting som han kan bruke der. Et for eksempel ta... Og så er det igjen problemet da, at han er så operational, eller han - jeg sier han, om det er Dagfinn eller

Simon... - de rekker egentlig ikke å prioritere dette. Så da må jeg bare sørge for, for min del, at jeg foreslår de riktige KPI'ene - at jeg tvinger dem til å jobbe mer med det. Og tenke litt lenger, long term, og det er jo crystal meth, for vi vil jo gjerne ha begge deler ikke sant. Det er på en måte måten vi prøver å få det til.

Og så sa jeg at dette var en teoretisk måte å gjøre det på. Det er ikke alltid det fungerer sånn. Det er jo alltid noe. Bjørn Myhre kom opp med en idé, som fant ut at vi har noe vi hal kalt «the magic powder» som vi kan tilsette Microsilica, som ikke koster mye, men som gjør at du får en shelf-life som blir tredoblet. Vi har jo problem med 971 for øyeblikket, etter 6 mnd får du et problem med set-time. Altså det setter aldri. Så det å putte inn sånt magic power i den løsningen, så har vi løst dett problemet. Men da by-passet vi hele systemet, kjør på! Du tar noen short-cuts, hvis det er noe som ser kjempebra ut.

Håndteres organisering av forskere annerledes enn de som skal holde på med oppfølging av prosess og salg etc. Ser du noen forskjeller der i hvordan det er, eller burde være?

Det er jo også et problem som Jordan har, at jeg vil at han skal facing customer så mye som mulig. Enten teknisk support eller product development. Men så får han da sånne caser, at Bjørn da, han må jobbe med Thamshavn før vi snakket med noen kunder. Så er det da å få dette utviklet. For det er ikke Thamshavn som kommer opp med den ideen, de har ikke sånne ressurser. Så da mister jeg på en måte den ressursen mot kunden. Så det er en sånn erkjennelse at vi skulle gjerne hatt flere folk.

Det jeg var på jakt etter; Det finnes teorier, ambidekster måte å organisere på. Prosess og produksjon, standard prosesser, kan følges opp på en typiske EBS-måte, mens de som skal jobbe med innovasjon og utvikling, da kan organisasjonen være litt annerledes. At de ikke har samme type management. Tenker dere i de baner, eller ikke?

Det er jo det som er hensikten. Vi har en Ivar Hellvik som jobber hos oss, han har ansvar for innovasjon for operations i gamle materials, og så i det nye da. Og hans rolle var å... jeg går ett hakk tilbake:

Arianeh, da hun var her, så hadde hun ansvar for critical process teams for Microsilica. Og hadde ansvar for å utvikle våre nye produkter. Altså begynte med å ha ansvar både mot verk og mot kunder. Og så splittet vi opp det når Ivar kom inn. Og Jordan kom

inn. Sånn at, de fikk på en måte samme jobben som Ariane hadde, dvs Ivar tok det mot verk, og Jordan tok det mot kunde. Og der jobber Ivar på en helt annen måte enn det Jordan gjør. I teorien. Men så er det av og til at ressursene er sånn at du er nødt til å bruke en Bjørn Myhre, og Bjørn sammen med Ivar, mer enn han hobber med Ivar.

Og da er spørsmålet, LEAN, jeg tror nok at EBS er mot verkene mere. Ivar, selv om han var her så rapporterte han til Geir Ausland, som da var ansvarlig som en type COO for verkene. Og så var han innom Håkon en liten stund, som da har Technology, som er tilsvarende det som Ariane har for Foundry for øyeblikket. Og det blir jo en EBS måte å jobbe på. Så tilbake igjen til hva Jordan skal gjøre og som Magne da forfektet; «du må gi dem frihet, og de må ha bordtennisbord og de må ha frihet til å kunne tenkte litt». Men du kjenner meg. Jeg liker struktur, jeg tror det er noe forbaska vrøvl om jeg skal si det sånn, de må få lov til å tenke, men de må ha sine strukturer. Jeg tror Agile kanskje kan gi noe der, den friheten de er på jakt etter. Men vi kan ikke ha folk som driver med fundamental research fordi det er veldig interessant å «se hva som skjer med det partikkelet hvis du tilsetter spenning», hvis det ikke er noen hypotese om at du kan få noe ut av det. Vi er for små til det.

Tilbake til spørsmålet, om det skal være en annen type struktur... Jeg tror nok at med inkludering på verkene av ny teknologi, sånn an vi kjørere mye tightere.., Jeg tror du må være litt mer fleksibel når du jobber med kunder. Du må ombestemme deg og kunnet ta andre valg basert på... Komme i et møte, og kunden sier «nei, det har vikke bruk for, men vi trenger noe sånn». Da må du være fleksibel nok til scrappe alt det du har holdt på med og snu det rundt, En sånn agile holdning tror jeg kan ha noe for seg, at du jobber med kunden fra et litt tidligere tidspunkt.

Er det noe der som bryter med EBS filosofi?

Agile? Jaaa, nei, EBS og Agile hører litt sammen, så det er en utvikling, Hvis du leser litteratur der, så er LEAN... Det blir ofte beskrevet som en utvikling av LEAN. Og at det ikke er alle prosjekter som det passer på .Det ble utviklet for et software metode å iobbe på, altså utvikling av software. Og så har det blitt tatt over av manufacturing og andre etter hvert i ulike prosesser.

Men jeg tror ikke det er alfa og omega. Men akkurat det med kulturen er jo kjempespennende. Og det finnes ikke noe svar som: «Ja, sånn er måten å gjøre det på!»

Foundry har vært opptatt av noe som heter Growth mindset. Og trodde det var noe de hadde funnet opp selv med en eller annen konsulent. Men så har jeg en kone som er lærer, og de snakker om growth mindset hele tiden. Og det går ut på at du skal tenke utenfor komfortsonen. Du skal ikke bare holde på med det du gjør i dag, men du skal prøve nye ting hele tiden. Og så få det mindsettet om at du er nysgjerrig. Og jeg tror nok det er ganske så fundamental riktig tanke at du må innenfor innovasjonsdepartement, at du må få en kultur der man er first mover type folk. Folk som gjør nye ting. At du ikke sitter med followers hele tiden. Du må få First mover-kultur, det er noe som du i det lange løp du må jobbe med, tror jeg.

Ser du noen forskjeller mellom tradisjonelle Elkem med smelteverkene, og Silicones?

Absolutt. Veldig. Og det som er forskjellen er at han som er sjef i Silicones, Fred, har en sales and marketing bakgrunn. Alle divisjonsjefene er tidligere verkssjefer. Ikke Inge, kanskje ikke. Men altså, det er det som er tradisjonen. Det betyr at, i hvert fall i vår divisjon: Måten vi blir målt på er verk-EBITDA. Også i Foundry, så blir det det. Og så er sales and marketing en del av det. Det er mye det samme i Carbon også, det er Fiskaa som blir målt. Eller ECC som blir målt. Det som jeg prøver å forfekte, og som de har i Silicones, er at de måler markedssegmenter. Sånn at i Materials har vi jo det. Vi har Oilfield, Construction, Refractories, det er der som blir målt helt ut. Og så driter hvilke entities. Vi må se hele verdikjeden. For å få det - for meg er det viktig for å lage den riktige strategien. Å se at i Oilfield er det det vi skal satse på fordi det er en høy inntjening og vi har spesialiserte produkter. Og vi må ha flere spesialiserte produkter i Construction fordi vi ligger for mye i commodity. Du får den type ting, i stedet for det som vi ser i dag, at verksjef på Salten ringer meg opp og sier at «Du, jeg vil gjerne - du må selge mer Silol, for jeg klarer å produsere mer». Det bør være jeg som forteller at «Nå må du forandre Silol-produktet ditt til noe annet. Så det er en konflikt vi har.

Dette er noe jeg kjenner igjen. Fokus er «selg ut volumet». Og når det er solgt ut, er jobben gjort. Den tankegangen er helt motsatt sånn som du beskriver Silicones og også Materials som jeg kjenner det fra før.

Jeg tror nok Inge er på jakt etter noe av det når han går inn i den nye organisasjonen og tenker hvordan man skal gjøre det med specialties. At man må ikke tenke på samme måte som man gjør med la oss kalle det commodities, core products, eller core standard products. Det er ingen som liker å kalle det commodities.

I hvilken grad er nye ideer, nye produkter, nye produktutviklingsprosjekter avhengig av personlig initiativ?

Helt klart avgjørende. Hvis du har en champion så får du det igjennom. Det undervurderer vi alt for mye. Det kremmerinstinkt. Som pusher igjennom fordi det er noe han virkelig tror på. Det er det som skal til. Og der bør jeg nok som leder være mere på jakt etter det. Hvis jeg ser at det er en som brenner for noe. Selv om vi ikke har helt good feeling på produktet eller noe sånt. Men hvis du ser det, så lykkes du. Jeg har ikke noe statistikk på det, men det slår meg at når jeg prøver å pushe igjennom noe fordi det høres riktig ut og jeg har snakket med en kunde og han er interessert... Og så har jeg ingen interne som virkelig er entusiastiske på det, så går det for sent.

Tror du det er forskjell ulike steder i organisasjonen vår, i Elkem? På hvor mye personlig engasjement har å si? Er det lettere eller vanskeligere å få igjennom ting i forskjellige deler?.

Fra plasser internt i vår divisjon eller mellom divisjoner?

Mellom divisjoner. Om det er forskjellige, om det har noe å si for hvor mye man er avhengig av individuelt initiativ.

Et godt spørsmål. Jeg tror det er ganske universelt. Jeg tror at du må ha det i en hvilken som helst hands-on funksjon. Det å ha de personene, da er det litt tilbake til followers og first movers. Du må finne de personlighetene som riktige inn i en sann. Og så må man ha en liten mix av begge deler, men du er nødt til å ha de first movers, de som kommer opp med noe, for at du skal få det til. Uansett hvordan organisasjonen er. Og jeg tror at det ikke bare er i innovasjon det gjelder. Jeg tror det gjelder i forbedringsarbeid generelt på verk og overalt.

Spør direkte om EBS og innovasjon: Elkem har holdt på med EBS og hatt kjempefokus og finpusset i 20-25 år- Tror du at det har påvirket vår måte å innovere på? Eller vår evne til å innovere?

Ja, det har det helt sikkert. Hvis vi ikke hadde hatt EBS, hva ville vi da gjort? Betyr det mindre struktur, eller på en annen måte, hva ville du hatt i stedet?

Jeg tror ikke det er der det ligger. Jeg tror det har mere med om du har kundefokus eller om du har produksjonsfokus. Og så er det sikkert flere veier til Rom altså. Men at vi på.. i vår måte å tilnærme oss, at vi bruker EBS og at det kanskje i enkelte tilfeller ville slow us down litte grann, det kan godt være.

Det som litteraturen sier, som jeg prøver å grave litt i, er at: En balanse er veldig viktig, slik som du har skissert opp, mellom explorative nye ting, og mer finpussing av det man har, kontinuerlig forbedring. Aller er enige om det, men så er det vanskelig, viser det. Det er så lett å falle i den kontinuerlig forbedrings fella og surre rundt inni det, og så blir det en vane, og organisasjonen lærer å jobbe på den måten, og så er det tungt å samtidig holde på med mer explorativ virksomhet. Og det er det jeg lurer på; får vi til å holde på med eksplorativt samtidig, og hvorfor? Og hvis ikke – hvorfor ikke?

Jeg kommer fra 2 kulturer. I Materials var vi ganske alene. Og da tror jeg nok at vi hadde - var litt mer crazy. Vi gjorde litt mer ting, vi gjør litt mer ting. Hvis vi ser ett hakk over meg, så kommer jo Trond fra et produksjonsmiljø og har EBS opp og ned i mente. Og det er klart, når hans måte å ta risk på er forskjellig fra meg. Sånn i utgangspunktet. Og han er nok - nå kaster jeg ikke dritt om Trond, han er kjempeflink - Men bare hva han står for, så er det kontinuerlig forbedring som er step by step for å gjøre ting bedre. Det å gjøre step change er nok vanskeligere. Batteriprojektet for eksempel. Jeg har prøvd: «La oss bare få tak i 4-5 stykker og så kjøre på, og så ser vi hvordan det går». Det var min måte å gjøre det på. Og så Trond: «Vi må kunne dokumentere at business casene er 100%, og så må vi dobbeltsjekke før vi går i gang med dette, og så kommer man aldri i gang. For det blir for mye jobb for å komme i gang. Beslutningsvegring kanskje. Hvis du ikke har alle KPI'ene på plass. Om det er EBS kontra noe annet, eller om det er en profil i mennesker, om risk-taking, om man bruker litt sånn intuitiv følelse i stedet for å få dokumentert, det er ett eller annet der det ligger.

Er dette en Elkemkultur?

Altså, jo, continuous improvment, det er jo det, absolutt

Risiko, tenker jeg på

Ja, akkurat, jeg tror det henger sammen. Det er det som er poenget mitt. Når jeg kommer fra Materials som ikke er så rigide på akkurat det der, så er det enklere å ta noen beslutninger. Det er ikke noen standarder du bryter, for det er ikke standarder på alt. Så jeg er i enighet i den hypotesen, om at det er en forskjell på continuous improvement og innovation.

Du har sikkert snakket med Louis, det er også en disk vi har hatt.

Og den tror jeg er endeløs, om det er en gradvis overgang, eller om det er forskjell. Men jeg prøver å forske litt. I det fagfeltet jeg fant, så heter det exploration og exploitation.

Om figur..

Den blå der – du blir nødt til å ta noen valg uten å ha alle svarene, og det er problemet med EBS. Og der ligger det med strategivalgene du tar der, de må - Det kan ikke være forsket ihjel før du tar de administrative valgene. Du må tro på noe. Du må tro på Solar. Og så var kanskje ikke det til syvende og sist det riktige. Du må tro på batteri, eller 3d printing. Og hva det er for noe man skal, så må man satse litt på det.

Det er egentlig dette jeg prøver å finne ut av. Jeg er kanskje også litt farget av Carbon, og så er det så tungt og vanskelig og «uff mye risiko å holde på her», så da velger vi det bort.

Og det er enda mer tydelig hos dere, for dere er enda mindre enn oss. Så du får noen dilemmaer der. Trygve kunne jo ikke ha de lett der han sitter og skal ha alle hatter.

Nei, og han har hatt veldig klare direktiver på hva han skal og ikke skal. For meg er det ganske tydelig at det er store forskjeller i Elkem, og det er spennende det også. Det må ikke være på den ene eller andre måten.

For meg er det viktige at vi snakker samme stammespråk og at vi snakker om det samme. Når nå på sales and marketing - at vi får på tvers av divisjonene - at vi får et system som fungerer for alle. Så får de også sanne muligheter til å gjøre ting på tvers. At nye prosjekter som kommer opp sammen med Silicones. Hvor Silgrain går inn i ett av deres produkter. Og det er mye enklere hvis vi har et samme stammespråk og vi jobber tettere sammen. Uten noen veldig soner og vanskelige. Være litt agilt; «La oss prøve ut dette».

Agile: er det en satsning i Elkem? Eller noe SiMat holder på med?

Jeg tror det kommer mer og mer på topp nivå. Det har vært en gjeng om har vært ute og sett på ting som McKinsey har drevet med hos andre bedrifter. Og så er det en realisering internt ett eller annet som vi får med. Så Geir Ausland holder veldig på med agile i digitaliseringen. Arianeh har gått av gårde med noen av sine programmer og vil prøve å implementere noe agile. CX prosjektet vårt, det kjører vi på agile metode. Ikke prosjektstyringsmetoden i Elkem. Så det kommer utenifra tror jeg. Og så vet vi at Michael er nok agile i sin tilnærming, for det er en kinesisk måte. Egentlig uten at det er satt ord på det, hvor vi bare går i gang, og prøv- og feil metoden.

Ja det er litt kinesisk. Det kombinert med Elkem, må være kjempebra, hvis man klarer på balansere det.

Ikke sant, det er ett eller annet der. Det er ikke veldig tydelig enda, men kom tilbake om et år så tror jeg at jeg har litt mer oppfølginger.

Utenifra eller undenifra?

Utenifra, altså fra forskjellige plasser i organisasjonen. Og så er jo faren da at det kanskje blir gjort på litt forskjellige måter på tvers. Fordi mange initiativer, så hadde vært fint om vi fikk noe støtte ovenfra, om at vi prøver å gjøre noe på samme måte.

Når man tenker på hvordan EBS ble innført av Ole Enger i sin tid. Det var virkelig hans kjepphest hele veien, og det ble så kontrollert og tydelig styrt fra oven. Og så har det vært veldig suksessfullt kan man si - ikke isolert sett - men veldig suksess for Elkem. Men skal man gjøre en tilvarende endring, så må det kanskje komme like hardt ovenfra?

Det er det jeg tenker. Og problemet med EBS slik jeg oppfatter det nå, er at det blir gjort forskjellig i hver divisjon, vi burde jo ha en metodikk og gjøre det litt enklere. Ha noen standarder i EBS. Og så klarer vi ikke å ha samme standarder for EBS metoden.

Vi må standardisere standardene

Ja, jeg synes jo at - Foundry, vi og dere gjør det jo helt forskjellig. Det har jeg sett. Forskjellige - det å sammenligne med hverandre og sånt, blir bra. Så det vi må prøve å få til, med en shape med å dele, eller få et mål med hva vi skal gjøre med agile.

Interview with E

(...)

Kan jeg komme med en fotnote:

I kulturen som kreves for å utvikle eksisterende business på den ene siden, og det å være disruptiv på den andre siden: Torgeir Reve, hvis du har hørt om han, han har besøkt oss og han sa: Måten dere blander sammen disse to tingene sammen på i Elkem Materials, med at de som selger og holder på logistikk, og er «man and a dog» på den ene siden og de som skal tenkte disruptive og annerledes på den andre siden. Dere mikser 2 kulturer og det er uheldig. sier han.

Kommentar om ambidexter organisering.

Bakgrunnen min er at jeg jobbet vel i 16 år med å utvikle Microsilica. Jeg har vært direktør for forretningsutvikling i 10 år, og så ble jeg konsernspecialist, og så har jeg vært sekretær for dette Stage gate systemet, og også medlem av det som het product innovation team som skulle foreslå og evaluere nye ideer. Det kom inn ideer fra alle ansatte. Vi vurderte rundt 150 forslag og sortere de ut, og noen av de gikk videre til Stage gate. Så jeg var sekretæren for Stage gate i en 3-4 år, og så for divisjonen for Si Mat, men det var stort sett Materials det dreide seg om. Så jeg har litt erfaring derfra, det er litt av bakteppet.

Jeg har også vært involvert i nesten alt som har..., alle strategiske planer i Materials over en 15 års periode, og hvordan vi tenkte der på nye ting.

Og for det første si at vi tenkte i hvert fall de siste 10 årene mye i retning av portefølje, som dette også er inne på da. Og vi sa det gjelder å ha mix på den ene siden av de langsiktige tingene som kan gi marked om 5-10 år, og noen midt imellom om 3-5 år, og noen mer kortsiktige: 0-3 år. Og vi forsøkte å allokere sånn etter hukommelse størrelsesorden 50% som skulle kommersialisere 50% de første 3 årene, så det innimellom skulle være ytterligere 30% - altså av ressursene som skulle settes inn, og de siste 20% skulle være langsiktig. I tillegg til det lagde vi et plott. Langs y-akset satte vi sannsynligheten for å lykkes, langs x akse satte vi en NPV, altså økonomisk uttelling, Og da var poenget, det gjelder å ikke legge alle prosjekter i en korg her, men

ha en balanse sånn at på den ene siden har du milliardprosjekter som ligger, ikke veldig sannsynlig at de lykkes, men skal være med. Og så fordelte vi det på en form for diagram og sånt. Det var slik som strukturen var.

På den praktiske plan, hvis jeg ruller veldig langt tilbake, de første 10 år jeg jobbet der, 1980-1990, med Microsilica - jeg var i Elkem før det - Det var en enormt kreativ periode. Nesten alt som ble utviklet ble utviklet de 5-6 første årene. Siden har det stort sett vært ekspansjon på eksisterende kunder og litte grann forbedring.

Det gikk jo fryktelig dårlig. Tilsammen er det vurdert at vi har sett på til sammen 300 mulige anvendelser av Microsilica. Av de så reduserte vi, sett på betyr at det ble som regel kjørte ett eller annet enkelt slenge-forsøk. Av disse så kokte vi ned 20-25 ting som vi kalte prosjekter i den forstand og brukte i hvert fall 1 mill kr på det, og vi sitter igjen med 6-7 anvendelser.

Økonomisk sett var de første årene veldig tungt belastende. Vi brukte 300 mill kr i 1980 penger før vi gikk i balanse. Det vill vært en 6-700 mill i dag. Men så svinge det rundt og vi nådde break-even for Elkem i 1987 og 1990. Siden 1990 har det vært overskudd. De siste tallene jeg hørte fra business var 2018-tall, og da omsatte de for 1,4 milliarder, og hadde overskudd på 270 mill. Så det har vært en meget hyggelig butikk.

Det som har plaget meg i de senere årene har vært at vi ikke har kommet videre med noen nye anvendelser. Og jeg har spurt meg selv mange ganger om hvorfor det da. Og der ligger noe, og jeg ble innkalt til den tenketanken med Gunnstein Skomedal og en del andre mennesker. Så vi skulle te å under eller ett eller annet sånt., og presentere sånne tekning fremover hva bør man satse på.

Og jeg har lurt veldig mye på hvorfor stoppet det opp. Det vesentlige der har vært at kulturen ble forandret veldig mye i Elkem. Og jeg tror at det skal begynne helt overordnet og si at det ligger en del strukturelle ting bak der.

Det ene er at sånn makroøkonomisk så ser en et klart skifte i den perioden jeg jobbet, vekk i fra- ikke vekk ifra, men en større andel av økonomien ble en finansøkonomi,

altså har man penger så går man på børsen, og du kjøper selskaper og aksjer og står i. I motsetning til realøkonomien hvor du investerer i fabrikker og den type ting. Og det betyr at de eierne som satt bak Elkem, la oss tenke Orkla og sånt, de var fryktelig opptatte av hva kan vi få ut av penger på kort sikt – essensielt. Og da ligger - de store gevinster ligger da - ikke i å invester i ny industri, det tar fryktelig mange år - store tidskonstanter, det ligger i å svinge seg på børsen. Og det er en stor internasjonalt problem og trend. Og makro finansøkonomi har overtatt fullstendig for realøkonomien.

Når vil du si at det startet?

Nei det har skjedd over en 20-30 års periode. Hvis du leser kritisk litteratur så ser du en del av dette her. Så det er ikke noe som jeg har spadd opp.

Dernest så ser vi en veldig konsentrering av bedrifter, altså vekk ifra småbedrifter og over til store. Og i en av slidene jeg har viset, så ser du at de aller fleste større bedrifter i Norge har nå fått utenlandsk eier. Det i seg selv er ikke så veldig galt. Det har vært en fordel og en lykke for Elkem. Altså, han Hagen-kjøpmannen hadde nok ikke vært villig til å satse alle de milliardene. Men poenget er at noen av disse selskapene, de driver en sånn strukturering i den forstand at de har egne avdelinger som skal drive med utvikling. Og de ligger ofte ikke i Norge.

Jeg har jobbet nå i et prosjekt for Eide nettverket, og hadde bla til evaluering, må være forsiktig med å navngi noen, men det er Alcoa det dreier seg om. Og vi har rett og slett en rimelig god forretningside som går på - skal vi se - det som ble gjort i forbindelse med karbotermisk aluminium. Altså der brukte vi ca 1 milliard kr i pilotanlegg, og anlegget står der. Og vi fant ut at vi antagelig kan brukes til å lage noe fornuftig, noe nanokuler av alumina. Det stoppet opp fordi hovedkontoret var ikke interessert i det.

Vårt hovedkontor?

Nei, Alcoa.

De har dedikert aluminiumsverkene i Norge til å skulle drive med det operative. Altså lage mest mulig Og hold dere til det, gutter og jenter, sa de.

Så besøkte vi i samme rennet også Yara som man skulle tro var et Norsk selskap, altså tidligere Hydro Agri. Og det var helt andre saker vis snakket om der. Men da fikk vi litt samme beskjed; at produktutviklingen deres var flyttet til Tyskland og noe var til England. Og det de drev med i Porsgrunn var stort sett bare rent operativt pluss at de har engasjert seg i noen førerløse skip og sånn, men det var utenom kjernevirksomheten. Og jeg nevner dette som 2 eksempler på hvordan store selskaper strukturerer seg slik at vi blir liggende utenfor. Så det strukturelle forhold som påvirker innovasjonen i Norge og i norske selskap. Så det eneste Gunnar og meg – favorittselskapene våre da vi gikk ut og snakket med dem – var faktisk Elkem Si Mat og Borregård. Borregård imponerte stort. Så det med spesialisering av store virksomheter....

Og så dette med utenlandske eierforhold, de har ikke noe spesiell fokus på utvikle business i Norge naturligvis, de optimaliserer hele virksomheten og couldn't care less om Sørlandet går ad undas.

Så kommer noe som jeg også tror er viktig på 2 måter. Det er har med kritisk masse å gjøre. Jeg nevnte jo disse 300 mill vi svidde av, det var naturligvis alt for mye penger. Men erfaringen vår er at disse små-bevilgningene på 1-2-3-4 millioner, de kommer du INGEN VEI MED i hvert fall når målet er litt tyngre utviklingsarbeid. Hvis du da har en ledelse som synes at det er mye penger og sånt, da har du gjort noe dumt, synes jeg. Så dette gjelder til dels på nasjonal basis. Det har vært lav satsning i Norge hvis du ser på FOU i % av BNP, jeg tror vi ligger på ca 1,7% som er halvparten av, eller godt under OECD i snitt, av 14-15 land som ligger på ca 3%. Sverige tror jeg lå på 4 i sin tin. Så vi har altså en nasjonal sak som sier at vi ikke satser så forferdelig mye. Og da blir du fort subkritisk. Det dyreste du kan gjøre er å satse lite. Må heller satse på få ting, så hiv inn mye penger, for de kommer til å koste mye.

Og tidskonstanten er også ganske viktig. Jeg har møtt Bjarne Skeie, og han sa at - han hadde en stor runde på Sørlandet- «Eg kan ikkje minnes det tok mindre enn 5 år noen gong».

Og så er det at annet strukturelt forhold, hvis man tenker bare på Sørlandet og sånt. Som jeg har jobbet mye med på et prosjekt som heter MIT REAP. Et stort også

nasjonalt engasjement, MIT har en utviklingsmodell for regioner, og Sørlandet har faktisk vært med i det i samarbeid med Bergen og Stavanger. Og vi har kjørt dette i 3 år eller noe sånt. Det er tunge forskere inne for å se på hva er det som skal til for å lage et såkalt økosystem for utvikling. Si at vi må kombinere finans og store bedrifter, krevende kunder og kreative miljøer og gründere og sånt. Det er en lapskaus...

Var det en respons fordi man erkjenner at Norge ligger litt etter på å bruke ressurser på utvikling?

Det henger ikke sammen, det er ikke sånn at A er forklart med B her, men det er et initiativ. Det kommer fra MIT, som har et sånt system og som de har brukt på store regioner og da mener Beijing og Tokyo og sånne steder, og Sørlandet, da. De har slått sammen næringsklyngene, GC Node , Subesca Bergen og enda en til klynge oppi Ålesund.

Det var noen sånne makroting som har innflytelse på hele klimaet rundt her, som Elkem befinner seg i, som sier noe om omgivelsene. Ja, jeg tror det er ytre faktorer som spiller en rolle og som får konsekvenser.

Og så skal jeg si noe om de kulturelle forholdene.

Jeg fortalte deg at jeg hadde Alf Bjørseth nede for et foredrag, Jeg jobbet som konsulent i Innoventus. Hvis du vet hva det er for noe, Gründerselskap. De hjelper småbedrifter, SMB i første rekke og gründere til å komme opp og i business. Og de har kontorer i Arendal og Kristiansand og Grimstad, men hovedkontoret ligger her. Jeg var konsulent for dem og skrev en rapport om innovasjon i Agder. Og i den forbindelse så inviterte jeg Alf Bjørset, du kjenner han?

Han var teknologidirektør i Elkem. Det var derfor jeg kjente ham egentlig ganske godt, og jobbet mye med disse solcelleaktivitetene som ble startet opp, utbygge og selge Scanwafer og sånt. Han holdt et foredrag og trakk opp en plansje og sa at «jeg har mistet troen på innovasjon i store selskaper i Norge». Han begrunner det med belønningssystemer. Han hadde en matrise. Det sto på aksene - hvis du sitter der som sjef og får forelagt et innovativt prosjekt av en viss størrelse, så har du"... Første mulighet er at du kan satse på det. Eller, du kan la være å satse på det; si Nei. Hvis du satser på det, og det blir en suksess, så er det jo en stjerne. Hvis du satser på det og det ikke blir suksess, så får du bank, det går dårlig. Men hvis du gjør ikke noe, dømmer

det nord og ned i første omgang, så får du heller ikke noe bank. Så hvis du vil overleve i dette system her, så er det best å bare sitte rolig ned, og ikke ta noen sjanser. Og komme på lure og gode argumenter for hvorfor dette ikke skal satses på og ikke brukes mye penger på. Så han har altså en belønningshypotese.

Jeg har også en belønningshypotese, og det henger sammen med tidskonstanten. Og jeg har oppdaget opp igjennom særlig fra 80 tallet og utover, var at de som sitter i ledelsen, de får lønnen sin diktert ut ifra årsoverskuddet og aksjekursen. Og det betyr å optimalisere på noe annet en langsiktig bedrift. Det betyr, store innovasjoner og utvikling tenger mye ressurser, det tar lang tid. En får ikke resultat i år. Ofte var det slik at disse sjefene satt der i 3 år og optimaliserte det, og så hoppet de videre til en ny overordnet stilling. Der ligger en felle som er ganske skummel. Det er et kulturelt forhold som har kommet i de senere år slik som jeg ser det. Alt er på tidskonstant i innovasjon vs belønningssystemer i ledelsen.

Så er det selve måten du går frem på, metoden. Og her var jo Arianeh veldig sånn kåt på dette Stage gate systemet som hun fikk innført. Vi hadde besøk av Cooper vi hørte på ham han holdt en messe, en endags-messe, på ett eller annet hotell i byen. Og vi gjennomførte det med alle dets skjemaer og sånt. Man skal presentere kontantstrøm over en 10 års periode, NPV og rentabilitet, du skal gjøre en analyse av kunder, marked, trender, du skal gjøre en risikovurdering for alle kritiske ting, og så skal du komme og presentere det. Det skjer på ulike nivåer oppigjennom. Og det , ja.. Som sagt jeg fulgte med det i noen år, og jeg kan ikke huske ett prosjekt som gikk igjennom der som leverte. Det fungerte rett og slett som en sil, det var de som var flinke til å selge, det var ofte de som snakket amerikansk, de som kom utenifra som fikk igjennom sine trinn. Jeg kan ikke huske en eneste suksesshistorie fra det. Heller ikke disse improvement.., disse idetankene som... Jeg kan ta feil, der må du høre med andre. Men i hvert fall de som jeg satt og skrev på.

Også med tanke på hvor mye ressurser som ble brukt på det...?

Ja, nå skal du høre, at det er noe annet jeg er ute etter. Og det er at det er forferdelig lite realistisk å sitte e med et lite stykke papir og vurdere markedet 10 år frem i tid og ta beslutninger på basis av sånne prognoser. Hvis det er en ting du er sikker på er at du

bommer. Og jeg har latt meg fascinere av noe av annet, som også han Cooper har touchet innom, og det er noe som kalles for Agility. En helt annen måte å lede på etc. Og i stor utstrekning må jeg si at vi bygget jo ut Microsilicaen; vi gikk ut til markedet. Du kan lese litt på - du har ikke tid, du skal jo ta eksamen - men jeg sendte over kopi av doktorgraden fra Roald Stølen. Og han beskriver i stor utstrekning åssen det ble gjort på et tidlig stadium. Og det dreier seg om å ta tak i nøkkelkunder og krevende kunder og jobbe med dem. Det gjelder både om du skal - innenfor begge de to dimensjonene dine, og altså når det gjelder helt nye ting, og utvide businessen. Og så er det å bygge relasjoner, personlige relasjoner. Jeg sier i mine foredrag når jeg skal skryte av forretningsutvikling, at hvis det er noe jeg anbefaler, så er det å drikke øl sammen med folk. Og det mener jeg dypt og inderlig, det ... sk.. i mange sammenhenger. Bygge personlige relasjoner, og så går du og så tester du rett og slett produktet.

Og du skal alltid gjøre det mot krevende kunder, mot store kunder. Og Hvorfor det? 1) Fordi de er normalt realistiske og kan gi deg feedback på hva de trenger, altså kundens behov er klart definert. 2) Fordi de er store, det betyr at du kan gro inn i et marked med å jobbe sammen med dem, og lage felles prosjekter. Og du må være villig til å blottlegge deg. Hvis du kommer som en tysker vi hadde her en stund hos oss, med noen sånn svære skjema via den juridiske avdelingen, så går det 7 mnd med til det, og da har du tapt før du begynner. Ta noen sjanser rett og slett

De viktigste områdene Elkem Materials sitter på i dag, det er

1. Det ildfaste materialet som jeg var sjefen for å utvikle i sin tid. Det omsetter for ca en halv milliard. Til stål og slikt. Og det er gjort i samarbeid med store krevende kunder hvor vi hadde kjempemye problemer. Og de problemene var lykken, rett og slett. De kom til oss med poser fulle av treflis og kjettinger og hva som helst. Og etter hvert så ble det sånn at noe virket veldig godt, og noe var ren katastrofe, og hva var forskjellen? Og så jobbet vi med det, inn på ganske avansert overflatekjemi og inn på det, sånn finmikroskopiering, og se på morfologi og sånt. Og selvfølgelig mekanisk rensning av treflis og alt det der. Det gjorde at vi over tid utviklet et produkt som var helt genuint, og som er industristandard i dag, altså 971.

Det var dette med agility som jeg sa, altså å gå ut og prøve. Og så endre underveis, uten å lage dette himmelske skjemaveldet med møte hver 3 mnd og sånt.

Så jeg snakket litt om åpen kontra lukket innovasjon, jeg behøver ikke å gå inn på det. Og jeg snakket om porteføljetenking og å spre ting over tid.

Punktum. Da var jeg ferdig.

Dette er jo akkurat det som jeg gnager på, så jeg føler at ting kunne vært bedre.

Jeg ser et poeng i at det er ikke en Elkem-ting, det er verdenstrend i makroøkonomien, og en nasjonal trend, og Elkem er midt oppi det.

Men samtidig - nå har jeg snakket med noen allerede - og jeg synes det er ganske store forskjeller mellom Silicones div og Materials, hvis man tenker det som enhet - Så noe er forskjellig der fra resten av Elkem. Og det er litt spennende: Hvorfor det er sånn?

Da vi etablerte dette stagegate systemet, så hadde vi den diskusjonen. For det gjaldt jo oss og Si div, vi ble jo slått i sammen. Og da var det lik at de som jobbet med innenfor silisium, de drev nesten ikke med produktutvikling i det hele tatt, det var stor sett forbedring av prosesser, det var det som var deres fokus.

Men det synes jeg er interessant, for meg ser det da ut til at i Materials, selv om kanskje trenden har avtatt, så er man i større grad flink til å gjøre begge deler, disse begrepene explor and exploit. Det er mye mer å se av at det er litt av begge deler der, enn i for eksempel Carbon, hvor jeg holder til.

Ja, hva er situasjonen i Carbon?

Der er det jo veldig tregt, vil jeg si. Det tror jeg vi sliter med - kritisk masse som du nevnte. Og kanskje risikoaversjon, en kulturell ting. Kanskje en overordnet strategi om at her skal det ikke investeres noe. Eller, det er ikke helt riktig det heller, for det er jo investering i en ny ovn. Men det jeg lurer på er hvorfor, hvorfor har vi blitt så firkantede inni EBS tankegangen vår, at vi har sluttet å tenke på nye muligheter? Hvorfor har det blitt sånn?

Det er, jeg tror, var inne på at kulturen innenfor sånne selskaper som tradisjonelt Elkem, lett kan gi et fokus på kostnadsreduksjon og sånt. Og det å skulle drive salg og sånt det veldig mye .. kostnader; få enklest mulig logistikk og sånt. Og det er

vanskelig i en sånn kultur å.. Det er jeg husker veldig god, vi satt der oppe og vi solgte til betong, og så var det noen som drev å skulle lage verdens sterkeste betong, og drive med ildfast materiale og alt det der. Så sa han: «Ta å del det i to. Send salgssavdelingen - de som driver med logistikk skal sende og sånt - en etasje under. La de sitte der og jobbe for seg selv, og så ansett 35 sivilingeniører som driver aggressivt med produktutvikling». Det siste var knyttet til det å ha kritisk masse selvfølgelig. Kritisk masse er veldig viktig. Når du sier at Materials nå er imponerende, så synes jeg ikke det lenger altså. Det er fordi de er alt for få. Og de har også... han Jordan er jo prime example på en som skal ha strukturer og sånn, ot bruker mye tid på det. Jeg vet det for jeg var konsulent og skrev strukturen for ham.

Jeg ser på en måte en naturlig tidsutvikling der. Både silicone-virksomheten kanskje, de har hatt et marked som har vært krevende og internasjonalt som beveger seg fortere, de har vært nødt til å utvikle ting. Materials også, man hadde jo dette produktet som man skulle utvikle og man var nødt til å finne noe, da er man jo nødt til å være eksplorativ. Og så blir det etablert, det blir en suksess og så kommer man inn i den dagligdagse rutinen på en måte, og så jobber man mer og mer med kontinuerlig forbedring, og så er det akkurat som det størkner litt. Det blir mer rigid. Og så er kanskje spørsmålet da, hvordan motarbeide det? Og så et annet spørsmål – på verkene våre er det jo veldig EBS fokusert – vet ikke helt hva jeg skal frem til nå.... Må det være sånn? jeg ser meg at EBS burde vært mere eksplorativt også i sin, jeg kaller det EBS da. At man...

Jeg snakket med Jordan og da snakket vi litt om EBS-ting. Og til og med innen disse prosjektene så har man kanskje en tendens til å jobbe hardere i stedet for å jobbe smartere, hvis du skjønner. Det er to begreper. At man ikke er så åpen for utvikle EBS og i sånn Agile. At det som egentlig skal være den kontinuerlige forbedringen har blitt så liten.

Ja, stage gate er jo EBS satt i system, og det jeg sier ar at det strider imot slik som verden utvikler seg. Det er ikke sånn utvikling normalt skjer. Det skjer mye mer ofte disruptivt sprangvis. Og det går ikke an å skvise den inn i systemet sånn uten videre. Det tror jeg er en teknikk en måtte ha i så fall.

Og det andre som er her, at vi må få ledelsen til å forstå at det tar lang tid å utvikle nye ting og at det krever mye penger. Det nytter ikke å sette av et par 3 millioner og skjære ned til beinet for å spare penger. Og så hvorfor er det så vanskelig å få til? Og da er det

jeg lener meg på dette overordnede kulturen igjen, ikke minst lønssystem for sjefer. Det tror jeg er en bremsekloss.

Det har jeg også en tro på. Og personlige bonuser og sånne ting, det dreier jo hvordan man jobber og det er jo det det er ment å gjøre.

Det er en grunn til at de har de bonusene, ikke sant. Og det er veldig stor fokus på disse store selskapene med nettopp aksjekurs, typisk sånn kortsiktig orientert. Så overordnet igjen, så er slik at finanseøkonomien som har overtatt for realøkonomien i stor utstrekning.

Men et direkte spørsmål. Tror du at vår filosofi - hvis vi kaller det EBS, vår forretningsmodell - er til hinder for oss i innovasjonsarbeid?

Ja, jeg tror den kan være det. For det første så er det veldig fornuftig i forhold til å drive produksjon, rasjonelt og strømlinjeforme alt mulig annet. Men i den form jeg har sett det i Stage gate systemet, så tror jeg det er et dirkete hinder for å komme noen vei.

Og hvorfor skal man da på død og liv da trekke det videre fra prosess og produksjon og.. Der tror jeg Elkem har en kjempe konkurransefordel, i forhold til andre produsenter. Men så lurer jeg på om vi trekker det for langt eller om det er en kultur som ar satt seg og som har smittet over.

Ja, jeg synes jo det. Jeg har vært i Carbon jeg også, noen år tilbake. Det ble opprettet en divisjon i sin tid med Elkem Materials og Elkem Carbon, også de grunnvirksomheten av nefelin og sånt. Og det var Gunnar Kulia som var divisjonsdirektør eller teknisk direktør og sto for utvikling. Hva skulle jeg si om det det... Jo!.. Også den gang, jeg huker ikke omsetning, det begynte i 1990, det var på rundt en milliard og det var solid overskudd, og da sa HK, vi diskuterte i hvert fall med HK: 35 mill av det hvert år kunne brukes, settes til side så vi kunne finne på nye ting. Uten at det var noe krav til EBS.

Det var ikke så lenge det var sånn, det kom inn nye mennesker. Gunnar sluttet først i jobben, og så sluttet Ståle Myre i jobben og så sluttet jeg i jobben. Og dro til Grimstad.

Ja du har vel vært ut og inn noen ganger

Nja, bare 2 ganger strengt talt. Så noen ganger er vel litt.. Jeg gikk under en sjef som var her, Marius Steen. Vi var 5 stykker som gikk samme dag.

Men når jeg føler at Materials får det litt til, så har de fått det til enda bedre før

Nå må jeg si at jeg sitter på utsiden av dette nå. Men jeg synes det har vært utviklet forferdelig lite de senere år. Ved siden av Microsilica som kjenner, så tok vi også tak i et biprodukt fra Sauda og Porsgrunn, ja du var jo borti det for tusane. Det ble brukt til magneter og ferritter og sånt. Vi solgte vel en del av det, men så disse her forbaskade folk som driver med TV kom på at de skulle ikke lenger ha den tuten bak. Så det falt bort.

Men det viser jo viktigheten av å fortsette å innovere, plutselig er det sånne ting som skjer i markedet.

Ja, det er det pussige her. Jeg husker tilbake til tidlig på 90 tallet eller en gang der, så ble jeg ringt opp av en tjommel som sa at nå hadde de litt kontakt med Statoil, og så sa at de hadde store problemer med en av disse jeg husker ikke hva han hette – et av disse feltene - ikke Statfjord... det spiller ingen rolle her. De måtte bore seg gjennom grunn gass, og de satt på en tikkende bombe. De var livredde for at gassen skulle lekke inn i olje – ja, ved siden av oljebrønnen og utenfor den såkalte casingen, og det er katastrofe hvis du er oppe og borer der, og det kommer gassbobler. Da mister riggen oppdriften og synker. Og selvsagt hvis det kommer gnister oppi de gassene der, er det en blowout, og meget farlig. Så de lurte på... og det viste seg at å bore ned i sånne oljebrønner, så setter du ned et stålrør, kalles for en casing, og så propper du til på utsiden mellom casingen og formasjonen, eller bakken om du vil, med sementmiks. Og det viser seg at den ikke er gasstett. Den får en viss krymp over tid. Og så var spørsmålet om man kunne gjøre noe med Micosilicaen. Da vil det kreve faktisk at det sto bare 3 mnd eller noe sånt da faktisk på et laboratorium hos Statoil . Og vi hadde en ingeniør der, og Statoil hadde en, og klarte å lage det. Og det er jo en stor suksess og det er basis for hele offshore virksomheten til Elkem i dag. Som jo ligger nedi Dubai og det området der, og vi tjener søkkande mye penger

Og så et poeng i det. Samtidig så fikk vi inn dette morstøvet fra Sauda. Det er også små runde kuler med veldig høy egenvekt; 4,6-4,7 eller noe sånt. Og vi sto og jobbet med det. Så kom Statoils ingeniører inn og sa «Skulle ønske vi hadde noen små

Microsilicakuler som var 3 ganger så tunge». Og det hadde vi! Jo, men det er sånn litt tilfeldig. Det skjedde...

Man må likevel være der ute og være i dialog med markedet og fange det opp.

Ja det må du altså. Og den strukturen man har begynt med etter hvert, at det er selgeren som skal ha kontakt med kunden, den er dirkete hindrende mange ganger. Du får ikke til en... for det første sånn at de som er i salg ute nå de har en salgsplan, så og så mange kunder, de er målt etter hvor mange kunder. Nesten sånn som de jeg hisser meg opp over stadig vekk, kundeservice hos Telenor. Jeg vet godt hva de er målt etter; det er kunder pr time, ikke kvaliteten.

Men også det at et krever ganske god innsikt å få tak i disse løsningene. Så vi brukte i hele min tid i forhold til markedsføring, som var teknisk uhyre avansert, mange av de med doktorgrad og sånt. Og det betydde at når vi kom til møtet i USA eller noe sånt, så satt du ikke der med en innkjøpssjef, men du satt der med 16 teknologer. De ville høre på hva vi hadde av nye ting. Og de kom og sa: «Hør her, her har vi et problem». Så den delen var ganske viktig, og det tror jeg er ganske godt beskrevet i doktorgradsarbeidet også.

Det er litt spennende også. Sånn jobber vi absolutt i Carbon med elektrodemassee. Salget er det stort sett teknisk support som gjør. Jeg tror nesten ikke det er helt forstått i vår egen divisjon en gang - på toppen - hvor viktig den biten av salget er. Så det er veldig bra. Men så har det på en måte overtatt for produktutvikling, fordi man har hatt... sikkert det med kritisk masse og forskjellige årsaker, så har det vært jobbet veldig lite med produktutvikling. Og utvikling ville ha krevd veldig dyre løft i form av investeringer i fabrikken. Og siden vi ikke kan gjøre noe på produksiden, så har vi gjort desto mer på kundeservice siden. Vi er kjempeflinke på det. Det tar oss så langt, men ikke lenger. Og så er det noen konkurrenter - som alltid finnes - som plutselig får litt vind i seilene og finner på lure ting. Og da står vi der, og da blir det i hvert fall dyrt når vi ikke har jobbet med det på 15-20 år.

Kan jeg spørre hvordan det går med kulltjære bek..?

Fra salg og marked har vi mast om det i mange år, at det må vi jobbe med. Jeg tror vi ligger 5 år bak konkurrenten som tok det der alvorlig med en gang, Det gjorde ikke vi. Og hva er det for noe - hvorfor er det sånn? Er det en kulturell ting i Elkem, eller en personlig ting i

Carbon? En kombinasjon sikkert. Eller er det for dyrt? Det viser seg at nå satser vi på det fordi vi må, vi bare kom så sent i gang.

Det var jo en visst tid siden en måte å klassifisere på i store konsern, så skulle ulike bedrifter ha ulike roller og noen skulle fungere som en cash cow, skulle bare tjene penger. Og det er mitt inntrykk; at materials har havnet der, rett og slett vi soper inn så mye penger så man ser ikke for seg at det skal blir noe stor sak. Det kan hende Carbon også har havnet der.

Det føles absolutt sånn. Men nå skal vi plutselig investere i en ny ovn. Men det er kanskje bare for å gi den kua litt mer føde så den kan fortsette litt lenger. Og det kan være helt ok strategi det, men jeg synes det hadde vært mer fair at det var uttalt at man visste hvor landet lå.

Jeg trodde dere var inni mye fint nå, som grafitt og dette og sånt.

Og det er jo det vi gjør nå, fordi konkurrentene får til et produkt som er mye bedre enn vårt. Dessverre, vi kan ikke late som vi ikke ser det. Men det er så skrekkelig dyrt å gå gjort dette, Råvarer er dyre, og vi har et oppsett som kun er laget for å kalsinere antrasitt. Og det er veldig tungt og vanskelig. Som da selvfølgelig er grunnen til at vi ikke har utviklet noe særlig de siste årene, fordi det er så store løft. Og så kommer Stage gate prosessen, og så skal man vise til at kanskje de 2-3 neste årene skal vi selge så og så mange mere tonn, men det blir for lite i forhold til å forsvare en så stor investering. Og så kan man si «Jammen, skal vi være her om 15-20 år så er vi nødt til å gjøre det». Men den tanken slår ikke an.

En liten pussighet, som nesten sikkert bare er et slag i luften, at jeg har misforstått.. Men jeg har jo vært litt borti innovasjon Norge, og de kom trekkende med en russer, en Simon Loginv som skulle drive med cracking av naturgass. Først, senere ble det biogass og vil si at han kjører inn i en reaktor og så får han felt ut et fint karbon, akkurat som Elkem har gjort også, og så får han hydrogen som biprodukt. Og det man var interessert i, var om man kunne utvikle og bruke biogass som råmateriale, som reduksjonsmidler for smelteverksindustrien. Og da tok han utgangspunkt i trekull, og så kjørte det i en reaktor ved ca 1000 grader og ulike temperaturer man eksperimenterte med og sånn. Inn med metan en av dem, og da er det sånn at metan kracker inni der, og det fine karbonet settes av inni porene i trekullet. På den måten så får han opp bulkvekten på den og senker reaktiviteten noe, og så får han ut rent hydrogen. På laben her oppe så brukte vi en induksjonsovn og et grafittør rundt, og

satte i gang. Og så oppdaget vi at etterhvert så fikk vi unaturlig høy temperatur inni. Altså det skal være amorft det som avsettes inni der. Det begynte å ta veldig mye strøm inni reaktoren. Og da vi tok det ut, så hadde det en gråblå konsistens som kunne tyde på at det hadde grafittisert ved lave temperaturer, 11-1200 grader. Så jeg tok kontakt med Øyvind Mikkelsen, for å få analysert det og sånt. Det har han ikke gjort. Jeg spekulerte på om det kan være noe sånn katalytisk. For at i sin tid, så husker jeg i K-ovnene, at du måtte jækla høyt opp i temperatur før du fikk noen grafitt av betydning. For det første er det preget av traktstrøm og ikke massestrøm. Det er senter som beveger seg nedover. Jeg kjørte i sin tid et rør inni der og tok ut prøver og målte diameter, og fant ut at det var en liten kjerne i midten som var sterkt grafittisert, og så falt det ned til nesten ikke noe. Jeg fant også ut at det var ganske stor forskjell på petkoks som råstoff og antrasitt. Men det pusset meg akkurat det der, at han Loginov har en metode for å lage grafitt ved lav temp på ett eller annet vis.

Det var interessant. Men det er ikke gått noe videre på det?

Nei, jeg nevnte det også for han Sten Yngve Larsen, som nå er oppi Trondheim og jobber for Eramet. Jeg jobbet halv tid for Eramet i sin tid.

Ja gjør du også det?

Ja, hvem gjør vel ikke det

Ja, jeg hjelper dem med å finne anvendelser for slaggen.

Det er en liten verden, jeg føler at vi er stort sett i samme familie, Eramet og elkem.

Men det var et sidespor.

Hvor var jeg... Jeg skal bare tittle på spørsmålene mine. Det er vanskelig å stille konkrete spørsmål for det er vanskelig å definere hva jeg egentlig lurer på.

Men jeg lurer på om Elkem gjennom de siste 20-30 årene har bygget opp en kultur som ikke femmer innovasjon, men som i sterk grad fremmer kontinuerlig forbedring i stedet for, og at vi ikke helt får til å gjøre begge deler.

Ja, jeg tror jo det . Men om det er EBS som er årsaken til det, eller om det er de andre faktorene er jeg litt usikker på. EBS i seg selv er ikke dumt. Men det kan være kontraproduktivt. Jeg vil påstå at det har vært det når alle prosjekter skulle siles

gjennom Stage agete systemet. Nå tror jeg de har gitt opp det Stage gate systemet. Og jeg tror at de har andre løsninger. Det er i så fall fornuftig.

Jeg hører at det er litt på vikende front, eller at vi tenker mer sånn Agile. Og det ser jeg litt på som redningen ut av det her. Jeg håper det blir en filosofi som pushes like sterkt fra toppen som det EBS filosofien har vært gjort.

Sett bort ifra at det kan være komplementære.

Ja, jeg mener at man skal absolutt fortsette med EBS. Men ikke bare det, men at man ser på agile i forlengelsen.

Det synes jeg høres fornuftig ut. Og så må man tenkte stort og komme vekk i fra et belønningssystem. Det virker kvelende.

Det tror jeg kan være veldig vanskelig å få til.

Jeg husker vi hadde en diskusjon tidligere fordi man tenker som så at nå har vi den og den avkastning av kapital slik vi driver nå, og hvorfor skal vi da hive oss inn i noe som er veldig usikkert . Og svaret på det har du implisitt sagt. At da tar du for gitt at du kan fortsette med samme business til evig tid, men det kan man ikke. Spesielt du i Carbon kan ikke det, da dør du. Og det ligger ikke inni regnestykket for alternativene.

Og vi tenkte som sånn at forretningsutvikling og innovasjon er noe vi skal se på som en forsikringspremie. Hvis du er inne på forsikringspremie, så er ikke det lønnsomt. Det er derfor forsikringselskaper kan drive. Men konsekvensen av en brann er såpass stor at vi gjør det likevel. Og det ligger også her, tenker jeg.

Det var et veldig fint bilde.

Any time!

Det vil jeg gjerne få lov til å få sitere deg på

Ja, men det må være en fotnote på, Dåstøl 2020.

Interview with F

(...)

We have a long term target, a theoretical target. We say that roughly 60% in blue, 30% in green, 10% in the red. So we start with that. And then we have - for planning out the next year, we have a budget that shows how much time we will use in the blue, green and red. Did Eric show you that?

Yes. And that was to me, coming from the Carbon div, I was very impressed by that

That. s nice to hear.

In materials we have really the same people working in all 3 boxes. So I guess there's a couple of ways you can be coming at this, I'm coming at it from Materials which isn't really focused so much on the plants. So we have these existing business segments which are now earning a lot of money. So we end up spending a lot of our resources on sort of defending; dealing with synergy cases, and dealing with technical support for existing customers and existing products, and formulations that are within the core knowledge and stuff. That stuff's urgent but not always the only thing that is important. So then our new product development takes longer and longer time as we have more and more issues with for instance increasing the yield in the furnace which is making the microsilica quality worse. So that means we are spending more time dealing with that. So we are dealing with the exploiting of today's resources, and loosing resources for exploring.

And this is something that came up with Inge coming in, because he really wants to separate between specialties and commodities. I thought we weren't allowed to say that...! I saw that even on his intranet post; He called them commodities. And so, just called it wat it is. But I was surprised he did.

So that interesting. And I think that was good idea. Because I think if you want to either grow specialties by exploring new market segments, or if you wanna grow new technology or something, you need to set aside resources for that in a separate group, like the battery project in Carbon I guess. And that makes sense. Because I see that there's a really tough interplay. But the conflict there, that you run into is... - it's really nice to be connected all the way along, so I think it's very nice that we have the same people working on product development that are also working on customer

support and also technical support for the plants, because then you really understand what's possible even with our production constraints, you understand what the customers need, and you understand how the product development is moving along.

I have a feeling that in the new organization, Silicon Products, we'll be separating technical customer support from new product development. New product development think will go under some innovation function. I don't know that that's the case, but I get the strong sense that that's what Inge will do. I think there are benefits and drawbacks to that.

Yes, I would agree. I do absolutely see the link; you want to develop something that is – the idea would have to come from the customers.

I guess he's real focus – I'm sort of reading between the lines here, I don't have all the details so I might be wrong, but he really wants to focus on innovation and he really wants to focus specialization. So I think he sees that dilemma of today's problems taking away from tomorrow's solutions. And so I think that's why he's trying to separate the two. But it could be... provide and add additional short term challenges, I guess.

That's one thing. And the other side is, if you look at the plants, it's very much "How do we sell out the volumes; how do use today's production technology to the best way". It'd be interesting to know how it happened in Carbon. If you just look and you say "We have x number of calciners and we need to sell them out", and then find out that "Oh, maybe a different production technology is important for producing - maybe the Elgraph process isn't the best process for producing the raw materials for batteries". Then you start thinking, not EBS, but new product development, new technology and all that.

In Carbon, I think the main problem is that it's so expensive, we need such a big lift in equipment, and investment is huge if you want to change anything. So that's why it's been lagging behind for many years.

Yeah, it is probably a process industry colandrome (?). If you put x number of millions or billions into – I remember when I was in business school, we always learned about intel. I think it's changed a little bit, but to build an new fab costs billions of dollars, 3-

5 bill dollars. But what they were doing, was to copying exactly. You create a fab, you get a production chips or whatever, and then you copy that technology exactly until you jump to a new technology.

Coming back to the 9 box... We try to balance, and we try to balance by setting targets. By setting general targets and then specific targets. When Robbie really hits the road, as soon as there is a synergy case, it all falls apart. I think you need to dedicate resources in some way, to exploration.

From what I see from your division, it seems to me that you are already in the stage where you do actually do both Because your strategy tells you to.

So my first question; "Are we doing both?". I feel that the answer to that is "yes". And the next question is "How do we manage that?" I'm not sure if this is the same in all divisions in Elkem, but at least Materials – I don't know if we should separate between Materials and Silicon.

Yeah, that's old thinking, I guess. But my responsibility is just Materials. I work closely with Tommy. That just my on sort of blinders I guess.

I do think we do a very good job. But it makes me concerned a little bit. Because I think about 15 or 20 years ago, I think they did an excellent job. You don't have to go back that far before it wasn't making any margins. And so it was about building up a business getting rid of some waste, and then trying to exploit potential value creation by finding higher margin application and higher margin specialty products. And you get to a point where you are making 300 mill kroner and your almost the size of a small division. So then maintaining that, milking the cow or whatever, becomes really important. So then new product development and new exploration becomes harder and harder. Even in the 4 years I've been here, I see that it's getting more and more difficult every year because the customer base of existing bus becomes bigger and bigger and bigger and demands more attention.

So it's not really related to EBS directly?

In what way?

I would like for my thesis to be able to say that it's because we do so much EBS that we are not able to do the exploration. But to me it sounds more like its critical mass of people or resources.

I guess I was thinking more about organizational design. Urgency vs importance, that sort of thing. The innovators dilemma, that concept.

EBS vs ... That interesting. Because for the longest time, Wayne Faaland said "We don't need all this innovation stuff, we have EBS". I remember when I was first learning back in the days, there was a lot of talk about step change versus continuous improvement. There is no reason why EBS should...

Toyota has a new product development process. Probably outdated now.. They focus a lot on concurrent development. So it's about rapid prototyping and that kind of thing. So it's basically applying EBS principles to innovation. It's another way of thinking about it.

I do see that there's reluctance too. I think one thing that is interesting, is the cultural side to it. I noticed my own reaction when I learned about agile and scrum. For instance, if you look at the principles of Agile; They say that "We focus on people and interaction over tools and systems". And my first thought was "No that's terrible". Then you think about it some more... When you talk about people working in innovation or product development, they always think they need to be free and creative, so they resist all the process and tools and systems that EBS provides. That's really... some conflict there. But then, an EBS guy would then say that "The structure will allow you to structure the routine stuff, so that you can spend the time on the innovation". So it's not prohibiting. Maybe there's a mindset into there.

I think what I'm searching for is the culture; has EBS colored the culture in Elkem in any way?

I suppose it would then have colored... Like in Materials, there's less tradition I think for EBS. So have people been less colored? Or is the culture less EBS-ish?

Yeah, I think that's a point.

But how to investigate that – that is my big problem.

Anecdotally, I can say that's true, because I had my EBS glasses on when I started in Materials, and had them knocked off my head a few times. So for sure, that's the case. Now how to explore that let me think...

Thank you, you're doing my job..

My personal philosophy is that there is something in the middle. I believe in that "Systematize some of the stuff, so that you can be innovative in the other stuff". One good example is - we are putting in an idea management system, the Wasoku system. It's helping us with our work flows, and idea management t becomes one thing we do with new product development. We come up with 100 ideas and then they sit there for 3 years. We talk about them for a little bit, but we never progress any of them we just have lot of new ideas. And so we're trying to apply.... And I think this is part of agile as well, and scrum. I see that this is the same you - sort of create a CONBON. You'd say "We can only work at two ideas at the time. Once we dismiss those two ideas, we will take two more off the cue and go through it". And there's systems and tools like that that keep you moving forward. But you can still do it in a sort of loose creative way.

Looking at culture; maybe it's easier to look at difference between, or contrasts within Elkem, to try to say something

I think you know Magne Dåstøl?

Yes

He has many thoughts about this. He was part of the - you know back in the days He has retired. Most of the people that are popping into my head that would be really interesting about this are retired actually, many of them. Because I would say Magne would be a good choice, Tor Søyland Hansen and Bjørn Sandberg. I think those 3 should have lot to say about this.

They would be coming all from the Materials division... I would be interested to look at more the contrast between that and the traditional plants.

From your perspective – you haven't always worked with Material; was it the EBS center before, towards all Elkem?

The EBS center for a little bit, yes. But from the EBS center I have been working largely towards Silicones and Materials. Of course carbon in the beginning.

We'll just focus on that – compare your thoughts on the culture that you see around you, with other people's thoughts on what they see around them, in different division, and then I can compare.

It's good that you interviewed Erik of course, because he's doing a lot to leading the culture. What he provides a lot of times, is quick decision not a lot o bureaucracy. A culture where it's ok to try something else. And fail. It's ok to take risk.

The Agile philosophy?

Yes. You mentioned in Carbon you have the big expensive calciners. We don't have this in materials. A million kroners is a huge investment for us. We don't have a lot of assets, which I think probably makes it easier for us to explore more business segments and things. We don't have this giant capitalized base that we have to keep fully loaded.

But we do get a 100 000 tons of Microsilica every year, that we have to get rid of. I don't know how many resources that takes. It's the construction guys.

Concerning follow-up and how things are managed – You say that all of you worked a little bit on all types of projects?

Yeah.. Certain people are more idea people and certain people are more practical by nature. So people are leaning in different directions.

One point there is critical mass. I think sometimes that's one challenge – to have the critical mass in order to be able to work and stuff. When you have a portfolio of... Well when you think about investment in higher capacity for an existing market for instance, you can just sit down and do an NPV and then you can run a project and then you can implement, and then you get an ROI on that particular project. When you say that we're gonna go into a new segment or gonna develop a new product, you have to imagine that your failure rate is gonna be really high. Probably, if you have a portfolio of projects, the NPV of any given project is negative, but the NPV on the portfolio is positive. This is real options value evaluations.

It's the same in oil companies, or producing movies, it was the example that was easy to understand. Any given film - when you buy the rights to the film, NPV on that particular film was probably negative because most films don't make money, they lose money. But then you have a block buster that makes up for all the others. But you don't know which one it will be in advance. So you have to have a critical mass. You have to be willing to take on 20 projects and have 19 of them fail so that nr 20 page for all of those, and you earned a new business segment. So it's a completely different mentality than "we're gonna add another reactor, another calciner or something, and then we'll worry about adding up enough volumes to fill it.

In one your buying enough lottery tickets to make sure you win, and the other you just buy one, but you check it out for ages..

Yeas, or you buy treasury funds.

If you look at the different projects - are they follow-up or handled differently; the core once vs the new ones?

Not differently enough. But we try to have sort of a sliding scale. So we say that the business case required is gonna be relevant to the size of the investment, and the amount of risk taken on, and also relevant to our level of knowledge about the outcomes. So we re not as good at systemizing that as we should be. In oilfield, there we had a couple of investments recently. Small investments. Build a mix and fix plant in Abu Dabi, that's one kind of investment. And then we started a project, like a million NOK, to invest in a new application. And the process is very different in those two. One is pulling money out of a bucket of funds, and in the other one you're applying for capital investment and all of the bureaucracy that comes with it.

So the latter would demand much more of the business case?

Yes. At least it's been pretty good for us, and Erik is side (?). It's not written down a specific budget. or if it' under a certain amount and totally within last year basically, last year's budget, and within the scope of our typical spending. Then it's ok, we just do projects. We have sort of an informal approval process and then they get followed-up on this weekly process. So that's no problem. If I want to buy a 100 000 NOK piece of equipment for the lab, actually I have to do a lot more bureaucracy than if I wanna spend 10 times on that on a project.

It goes together with the risk?

Yeah.. it a way to measure our ROI.

Do you think that how Materials is handling risk is different to other unites in Elkem? Or is it just what you said?

It's a little but hard to know, I would guess so. Materials is just so different from the rest of Elkem. The profile of the people in Materials is so different. We have a couple of people doing the operations, but it's mostly sales and marketing and R&D and supp chain, almost a sourcing and trading type of business.

When coming from the EBS center – how mature would you say materials is when it comes to EBS?

It depends on the kind - the part of EBS. If we consider traditional EBS, I would say Materials doesn't do a lot of that. There are parts of EBS, if you take customer value management and these things, Materials is very good at that. And I would say in the labs and things we are very organized and very neat.

If you think about the Materials division or the Materials part of your division: You could almost say it's a market and sales group or trading activity, and the others are much more production oriented. I think there's a big difference lying there. If you think that we could have a hole department in Carbon... But our sales department is 3 people, whereas... If you think about Microsilica as a production unit, they have a hole bunch of people working just to get rid of the production.

Yeah, and it's a little bit funny, like that plants have profit and loss, but the... I'm just remembering Carbon, it seemed like there was always a competition about which plant was earning the most. I don't know maybe that's the right choice for the way carbon is organized.

I feel like I'm colored a little bit here, being a former EBS guy. It's one thing to think about operational outcomes. But sales and marketing and customer focus... So maybe there's a... EBS gets in the way of that.

Or they are fighting each other in a way? – From the market side I would like to have 10 different products, but that is a problem in our production because it would mean 10 times the warehouse and everything would be much less lean. The production would be more

complicated, so there this constant – maybe not fight - but we're pulling in different directions.

I would say that maybe a little bit of it is misinterpretation of LEAN by EBS. Or misinterpreted by persons using EBS. Because in of the main principles, from most programs, is you start with customer needs, then you're designing the system to meet them. I think LEAN talks about minimizing inventory, but not about minimizing inventory at all costs. It's about getting rid of the right level of inventory, because a customer doesn't care about inventory. And what's the minimum inventory to achieve the highest service level.

In carbon we have eliminated a lot of waste, and we are supplying our current customers with exactly what they want and need. Maybe a little less than what they want, but at least what they need. And we've been optimizing that, but then if they ask for something else, or you have a new customer asking for something a little bit out of the stream, that is very complicated. Because we have "leanded" ourselves so much. And everything that falls out of this standard process that we have, demands lots of resources, and then its very hard. And it has made us a bit stiff in the structure, so there is where all these ideas come from – from my side.

And then it's very interesting to see that in Materials for instance, it's not like this at all, it very different

I get the impression – I don't know if this is correct, but I get the impression on that competition is catching up to Elkem Carbon in some areas.

Yes, like our external competitors?

Yeah, maybe the quality gap is closing

I'm afraid it is, and then we need a step change.

What happened with green electrodes for example...

Just an example, it took like forever to get the division top level management to accept that this is important. And when we finally did, it was because we were more or less forced to. And then it was already late, because our competitor had already launched something. And we are still striving to eat the gap. But it's going on now, so we have a product, it has been tested at Bremanger, so we are launching. But we are really 3-4 years back compared to the others-

Or the other, there's just one. That too bad. That comes from.. I'm not sure, maybe just persons in charge, personal resistance to taking risks. I'm not sure.

I don't know. I remember when I was in Carbon, there was always talk about this paste plant in China that had a million tons of capacity. And they were just making all kinds of scrap graphitized materials and... I don't know the details, but it seems like we could never gain any market share at ECC because we are trying to produce in our standard way and we couldn't meet the market.

I know their anthracite isn't the best, so they're struggling a lot with that. They are very close to the source, but it's not good enough for electrode paste. So they have to work around that and it gets expensive

There something else, didn't I hear that Sarawak run just out of anode butts for examples, not really even have any calciners.

No, they just purchase already calcined from other parts of Elkem

So you run on just anode butts from anode plants?

Yes, like an addition, because it's also a struggle to get an anthracite that is good enough for the customers in Sarawak. And then it also get expensive.

....

Eric gave me a lot of insight in how it can be managed. Because I do think that Materials is doing both exploration and exploitation. I think he pointed to many important things. First it's on the agenda; like this many millions should come from new activities.

And there's the problem of critical mass like you said. And a response would be Agile; to be more agile, to make some short trials, or to involve customers earlier. And so I think there are some clues there, and I think that could be copied by other parts of Elkem.

I've been a little bit negative, but I do think that we have something to be proud of in Materials.

I think the culture is different. It seems to me... it's market driven, because it's said it should be market driven. It also sounds to me like there's some understanding of... the lab and the

process things they are more controlled in an EBS way, whereas the market work is more agile maybe, and there's less bureaucracy. And there's a name for that. It's called ambidexter organization. And I think actually you have that.

I shouldn't be so negative, because we do do a lot of good things.

I don't think you're negative

One thing I do react on being a former lean guy who is now an innovation guy apparently, is that there is no conflict here actually. Wayne obviously feels differently, but I think that there is no conflict between EBS and innovation and agile, it really isn't. It's all about interpretation underneath it. Like "Scrum", which is like the most popular flavor of agile, if you read the scrum manifest or whatever – it's all based out of lean actually. Its stolen from lean and it's just the language you speak it in. It's all the same principles, it's just spoken in a different language. And one is a little softer and easier, and the other one is about procedures and structure and one point lessons and... But the underlaying principles are very similar. There's no conflict, very little conflict actually. It's all about the culture side of it, how you package it and how you communicate it and how it's used within the organization.

And maybe the agile thinking is the natural continuation of EBS our LEAN?

Yeah If you really wanted to be simplistic about it, I think about Agile as EBS for sales and marketing and product development.

I feel that's been missing. I've almost always been working in sales and marketing. So all this talk about EBS, I feel left out in a way because I don't do any EBS directly in my job.

A "sprint" or a "hacathon" that's just a kaisen event. A "back-log" is a kanban. It's amazing, it's just the same things spoken in different languages.

This is something to bring into Elkem Carbon. I think the EBS or what you want to call it has been missing. A language and concepts that we can use, and maybe also learn from Materials.

It's just interesting, it's sort of like an anti-body response. You see it with, back int the day; with silicones versus traditional Elkem. That you have the sort of French way, and it is much more alive, I guess. The presentations were much more dynamic. The

people were much more dynamic. Many Norwegians are like “I don’t know what I’m being asked of”.

And you go the other way, and talk to the French and they say, “Ah, the Norwegians and all their boxes and their A3s”. It’s almost the same, Agile and EBS are two sides of the same coin. But if you all of a sudden introduce scrum to a production team, I think they would just... You have to be a bit careful, that’s my opinion.

Ease it in

Yeah or something, I don’t know, I know I had that response when I first started learning about this stuff. Like “what the hell”.

To me it’s all new, it’s not something we talk about in Carbon at all, I never heard any of those words said around here.

No, and it’s something we’re all just learning about I think. But in two years we’ll be saying these words all the time hopefully, or even in 1 year. But what pisses me off, is that scrum has been around forever. It’s been around for 12 or 13 years, and this is something that we have been talking about since – when I was in the EBS center, that was in 2014 and 2015 - we were talking about this. And my opinion, and there were others too, was that we should learn about it. We should pick one of the EBS coaches and go out and get some scrum training and be experts, and start thinking about how to use it. And the answer was “No, uhm uhm”

Really?

Yes

And that is interesting, why did they say no?

I don’t know, I don’t wanna even guess. But I find it annoying. I think its idiotic – that... yeah this could already be part of our culture, I don’t understand that. I guess it’s a cultural thing that we didn’t go out and do that.

That sounds like we have enclosed ourselves a little bit

I think some key people drew fast conclusion what innovation means and what these things mean and then... it’s like...

I think that points to something, a weak point maybe.

Yeah, it is actually. Because when I started in Elkem, I went to several EBS universities. First as a student and then as a trainee, EBS center learning, and then actually facilitating some. And I noticed that... Every EBS university at the end, they ask for feedback, and we got the same feedback again and again. And a lot of it was for example people working in sales, saying "This doesn't make sense to me. I think it's great, but I don't translate that to my daily job". And you hear things like this year in and year out and we don't do anything about it. Where's the continuous improvement in EBS?

OK, now I'm babbling.

PART 2

What were your main tasks as an EBS coach?

In carbon it was a little bit interesting. The role in Carbon -it was about, or I thought it was about, building up an EBS system within the division. And basically getting the EBS coaches at the plants up and running, and supporting with training and some workshops and project facilitation when needed. Basically being a support to the site EBS. EBS is best done when done locally. It's not something that people should come in and do for you.

So you were not involved directly?

So that's what I thought the job was. But in practice, what I ended up doing, was going from site to site doing projects and all the challenges you could expect were there. I would go to Brazil for a week or two weeks and do some work, and things would make progress. And then I would leave and they would go backwards. And so I felt like there was a little bit of wasted time there.

It takes time. I'd like to think it's not a waste, it just has to mature.

Yeah I'm sure there were benefits to the work done, I hope so.

But it always went better when there was somebody on site who was championing and taking ownership of these things. Like in Brazil, this Swedish guy, he took ownership of lots of the projects there and we made much more progress.

For my questions here it's a good thing that you were working with projects, because that's what I want to dig into. If you think about the 9 box, were all the projects in the core?

Yeah. I'm trying to think if there were any that weren't.

Did anybody come up with a crazy new idea that could be out of the core box, like a new technology or new product...?

No... no. Almost everything was based on planning and flow. I mean we were working on setting up improvement teams and that kind of thing. Did any ask for a step change? No, not that I can think of. I was working with plant operations and stuff, so there was nothing like step change

That's kind of to be expected.

Sometime there might be something actually.

Would you say that the balance, or orientation of the projects was – there could be a balance between market focus or production or other areas. It was like you said flow then, mainly?

It was mostly about doing today's work better. Efficiency and quality and things like that.

And do you have a feeling about the timeframe of that work? Like weeks, month, years from start to success?

For projects?

Yes

I would say an average number would be 6 months. Large variations, but that's the average I guess.

And the success rate for those projects?

Yeah, that's a sort of sliding scale of what's a success. I would say 50%. Should be the half in my opinion.

And those that didn't succeed – why?

I think everything succeeded a little bit. But there's some threshold like you should get enough return. I think the ones that didn't succeed was either due to lack of focus or sponsorship, or fires came up that you had to fight. This was very much with in my previous employer as well. We did a lot of EBS-like work, but also from product development, and we were getting a little bit more. Whenever some fire came up, the stuff get put aside and all hands on deck to deal with whatever the problem is.

It the same thing. Like how technical support takes away resources from new product development, it is the same here really. Fire-fighting takes away resources from improvement work.

That's very interesting, I read a paper. I could maybe send it to you, where they talk about working harder versus working smarter, and it's very easy to fall inn to the working harder trap.

Anectdotally, I can tell you that is often the case.

It's funny how often I have been working on things like that, where people say were too busy to implement this improvement. Maybe you've seen the cartoon: It's back in prehistoric time, and there's these cave men pulling a cart with square wheels and some guy comes around when he's like "look, I've got a better wheel" Like "No, we're too busy pulling this cart".

Yeah, but isn't the EBS all about that? Actually doing the smarter work, to improve?

Yeah, that's the fundamental theory, but you have this sort of activation energy. This sort of worse before better. That's one thing that people don't know; Like people say "Lean is about basically doing jobs with the fewest number of people possible".

Look at like the organization structure at Toyota. The five to one rule. At any layer of management, any manager, only has 5 direct reports. So they actually are a very non-lean organization and they do that purpose. So then if you have a lot of people, you have time to do improvement work. You have to have slack in some places in order to be able to improve.

So we're not always obeying our own EBS sayings?

I don't know that it's a violation, actually. Maybe, it's in violation with EBS, I don't know, but it's not in violation of lean.

And because for me, that's what it's all about: To work smarter. And to take the activation energy to do it smarter. But then, if that is not done, is it possible to give any reasons why?

Yeah, I don't know. There's a logical fallacy here in both improvement work and also in new product development. I'm maintaining my house. I just bought a house and we have to hire contractors to come in and fix the stuff, and we're suing the insurance company, We will get the money back. But if we had spent every single penny we had on the mortgage for the house and we had no free cash, then we'd be screwed. We wouldn't be able to fix up our house and make it better. It's the same - like if you have exactly enough people required to do a job, as soon as you have a problem, or as soon as you want to improve something, you can't do it.

It's the same as queueing theory, like a traffic jam. As soon as you put one more car on the road than it can handle, nobody can go anywhere. You've seen this in the time of Covid. People say if 10% of Norwegians worked one day a week at home, we'd have no traffic jams or something. It's amazing how small of the drop would have to be. You have to build some slack in the system.

There's threshold limit in a way, if you pass it..

I think this is really into something fundamental. I had this feeling that sometimes we do improvement work, very nice, and were able to make the organization more lean because we have made a good change and a really successful project. And then we are leaner, and then the next time a problem comes up, it's hard to do the same kind of "work smarter" the second time.

I agree, there's two major pitfalls. There probably a million, but there are two major ones related here. One is that if you have just the amount of people you need to do the job, you can't handle when unexpected variation occurs, that's one problem. And the second problem is that you can't commit resources to continuous improvement. And so then if you're not getting better, you're getting worse. So you need to have slack in the organization. And the other thing, I see that people do wrong, is that to do continuous improvement work.... or it won't be focused or aligned, because there's actually an infinite number of things you can improve. And doing some improvement

work is probably better the nothing. But if you do improvement work and it's not... if people are just all around improving little things here and there, you are not seeing any net gain, if you're not having an overall strategy. So it's much better to say that "We wanna increase the capacity of our line by 20%", or "We want to reduce defects by x", and you have some goal and then you do continuous improvement that work toward that goal, and you ignore the work that don't work to that goal. Because if you do a million small improvements that all contribute to different goals, you may never see any benefit from it.

I see that as a way of - if you have only bottom-up improvements, there can be good improvements, but they are smaller and you get lost. But there should be some top-down strategy also for the improvements.

Yeah I've seen people describe it as these two triangles that go abstraction. So your strategy abstractive should come from the top of course, and at the top you should have some sort of strategy process. And you should have leadership say that "We should accomplish these hairy goals". So then the guy working on the shop floor is the person - the guy running the molding line - is the person who knows where they can do improvements. But the manager is the guy how knows where we need more capacity, so where to guide the ideas and things.

So yeah I agree.

That sounds like the perfect way. How's your impression then around Elkem, are we able to do it that way?

I guess I've seen all cases actually. I'm not gonna name names, but I've seen situations where people have been sort of disconnected at the top. I've seen cases where top leaders are overly micromanaging. And I've seen somewhere in middle where they give clear guidance and freedom for people to move. So that to find a leader that can say "We need to accomplish these things", and to get people behind it, and then allow freedom to figure out how to accomplish those things. I've seen all types of leaders in our organization.

Do you think that's down to the person, or the personality, or is it a culture around that person, in a specific div for instance?

I also went to business school so I believe it can be trained. Leadership is something that can be learned. So I guess its maybe 50% just natural ability. 50% some kind of training and what leadership you had, and then some people are just neutrally good leaders. They just know how to engage people and take the best out of everybody. And some people just need to focus to do it, they need to be trained.

Then there's also culture. You could be a very good leader, but have a culture around you that doesn't fit. Maybe you just switch to something else, then...

Yeah but it's interesting in Elkem. Like especially in Elkem Carbon, because we have many different natural cultures like South Africa and China and Norway. Its very different... command structures, I guess you could call it.

Sometimes we come up from Norway and we believe we do it the right way. We have this very social democratic structure and we want to see that maybe, in the other areas as well. We don't really appreciate that there are big differences in culture and management style.

My impression - maybe it's even obvious - my impression from working in Carbon is that actually in both China, South Africa and Brazil, it's very top-down. Everybody expects their manager to tell them what to do. If they have a different opinion, they hide it and they just forget about it. To more or less extent, I mean it's an exaggeration. But in Norway, I noticed it's just the opposite. In the Fiskaa plant, I noticed that sometimes decisions are made, then people decide not to get behind it, and then just don't follow it. I think both are bad!

Leadership needs to set a direction. Underneath leadership or on top depending on how you draw your diagrams, they need to figure out how to achieve that objective. And then once the decision is made, everybody needs to align behind it. Whether they agree or not, as long as they have a place they need to now align. I think if we could get the best of all these cultures, I think we have something special.

Yeah we have, but that's hard. It takes a really good leader maybe.

Yeah we have some.

We have this EBS culture, do you think it has colored the Elkem culture? I'm thinking culture in terms of risk-taking, short term vs long term focus etc.

I think the EBS culture is colored by Elkem, and sort of amplifies and reflects. Like I was saying yesterday, I'm a little bit disappointed by ESBS. It's very nice that EBS is philosophy based. I think we did a very good job with that. We have a good philosophy. But then I think our tools are very just shop floor tools, that's all we use. I think that maybe that reflects something about Elkem. That Elkem is very much focused on the technologies, very much focused on production. Center of gravity in Elkem is the plant manager. Maybe that's reflective of EBS, I don't know. Because where I worked before, in the pharmaceutical industry. And in product development and sales and marketing, I mean operations can be quite expensive but it doesn't matter. As long as they produce products on time, the comp makes a lot of money based on their IP. Then you have different systems and you have different philosophies. So it might be that EBS is reflective of Elkem. And then it reflects back again.

Its two face of the same thing

But then getting silicones integrated, because of the French culture maybe, and also because they are closer to the consumer and therefor they have many more varied products and it's much more application focused than production technology focused. I think they have much more application focus. You could say the same about Materials maybe, and maybe that's unfair to Carbon, that makes it sound bad to the others

No, it's just different drivers.

And you see that. You see that positive side to what silicones bring.

I think this is really interesting and its really at the core of what I'm look for or trying to find out.

That's good to hear. Surprisingly good to hear.

I think there's really something there. We have this EBS in Elkem, and its very oriented around production, and that's natural. Maybe the Silicones and Materials could learn Elkem another way of thinking, or an extended way.

I think its actually happening over the last few years. And will continue. It'll be interesting. I don't know when you are finishing your thesis..

December

Maybe by then... I'm thinking with the new organizational change I think that might be another step toward market oriented organization and it might mean things will be different about product development and innovation. And interesting to see how it plays out.

I would like to see that happening. The only thing is that Carbon is getting smaller and smaller compared to the others.

Interesting to speculate.

We really have these critical issues, because we are small.

It's interesting with Carbon, because you have very steady cash flows and such a small division and on the side...

I think we also could do more. Its not a natural law that it has to be like this forever. Its stable, but we could still explore options.

Inge - my understanding is that he's very much innovation and business strategy type of person. Maybe Louis is an operations guy. So the future direction in Carbon... But Bjørnar is an innovation type of guy, business marketing strategy guy, so maybe he brings a lot.

Maybe they could have a good dynamics between them

That will be interesting.

Interview with G

(...)

For å få litt mere forståelse, for hvordan dette er , er det best å snakke med Emanuel Åt. Men fra mitt ståsted, det jeg har skjønnt siden... I dette Global innovation styret, så mener jeg det er mest inkrementale prosjekter. Mere blending, ... og dette er i samarbeidd med technical og marketing hele veien. Jeg håper at Emanuel synes at det er riktig det jeg sier. Jeg kan ikke detaljene hos dem.

Og hvilken rolle er det hun har?

Han(?) er FOU ansvarlig for Foundry.

Dette jeg har tenkt på, vi hadde en øvelse i management teamet for ikke så lenge siden hvor vi gikk igjennom alle produktene, eller ideene, i innovasjonssytet. Og de fleste havnet på det kjerne og adjacent. Det var ikke noe som vi mente var helt new, bort sett fra det Kirowak prosjektet som pågår i Chicoutimi. Kirowak Det er biomasse.

Dette har vi sagt at dette er helt utenfor vår boks, og egentlig kjerneområde til Elkem, og begynner å bli en del som vi skal... av strategiske prosjekter som vi kommer til å fortsette å jobbe med. Og da er vi på den på høyresiden.

Dette kom ikke fra FOU i Foundry, dette er jobbet med i Chcoutimi av en person som har tatt initiativet og begynt å jobbe med eksterne og da har det blitt et prosjekt som pågår på corporate nivå i samarbeid med Foundry.

Det er kanskje litt parallelt med batteriprosjektet i Carbon. Er det nye markeder også?

Du kan si at det er nye markeder, men vi føler fortsatt at det er ikke helt på – ny teknologi, adjacent market.

Det er som en hype. Det var noe som Elkem ikke kunne fra før, men som man har tilegnet seg etter hvert. Processprodukter som har samme prinsipp som Microsilica i sin tid. Som Microsilica, så lager vi det... vi prøver å prosessere det på sett og vis. Så det er et biprodukt, eller avfall, men det er mere verdiskapende. Men også process product har begynt å bli et område hvor man har satset på... et nytt område. Og tjener

penger på. Så jeg mener det kan klassifiseres som nytt. Man har behandlet en utfordring for å skape en verdi.

Og så har vi gått igjennom... Hvis du tenker på brikettering hvor Island har vært driver. Også en innovasjon hvor man ikke hadde tenkt på forhånd. Og det har med sirkulær økonomi å gjøre. Og jeg tenker at dette er også, si... er noe som er nytt, og som kan skape nye markeder. Ikke bare at du bruker billigere råstoffer, men at du også kan bruke det til å innføre en ny måte å jobbe på. Biomasse og sånt. Så process product.. man kan se for seg at det er en startgrop for mer sånn type tenkning.

Jeg så det kom et initiativ om circular economy på intranettet

Circular economy var nok ikke den opprinnelige tankegangen i Foundry. Det kom fordi vi hadde en del utfordringer med biproduktene våre. I stedet for å deponere, så «Hvordan kan man ta det i bruk slik at man kan skape verdi?». Og det har man klart i de siste 5 år. Før min tid.

Dette er jo... sånt som dette er gøy å få til!

Og så har man kjøpt opp en sånn incert også i England, som er også helt nytt.

Hva er det for noe?

Det er ingot'er som inngår i andre markeder. Men det også en ny måte... et nytt marked.

For 2014 var det slik at Foundry endret på strategien sin til å være mere markedsorientert. Og i sammenheng med det tenkte man nytt ihht der hvor man kan skape verdier med å komme seg inn i markeder som ikke er så langt fra kjernekompetansen. Og så har man organisert det slik at man hadde segmentansvarlige som tenker mere langsiktig. Og det ... (?) marketing. Og der har man også begynt å se på områder hvor man kan utvikle markeder i en større grad enn det man gjorde før. Og i lys av det kommer det mange nye ideer som man har satt ut i livet. Og det har på en måte hjulpet Foundry til å ha stor vekst, man har klar tå komme seg ut av commodity problematikken.

Ja, det er jo det det handler om her.

Ikke nødvendigvis nye produkter, men kanskje blanding/ anvending av nye produkter og bruke produkter i en annen form enn det man hadde tidligere.

Når du sier at fra 2014 var det en strategi om å bli mer markedsorientert. Hvordan gjorde man det rent organisatorisk, eller strukturelt? Eller verktøy?

Da ble det delt i regioner med business ansvarlige

Altså geografiske regioner?

Ja, geografiske regioner med business ansvarlig som har pr dags dato frem til i hvert fall juli har ansvaret for både produksjon og marked og slag.

Som følger produksjonsstedene, eller uavhengig av det?

Du har ansvarlig for Europa som også har ansvar for Bjølvefossen for eksempel. Bremanger - man har fremdeles post taphole delen av Bremanger. Og da har du FeSi som var på Island, og samarbeider godt med Rana. Og nord Amerika og Sør Amerika under ...(?)... Både Chicoutimi og Paraguay og salg og marketing der. Og så har du Asia.

Så er det sånn at man leverer litt lokalt innen de regionene, og så tilpasser man markedet, eller man tilpasser produksjonen i de regionene til det markedet som finnes i regionene?

Ikke nødvendigvis, Når det gjelder inoculanter, så selger du til Kina. Høyt potente inoculanter, så selger du til Kina for å beskytte segmentet. Det ville blitt kopiert der nede, og fått lavere pris. Vi jar klart å selge som høyt premium til Asia, med gode marginer.

Skjønner, og da er det en IP sak at man velger å ikke produsere det i Kina?

Ja. Så for de mest viktigste høymarginprodukter.

Det høres jo ut som en matriseorganisasjon, med produkt og regions.

Det kan du si. Og det er klart, man har klart å ta noen markedsandeler også i Asia som er det området som man satses på i fremtiden. Det er klart at det har man lyktes i stor grad med den type organisasjon som vi har prøvd i de siste årene. Man har lyktes med den modellen, egentlig

Ja, for da var det rett og slett litt omorganisering som ble gjennomført?

Ja, Eller 2015, jeg husker ikke. Jeg begynte i 2017.

Hva er din rolle oppi det? For du har teknologiansvaret?

Jeg som jeg sa, det er mere støtte til alle verkene vi har omkring i verden. Og kvalitet , EBS, delvis IP og støtte til alle prosessene våre, alle verk. Så det er det som har vært mitt ansvar hittil.

Og når man har valgt å være mer markedsorientert, så kommer det sikkert inn forespørsler og ønsker fra markedet som produksjon og prosess må finne en løsning på. Er det der du kommer inn da?

Ja, det kan du si. I 2017 da jeg begynte her, så begynte vi å etablere det jeg kaller KP team på divisjonsnivå for de kritiske prosessene vi har og hele verdikjeden. Og da er det fra oven til KSB (knusing og siling og pakking). Etablerte i tillegg et team som skulle fokusere på kundenes behov.

Som et egen team?

Eget team, som hadde grensesnitt mellom produksjon og kundene. I det teamet så var det representanter fra technical support, fra disse som er tekniske ledere på de forskjellige KP teamene, og selgere og både tekniske og selgere og markedsfolk slik at de kunne foreslå forbedringer for å øke forståelsen på begge sider. Og da har de klart å ha for eksempel som treningsprogram for 2 av våre verk, Bjølvefossen og Bremanger, hvor vi inviterte disse technical support eller folk som har produktkunnskap og kompetanse og kundens kompetanser til å undervise verk.

For eksempel en av tingene vi har klart å løse, er med knusing og sizing hvor vi har hatt en masse problemer hos kundene. Og da man begynte å forstå hvorfor man får disse klagen på kundenes side, med at ok, det påvirker deres prosess, og gir lavere utbytte, høyere kostnader, mere tid til å justere det osv osv. Og et har skapt mere forståelse på verkets nivå for å kunne levere innenfor den spec'en man har avtalt. Ikke hele tiden ta hensyn til hva vil bli utbyttet , eller hvordan er det fra produksjon sitt ståsted, men å forstå kunden. Og da er man mere fleksibel ihht til hvilke produkter til hvilke kunder man skal levere til. Om det er 10, og justere disse klagen og øke tillitten og customer experience ikke minst.

Dette var ikke tema tidligere, men har begynt å bli tema nå. Vi hadde business review med alle verkene før vi etablert dette teamet her, men det var mest på logistikk. Men altså produktnivå, mere på det administrative enn på full forståelse på hva kundene krever i de *produktene de produserer for hver enkelte*.

Den psykologiske effekten er kjempestor. Det er kunnskap, men det er også mye den.... Ja det psykologiske. Å ha en forståelse for at dette vi gjør er viktig fordi sånn og sånn. Den kjenner jeg mye igjen her i Carbon. For vi har litt samme problemstillinger og utfordringer. Vi har kunder som ønsker ting, og så er det viktig med en gjennomgang med produksjon av det om hvorfor det er viktig, hvis ikke så tenker de bare «Ahh, masete kunder». Men kunder ber jo ikke om ting for å være masete, det er jo en grunn.

Ikke sant. Hvis en situasjon ikke løser seg i første omgang, og man ikke klarer å korrigere det, og så går man i samme felle om og om igjen. Det er klart, det å forstå hva er verdien og gjensidighet og at også salg og marked forstår hvilke begrensninger vi har. Og vi skal gjøre noen forbedringer på produksjon sin side, så er det målrettet ikke fordi man mener at det er tungvint, det kan være et element, men at man prøver å forstå hvor går grensen. For alle de masingene fra kundene de ikke er villige til å betale for heller. Så da må man se hvor går grensen ihht at du leverer konsistent produktkvalitet. Til de verdier som skapes hos kunder. Forhåpentlig så klarer du å balansere mellom kostnad i produksjon og kvaliteten som kreves og er etterspurt av kunden.

Og der føler at vi berører et punkt som jeg i hvert fall kjenner igjen hos oss.. Min oppfatning av verden er litt farget av min vanlige arbeidsdag... Det dilemmaet man har mellom å ha en skikkelig effektiv produksjon som er størmlinjeformet med EBS opp og ned og frem og tilbake, og å ta hensyn til kundeønsker i markedet. Hvordan takler dere det?

De selgerne, de er veldig sånn, av og til skulle man tro at de var på kundene sin side. Kunden er ikke fysisk her, men de har deres voice. Men av og til må man ta noen vurderinger. Hvor mye er støy og hvor mye er reelt behov. Og når du har skjont det, med en gjensidig forståelse, så klarer du å komme til kompromiss. Fet er ikke noe svart hvitt heller. Vi har ikke noe svart hvitt svar vil jeg tro. Men å jobbe sammen med kunde og gjensidig forståelse og at man oppnår optimalt resultat. Jeg tror ikke det er noe fasitsvar uansett, med det er å ha den dialogen med produksjon for å forstå

kundenes krav og på andre siden det er å skjønne hvor er vi, hvor har vi våre begrensninger. Altså hvis det krever en stor capex som kundene ikke er villige til å betale for, så får man stille seg noen spørsmål.

Ja, det kjenner jeg også igjen. Da kommer man... Til slutt kan man si til kunden, «Ja det kan vi gjøre, men da koster det så og så mye mer».

For å fullføre det. Kanskje man kan sitte og kreve mer, men kanskje de ikke har tenkt så veldig mye heller. Så de har et behov der og da, men det behovet er reelt og det er noe man kan utfordre kundene på. Å få dem til å forstå hvorfor grensene og hvor mye det ville kost oss hvis man skulle gjøre den forbedringen,. Ja OK, men da må vi få lov til å gå opp på pris.

Kvalitet som er etterspurt, eller så er du ikke i den produksjon.

Men samtidig så er jo sånne diskusjoner veldig verdifulle faktisk, man lærer så mye, man knytter kundekontakter nærmere.

Jeg synes vi har vært flinke i Foundry. Når du har en kundeklage, så er det ofte... I hvert fall på Island var det sånn at de bare dro. Sammen med selgere og sånt. For å diskutere problemstillingen. Og da lærer du veldig mye av disse avvikene. Det er der du lærer veldig mye, det er en gave du får, for å kunne gjøre noen forbedringer. De har også blitt veldig flinke til å utvikle spesialiteter i samarbeid med kunden gjennom det samarbeidet.

Det er utrolig verdifullt. Det er jo veien ut av commodity.

Ikke sant!

Hva da med, hvis man finner noe i markedet, noe som kunden ønsker, og så jobber man med kunden for å prøve å få det til. Hvordan er det da med ressurser for å faktisk gjennomføre det som trengs for å lage det de vil ha?

Ja, altså du har en sånn innovasjonsprosess i Foundry, Stage gate som sikkert mange andre. Hvor man fanger opp ideene i et system som du sikkert kjenner til – Wasoku

Ja, jeg har hørt mye om det i det siste

Det er veldig bra, for da er det gjennomiktig. Og så kan du føye til dine ideer og så kan du koble noen flere folk. Og så er det... Noen er organisert regionalt, og noen er organisert globalt. Og da er det disse diskusjoner blir tatt på forskjellige styremøtene, og det blir tatt beslutning på hva man skal gjøre, hvilke ressurser man skal allokere, og der. Og så er det litt press på at når er det neste gang vi ser noen resultater eller output. Og organisert og strukturert slik at man pusher mer og mer i den tunnelen . Altså ideene er mange, men om du har tid til å jobbe med disse ideene og kunne velge det rette for å kunne allokere ressurser, det er klart det er en diskusjon man har stadig vekk. Og da er det aligned med både strategi og ikke minst med å kunne utvikle noe business case som kan påvise at det har noen verdi. Så det er en kontinuerlig diskusjon, og det veldig ofte, I hvert fall det som jeg deltaer i - Global innovation styret - som tar opp disse diverse ideer på forskjellige stadier, hvor man diskuterer fra diverse aspekter. Og da lover man at dette er noe som vi kan bruke både penger og ressurser på. Det som kanskje vi burde bli bedre på, er portefølje management. Det betyr at du kan prioritere fordi du har ikke uendelige ressurser for å allokere og være en ide. Men at det er en portefølje review hvor du kan se hvilke av disse ideene gir hvilken type verdi og hvorledes er de viktige for strategiske målsetninger, slik at du har en prioriteringsliste på hva du mener at det er viktigere og hva gir det deg av markedsverdi, markedsandel, kundeforståelse, kunde-experience eller whatever. Og ut ifra det så kan du si at «OK, det er de prosjektene er veldig viktige og da må vi allokere flere ressurser», og så kan vi vente med de andre. Jeg tror nok det er en sann forbedring som jeg ser mange steder fordi vi ser på initiativer en og en, men vi ser det ikke i sammenheng. Og da tenker jeg på mere alignement EBS-messig også, ikke minst. Ta en value-stream vurdering av... Hva mener du gir størst verdi og hva er urgent. Det er det ene. Det andre du kunne gjort bedre, er når du har strategisk diskusjon, hvilke områder er kritiske.,. Så vi burde booste mere ideer, flere ideer inn og ta flere initiativer for å skape verdi. Da tenker jeg du kunne vært mere aktiv til å skape disse ideene i stedet for at det skal komme tilfeldig.

Og hva er det som skal til for at man kommer dit?

Det har man allerede et system på i Wasoku. Der skal du definere utfordringsområder som du gjerne vil ha mere push på. Da kan man invitere til å ha flere ideer. Men det vi kunne ha blitt igjen bedre på, er open innovation

Open innovation betyr at vi – de ideene vi har er veldig nye internt, de kommer fra våre egne ansatte og hvis de kommer fra eksterne kunder så er det filtrert gjennom flere personer. Så min drøm hadde vært, hvis jeg hadde vært ansvarlig for det, hadde vært at vi hadde en open site hvor vi kunne ta imot ideer fra kunder direkte, så vi kunne sette ut utfordringer og hva kundene våre systematisk komme med ideer og vurdere dem. Og så kunne vi begynne å jobbe etter det sammen med kundene våre ihht å ha det samarbeidet på kryss og tvers.

Det er neste nivå på det samarbeidet

Ja, ikke sant? Med forskningsinstitutter eller noen eksterne, hvor man kunne satt ut noen ideer og invitert folk til å komme med sine løsninger. Skape flere... Skape noe dynamikk som på en måte kommer med som kontinuerlig innstrømning av ideer, sånn at man kan håndtere... behandle i diverse forum. Og så er det veldig viktig at disse ideene er ikke bare teknisk vurdert, men at man har sånn type som vi kaller det i agile terminologi: Sånn translator som kan til enhver tid fokusere på hva er det der blir den ideen kan skape. Det vi er gode på er å utvikle tekniske løsninger fra a til å, de som er tekniske spesialister. Men vi er veldig lite flinke til å se... til å ha en entreprenørtankegang. Og både se mulighetene utenom der hvor vi er, og på en måte kunne omsette den ideen i en ting som kan skape verdi. Det gjør det visuelt, men det blir på en måte at du beveger deg hele tiden innenfor det området som du kjenner veldig godt til, og veldig vanskelig å komme utenfor boksen. Det er du i den boksen som bestemmer. Men for å komme ut av boksen så har du behov for å jobbe med flere som er eksterne som tenker annerledes enn deg for å finne på og for å kunne skape noe nytt. Her har vi en del utfordringer som jeg tror at noen har fått løst med å være mere åpne fra... Det er alltid noe IP issues man må ta hensyn til, men det er ikke alt som er IP.

Hva tror du er grunnen til at vi ikke har så mye entreprenørskap? Er det en kulturell ting i Elkem? Eller er det en norsk ting?

Nei, jeg tror det kanskje er Elkem. Elkem har vært preget av konfidensialitet og strengt regime over mange år. Industri, jeg kommer fra malingsindustri, jeg har jobbet for Jotun og i København som dansk og svensk så jeg har vært rundt i Skandinavia med maling i diverse stillinger og diverse oppgaver og der. Da jeg kom til Elkem, ble jeg

sjokkert over den konfidensialitetshysteriet. Bare kommer seg fra denne avdelingen til den andre så må du jo ha adgangskort.

Ja sant, det er sant

Jeg tror at hvis du klarer å stjele ideer bare for å sirkulerer rundt i avdelingene, da er du et geni egentlig. Vi har på en måte en skikk for å beskytte seg. Sikkert har sine røtter ett eller annet sted, jeg kjenner ikke til historien men generelt åpenhet har sine priser og sine verdier. Men det er å kjenne til sine begrensninger og forstå hva er ikke egentlig konfidensielt, kontra det som man kan dele. Og hvis du ikke kan dele, så klarer du ikke å ta imot. Og da er du... sitter du i siloene dine. Jeg tror nok når det gjelder Elkem, det er ikke noe norsk.

Handler det noe om risiko også, at man er litt risiko...

Man har ikke vært det. Men vi ser en endring i kulturen nå. Med ny direktør og kinesere som har kjøpt oss opp for en stund siden. Og ikke minst at vi har fått silicone i vår bedrift, så skjer det nok en endringskultur som vi vil se kanskje på sikt, ikke akkurat nå. Men siden jeg har vært her, ser jeg allerede endringer.

Det høres jo lovende ut. Det jeg lurer på, har det noe med EBS å gjøre? Det at vi har jobbet så hardt med og fokusert på EBS prinsipper, eller LEAN da.

Jeg er ikke helt sikker på, vi har snakket veldig mye om LEAN, og det er mere på prosessiden og produksjonssiden. Men vi har ikke vært flinke til å lansere EBS og LEAN i andre områder. Andre steder finner ikke EBS. Har hørt om det kanskje mer eller mindre, men vi har ikke adoptert det i hva vil det være verdien som kan skape innenfor FOU for eksempel, innenfor utvikling, innenfor marketing, innenfor salg, innenfor andre områder, innenfor administrasjon. Jeg tror vi er gode til å skryte av det for vi snakker om EBS, vi tenker kun produksjon og ikke noe annet. Derfor er det kanskje litt urettferdig å bruke EBS terminologi og si at dette har vi vært fokusert som har hindret ground breaking thought type revolusjon og utenfor boksen. Enda det hindrer til en viss grad hvis man tenker snevert. Men samtidig tror jeg ikke det har gitt sjansen til EBS å komme seg inn i dette området her. Det EBS kan gjøre i den sammenheng i mitt hode, er at man kan streamline ting slik at man jobber mer effektivt. Og så kan man frigjøre tid til å tenke nytt. Jeg tror nok EBS har en stor rolle, men du må ta det i bruk, ikke bare snakke om det. I hverdagen din.

Deri synes jeg det ligger et lite dilemma også, for når man gjør sånne forbedringer som vi ofte gjør, så blir vi mer effektive. Så blir det en konsekvens på mellomlangt sikt, at da allokere man også mindre ressurser til det området som har blitt forbedret, fordi det har blitt mere effektivt. Og så på noen års sikt, så har man totalt sett fått mindre ressurser, man har fått optimalisert veldig de strømmene man har, men hvis det da skjer noen ting og man kommer utenfor, eller det kommer en kunde som ønsker noe nytt, så er det tung, som jeg opplever det. For da har vi så lite ressurser å dra på. Det er vel egentlig ikke et bevisst ønske om å redusere antall folk. Med det er en konsekvens at vi da ikke har en pool med ledige ressurser å ta fra.

Men nettopp det jeg sier, jeg tror nok vi kan bruke ressurser mest effektivt med å implementere en agile måte å jobbe på. For meg, Agile er EBS prinsipper. At du ville også, en ting som vi gjør som er litt tungvint, er å jobbe i prosjektstruktur som tar evig tid. Og det er veldig mye byråkrati og alt skal være perfekte 200% før du går til neste steg. Og det PDCA. men den som er stakeholder, kunder, er veldig tungvint fordi man gjør det når man føler at man er klar til å levere. Det er en agil måte å jobbe på som også kan være EBS prinsipper, er sånn at du bare gjør. Klart du kan gjøre feil 8 ut av 10 ganger, men da har du klart 20%. Mens resten så begynner du å tenke annerledes igjen, og da kan du forbedre deg på måten å gjøre ting på, rette på targets og hvordan du gjør ting, og så begynner du å bryte det ned i små milepæler som er mer spiselige og som er mer agile og så kan du justere det med å ha mere fleksibilitet ihht å justere det og bruke ressursene dine på. Du kan frigjøre ressurser til også å jobbe med langsiktige og mellomlangsiktige oppgaver. Det er vår måte å organisere på som gjør at vi ikke klarer å... For hvis vi skal jobbe slik som vi gjør i dag, så må du gange ressursene med 3 eller 4 for å kunne ha fått kun sånn langsiktighet eller innovasjon eller what ever. Så vil jeg tror at du på en måte er alignet med stakeholders til enhver tid, du har fokus på å skape verdier til enhver tid. Det er mere gjennomsliktig det du gjør slik at folk kan se hvor er disse flaksehalsene underveis, hva er det som hindrer at du ikke er i mål i dag. Og da... Og så har du den kontinuerlige støtte av disse stakeholderne til enhver tid, som vil se hvor problemet ligger, og de kan hjelpe deg, støtte deg til å fjerne dem slik at du frigjør ressurser på sikt. Etter hvert som du har jobbet mer og mer effektivt, til å jobbe langsiktig. Så kan du også adressere dine initiativer på langsiktighet akkurat på samme måte, men bryte det ned i korte- og

mellomsiktige og langsiktige. Dette har vi Ikke vær så flinke på, men jeg tror nok vi kommer dit.

Det litt artig , for det er jo å ha en struktur, men ikke noe som er rigid. Det høres kanskje ut som et paradoks.

Det er fantastisk. For den måten som vi jobber på nå, så har du sånn stand-up 5 min hver dag, Når du jobber med kanban, så er det 1 gang pr uke, men da er du alignet hele tiden. Du hadde regnet med den ressursen til å fullføre den oppgave her. Men den ble opptatt med noe annet, uten å gi deg beskjed en gang. Da må du sitte og vente. Vi har mye dødtid med venting. Med tilbakemelding. Men å aligne alle ressursene en gang i uken, eller oftere enn det du har gjort tidligere, så er det på... Så sier du «OK, dette trenger vi ikke jobbe med. Det er ikke noe verdiskapende akkurat nå, så vi putter det på hold». Og så jobber vi med noe annet. Så du klarer å navigere gjennom det, ved å ta i bruk ressursene på en helt annen måte og fornuftig og effektivere måte, enn hvis du arrangerer svær, tung byråkratisk prosjektstyring med styrekomite som kanskje ikke er engang så veldig inni den oppgaven. De skal bare sitte der fordi de har en stilling i Elkem. Sant? Så dette.` ...

Hva handler det om? For det er jo en tradisjon vi har føler jeg, det med store tunge prosjekter. Har det noen...

Til og med byggeprosjekter kan du kjøre agile.

Hvorfor er det ikke sånn i Elkem? Fra før?

Man har ikke hatt folk som har tenkt sånn. Du har altfor mange teknikere, veldig få som på en måte har lederskap og gjerne vil endre på ting.

Er det fordi vi er for mange som må ha alt på stell før de går videre? At vi er litt redde for å hoppe uti det?

Det er en engineeringtankegang. Det er teknokrater som prøver å på en måte levere 100%, så er de litt forsiktig, man skal være helt sikker på dette. Og i hvert fall være god til å risikovurdere. Det er litt dilemma. Men det er en generasjon på vekst og det tror jeg nok du kommer til å se. Jeg har prøvd det ut med min avdeling, og det har funket. Og det er folk som har vært i Elkem i 40 år som ikke hadde tro på at dette skulle virke, men det viker bra.

Da er det dette agile du snakker om? For det har vi ikke begynt med hos oss, som jeg vet om i hvert fall. Det høres jo absolutt ut som noe vi kan tjene på. Å begynne å tenke litt mer sånn.

Helt klart.

Er det et eget initiativ som har dukket opp hos dere, eller hvor kom det fra?

Jeg tok det initiativet selv. Det var litt i forbindelse med Covid og det som skjedde, fordi vi er med teknisk support til verk, og bare kanskje diskusjon og.. men der har vi lite å gjøre, så er dere... kanskje dere ikke har så mye å gjøre. Da må vi begynne å synliggjøre hva er det egentlig vi holder på med, og på begynne å strukturere slik at det er mere aligna. Og det ser vi jo. Og så er det de som har mere faglig kunnskap og kompetanse, blir mer og mer lastet med ting og tang. Og så er det for å skape litt teamfølelse. Så det å kunne hjelpe, fordi jeg som sjef her er ikke inni detaljene, så jeg bare gir oppdrag, og venter på noen svar. Men nå er jeg mer engasjert, jeg involverer meg og tilrettelegger og hjelper til med å fjerne disse flaksehalsene som jeg snakket om. Og det hjelper veldig mye på hvordan du skal prioriter oppgavene dine, ikke om 2-3 mnd, men akkurat nå. Vi har et sprint som går fra den uken til den uken, og hva er det av leveranse, og hvordan du skal demonstrere at du har levert.

Det er spennedene, for det er jo egentlig EBS prinsipper. Det er gøy å høre du sier det, for det gjenspeiler jo veldig EBS filosofi..

Ja, men det er EBS ja. Men mere på en måte... Det går fortere. En pdca som går i en måneds tid, men heller på 2-3 uker, så har vi en sånn retrospektiv som gjør at du tenker tilbake: «Hva er det som var bra? Og have kan bli bedre? Hva er det som jeg ikke har fått til så veldig bra, hva er det neste steget?». Som vi skal vurdere hele tiden, så du justerer kursen. Altså det som du hadde trodd for 4 uker siden, er ikke sikkert det du tror i dag, for det dukker opp ting – alltid.

Det er veldig en nøkkel. For problemet noen ganger er at vi vet jo ikke hvordan det kommer til nå se ut om en måned. Men så må vi samtidig legge planene og business casene så presise sånn at vi må ta utgangspunkt i at om 6 mnd så ser det sånn ut. Men det eneste vi vet er at om 6 mnd ser det mest sannsynlig ikke sånn ut.

Akkurat, den som kan predikere 6 mnd fra nå, og hvis noen gjør, den jobber er allerede gjort. Så man prøve å gjenta det kanskje, copy - paste. Men hvis du skal skape noe

nytt, så trenger du å navigere hele tiden, med kompromiss og juster kursen hele tiden. Og det blir den agile måte å jobbe på.

Det ble ikke så mye innovasjon, mere agil, men. Apropos at du ikke har nok ressurser, så har du mer enn nok ressurser hvis du organiserer det riktig. Det er min oppfatning.

Veldig interessant, nå fikk jeg litt å tygge på.

Interview with H

(...)

Det som er å si om dette, som jeg synes er et startpunkt når det gjelder FOU Carbon og min rolle, det er at da jeg ble rekruttert til Elkem Carbon, og i mine samtaler med Asbjørn Søvik, så var det et uttalt mandat å være i den boksen nederst til venstre. Altså, det var på en måte bestillingen fra Elkem Carbon til meg. Også var jo ikke jeg sånn 100% enig i at det er rett for en divisjon i Elkem å bare jobbe med kjerne-kjerne. Og det var også en konflikt i mellom det at det mandatet var å operere der, men kritikken var mangel på nye produkter og vekst basert på det. Og det var en kritikk, det er kritikk som har versert i Elkemsystemet lenge. Altså det at vi bruker ressurser på det vi kaller for produktutvikling og FOU, men verdien av nye produkter og nye tjenester er lavere enn den følelsen man har av ressursene som settes på det.

Ja, det er en veldig klar mismatch. Men hvor kommer kritikken fra? Er det fra samme hold som setter mandatet?

Ja, fra Asbjørn sin side var det delvis det. Jeg må få lov å være så tydelig å si det. Men det er jo også litt sånn... Det er mye kontekst som avgjør hva man sier og hvordan det forstås. Men i hvert fall, bare helt tydelig, de innledende samtalerne jeg hadde om å begynne å jobbe for EC med FOU, så var det på en måte rammen, eller startpunktet. Det å være i kjerneprodukter og kjernevirksomheten vår.

Men så var det samtidig et ønske om å utvikle produkter, mer inni her (grønn sone)?

Eller så kanskje ønsket var litt uklart, annet enn å se på omsetningstall og si at «Her er det ikke mange nye produkter som bidrar til stor %andel av den porteføljen vi selger». Men det er i hvert fall en liten... noe av den kulturen som har vært i Elkem Carbon. Og så har jo det endret seg litt med tiden som jeg har vært med, også under Asbjørn, og vi begynte å se på alternative råvarer, grønne løsninger, kanskje særlig det under Asbjørn. Og så kom jo batteriprojektet som et veldig ekstremt prosjekt i den «ny teknologi/nye markeder».

Ja, den skiller seg helt klart ut.

Og jeg er jo enig i den måten det er gjort på, at det er skilt ut som et eget venture virksomhet. Fordi det er så fundamentalt ulikt, med så ulik takt, og alt er bare veldig langt fra der tradisjonelt Elkem Carbon har stått.

Så det organiseres annerledes?

Ja. Det andre som jeg har lyst til å si innledningsvis, som jeg aldri greide å bli enig med Asbjørn om, og som jeg tviler på at i hvert fall Inge heller har brukt særlig tanker rundt, det er dette med å forsvare eksistrene volum i en utviklingssammenheng. For når vi vurderer verdien av innovasjon, så snakker vi nesten bare om nye salg og nye salg, eller nye kunder, eller... Og så er det jo sånn at hvis du gjør ingenting, så er det ikke bare det at du ikke selger nye ting, men du mister det markedet du har også, hvis ikke du fortsetter å utvikle, fortsetter å gjøre innovasjoner mot markeder og alle de retningene man kan. Og for en så tradisjonell virksomhet som Elkem, metallurgisk side i hvert fall, så er det veldig fort gjort å glemme at det å ikke vokse, men være der vi er, det er på en måte en implisitt vekst. Som det er nesten umulig å verdisette da.

Jeg ser det litt som at vi er på en måte en cash cow, og hvis vi skal fortsette å la den produsere melk, eller penger, så trengs det et minimum allikevel.

Ja, og poenget er det at det finnes ikke en reell cash cow i et sånt marked som dette, som bare kan stå der og ikke gjøre noen ting og levere det samme produktet og levere like mye penger. Det er ikke sånn det er.

Ja for hvis man tenker det som... Det er ikke et lukket system. Det trenger fremdeles noe input for å gi noe output.

Det er akkurat det., og selv om ikke det er... vi kaller det for nye produkter, så skjer jo endring helt kontinuerlig, bare ta tak i råvarer, ikke sant. Så er det jo ikke sånn at våre råvarer er like over lang, lang tid?

Men betyr det at vi – for det kan man jo egentlig kalle kontinuerlig forbedring.

Ja, du kan det

Men betyr det at vi kanskje ikke gjør nok av det heller?

Jeg vet ikke om vi gjør for lite eller for mye, men det jeg vet, er at det blir ikke sett på som innovativt arbeid og en viktig del av det å holde... få pølseboden til å gå bra.

Altså det at vi har den økonomien vi har, og det at vi legger på ressurser for å sørge for at produkter og tjenester er tilpasset markedet og de mulighetene som ligger i råvarer og hva det måtte være. Så synes ikke det så godt i sånne innovasjonsvurderinger, er bare poenget.

Så betyr det at dine ressurser, det er kanskje ikke helt forstått eller verdsatt eller hva man skal si – hensyntatt – at du må bruke – bare for å holde kua gående, så må du bruke en del ressurser bare på... Det er kanskje ikke helt hensyntatt?

Typisk eksempel er møtet jeg var på i formiddag, med et kvalitetsproblem på stampemasse i Kina. Hvis ikke vi gjør en granskningsjobb og forsker og prøve å finne svar og kanskje nye løsninger på det hvordan det produktet fremstilles, ja så er jo hele den store stampemasseporteføljen i Kina truet. Og det, etter min oppfatning, så handler jo det om å gjøre innovasjon og finne måter å gjøre det på som gjør at den produksjonen blir mer robust og i stand til å levere et mer konstant kvalitetsprodukt. Men det er jo ikke et nytt produkt.

Man kan ha innovasjon inni her også (kjerne). Sånn som du beskriver det.

Det er veldig fort gjort å... i de sammenhengene som jeg er med å diskutere innovasjon i Elkem, så er det veldig fort gjort å tenke «Google og Tesla og alt skal endres i en supertakt og det er veldig flott, siden Google og Tesla tjener mye penger». Men det er ikke nødvendigvis riktig i alle sammenhenger og det eneste som skal skje innenfor innovasjon; sånne Step change innovasjoner.

Jeg tenker at det er ganske preget av omgivelsene man er i, og våre omgivelser er tung tradisjonell industri. Som kanskje ikke trenger nye Google oppfinnelser, ala, like hvert år.

Nei, hvert fall så er det ikke bare det. Hvis denne industrien har eksistert i 100 år og det var masse revolusjonerende å finne på, så er det jo noen som har gjort en dårlig jobb i 100 år. Det tror vi jo ikke at det er. Men det kommer nye utfordringer hele tiden, som for eksempel råvareendringer, eller endringer på hvordan... Se på bruk av energi for eksempel, eller utslipp og alle de... Arbeidsmiljø, menneskers krav til sammenhengen de står i, at de finner seg ikke i å være i bare et ikke-inspirerende, kjedelig oppgavesystem for eksempel, det er mange sånne ting som gjør at vi må endre oss, som ikke nødvendigvis bare er å finne på et nytt produkt.

Ja, store trender som er utenfor oss. Det har vært litt utvikling egentlig, sier du da, de siste årene. Hva har driveren for det vært?

Det er jo, jeg vil si at det er 3 hovedsaker der. Det ene er... kan begynne med det mest negative. Det er at konkurrenter gjør nye ting som er bedre enn eller like godt som de produktene vi leverer.

Så da kommer det innspill fra markedet?

Ja, så da er det jo marked som ser at konkurrentprodukter fungerer, har større verdi enn våre. Og bruker... måten å snakke på som er vanlig å snakke på rundt dette. Det er den første, og da må vi jo reagere da.

Så det er det ene., Det andre er råvarebase. Og da er jo det både sånne store trender generelt, og så er det lokale muligheter.

Da snakker vi om råvarebase som en driver for at divisjonen ønsker utvikling?

Ja, eller det setter oss i en situasjon der vi må utvikle, fordi vi må forholde oss til de råvarene som finnes, og som er økonomisk akseptable. Og det er jo litt, det er en variasjon mellom de grafiske plasseringene våre.

Ja, fordi råvarebasen endrer seg da? Eller krav til råvarene?

Ja, altså, det enkle eksempler: Tilgang på kalsinert antrasitt, alle steder endrer seg og er ulikt. I Malaysia så har vi en mulighet når det gjelder anode butts, i Kina så er råvarer på en måte et veldig kaotisk marked med mange muligheter og noen begrensninger, bla antrasitt med veldig høyt skadelig askeinnhold, og endringer der skjer jo løpende. Det er vel egentlig det som er de viktigste, er det ikke det?

Jo.

Men så er det jo også spørsmål da, og der var jo Asbjørn egentlig... ble han en driver etter hvert. Dette med å spørre seg, finnes det råvaremuligheter som vi burde se på? Det ble jo videreført nå i Elkemsammenheng nå med sirkulær økonomi tenkning, Og det å ta tak i mulige delstrømmer fra andre prosesser osv. Det har vi ikke gjort så mye, men.

Ja, altså som et litt mer åpent spørsmål?

Så det regner jeg jo med er noe som vil vokse frem mer og mer. Men det er ikke noe som vi har gjort mye av til nå, det kan vi ikke skryte av. Men anodebutts har vi jo sett en del på.

Var dette den tredje driveren?

Nei, det var det andre. Altså først konkurrenter, så råvarer og rammer for hva vi kan gjøre. Og så det siste er jo miljø, og miljøkrav. Og der er det 2 hovedaspekter pr nå. Eet ene er PAH i bindemidler og ny restriksjoner på det, og større bevissthet både iblant kunder og arbeidstagere i bransjen. Og så er det jo svovel og svovelutslipp, og fokus og restriksjoner på det. Og begge de er drivere til endring som har gjort at vi har jobbet litt med å finne løsninger for det.

Så hvor mye av disse tingene vil du si er strategisk styrt, at det ligger en strategisk vilje bak, i motsetning til å være mer ad hoc respons på ting som skjer rundt oss?

Tja... Jeg vil si at alle de 3 områdene er både og. Altså det at vi, sånn som Rheinfelden som en moden konkurrent som har kommet inn i Elkems prosess i Rana, det er jo på en måte en ad hoc situasjon. Men det er jo også en kjent situasjon som vi har tatt noe kalkulert risiko i forhold til. Den vil jeg si er mindre strategisk, og mer kan du si markedsfremtvunget. Mens det som går på råvarer og miljø, det er jo mer styrte ting. Og så kan en jo diskutere: Når er det rett å sette inn ressurser, for det vil alltid vil være noen som sier at dette skulle du ha gjort før, og så er det alltid noen som sier at dette er bortkastede ressurser for dette er ikke nødvendig enda. Så det er en sånn... Når det gjelder PAH frie bindemidler og elektrodemasse, så synes jo jeg at vi var... Vi hadde en prosess for å komme i gang som varte litt vel lenge. Men samtidig så kom vi jo i gang ganske greit, jeg synes ikke det var verre enn det kan være for en så stor aktør som Elkem.

For der er det jo... På stampemasse, så var vi egentlig ganske tidlige ute med et PAH fritt alternativ.

Og den forklaringen er enkel. For det at når du har kunder som krever... når du har et marked som er villig til å betale og til å ta teknologisk risiko, så er det jo lett å velge å utvikle.

Det er jo mye vanskeligere på elektrodemasse der stort sett alle kunder sier at dette hadde vært kjekt å ha, men selv så skal jeg ikke ta noen kostnader eller risiko.

Så da har kundeetterspørselen vært annerledes mener du, på aluminium? At de var mer krevende, eller krevde det?

Ja, helt klart

Jeg skjønner ikke helt det, kjenner jeg, at aluminiumsindustrien mer krevende enn smelteverkindustrien. Eller var det tilfeldig?

Ja det er... Min erfaring er at aluminiumbransjen er ekstremt proaktiv ift mulige miljørestriksjoner, og at de jobber med løsninger i forkant av regulering og krav fra myndigheter. Og det, i hvert fall de årene som jeg jobbet i aluminium, så hadde vi selv pålagt miljøkrav og andre sånn type arbeidsbelastningskrav og sånne ting som var strengere enn det offentlige myndigheter påla oss.

Det er ganske spennende som vinkling. At her er det... hvis vi tenker at vi opererer i 2 forskjellige bransjer, de er nære men ikke helt det samme, altså aluminium mot ferrolegeringer..

Jeg tror det er ganske banalt. Jeg tror det handler om amerikansk arbeidesliv og risiko for saksøking og enorme kostnader hvis man har tatt risiko på skadelige ting som man eksponerer arbeiderne sine for. Jeg tror ikke det er noe idealisme ute og går. Alcan, Alcoa og de svære aktørene er preget av amerikansk kultur og holdning når det gjelder miljøbelastning og arbeidsmiljøbelastning.

Ja, og da i større grad enn ferrolegeringsindustrien som kanskje er mer et sammensurium av alt rundt i verden?

Ja, Eramet utmerker seg jo med å ha disse holdningene når det gjelder PAH i elektrodemasse.

Ja, og Ferroglobe vil jeg si.

Ja nå i hvert fall.

Ja, eller Ferropem, det var der det begynte.

Ja da er jeg med.

Men nå er det ikke jeg som intervjues, det glemte jeg..

Men det ligner ikke på store selskap som Alcoa som sier at «Vi skal ha en tusendels PAH konsentrasjon i eksternt miljø ift det myndighetene krever av oss. Og hvis ikke vi klarer det så begynner vi å legge ned verk». Det er jo på en helt annen planet enn det som vi ser i ferrolegeringsindustrien. Og så er det jo... Så hører det jo med til historien at de snakker med store ord og de trekker seg når det kommer til stykke og det blir veldig dyrt. Men det ganske så klare føringer i hvert fall da. Og de bruker det aktivt i verdibygging av selskapet, forteller børsen at «Vi er de flinkeste til å gjøre riktige ting miljømessig».

Ja, og da betyr det... Da har vi på en måte etablert at markedet er forskjellig. Og vår utviklingstakt vil jo da stå litt i forhold til hvor aggressive eller pågående eller progressive de forskjellige markedene er.

Ja, det er jo helt riktig når det gjelder miljøsiden i hvert fall.

Ja, det er sant med miljø, for det finnes jo andre aspekter av det. For jeg vil jo tro at alle smelteverk er jo like opptatt av å ha god drift som aluminiumsverk.

Det er jeg enig i. Men det hører vel og med til bildet der, at internressurser på smelteverk, når det gjelder forståelse av alle innsatsfaktorer, er generelt lavere. Altså et er ikke alle smelteverk eller organisasjoner som driver med ferrolegeringsproduksjon som har dybdeforståelse i alle delprosesser sånn som gjerne det er i aluminiumsbransjen.

Sånn at når vi var egentlig ganske kjapt ute med PAH-fri resept til stampemasse... En ting var at det var lettere rent teknologisk, i forhold til elektrodemasse. Så var det i hvert fall delvis pga større pull fra markedet.

Ja, eller i hvert fall en veldig klar vilje til å ta det imot. Hvis noen kommer med et miljømessig riktig produkt og sier dette tror vi er like godt som det andre dere bruker, så er de villige til å investere for å finne ut om det faktisk stemmer.

Men den beslutningen om elektrodemasseutvikling, den... Jeg opplever at den tok litt tid. Vet du hva det handlet om? Hvorfor det tok litt tid, for man skulle jo tro at det er jo rett frem at «Et miljøvennlig produkt, det vil vi ha».

Ja, nei, altså det var jo... Den vurderingen som var vanskelig var jo... For det første «Er det sannsynlig at vi finner en teknologisk løsning?». Og så er det spørsmål om

«Når er det riktig å gå på en sånn utvikling?». Og da er jo en av vurderingene: «Blir det et krav?». Og hvis ikke det blir et krav, vil da kundene velge å gå... Å velge en teknologi som er mest sannsynlig mindre økonomisk gunstig for dem?

Hvis man hadde en uendelighet av ressurser tilgjengelig, så hadde man kanskje kunnet jobbe med det uansett. Var det en prioriteringsproblemstilling, at man brukte ressursene på andre ting?

Ja, det vil det jo alltid være. Jeg tror, det blir en subjektiv vurdering. Men i min vurdering var at det var en periode med noe tautrekking om ressurser til dette. Og så ble bildet klarere for alle over litt tid, og så valgte vi å gå. Og da sa vi jo egentlig at «Nå er dette det viktigste, alt annet må vike hvis det blir en ressurskonflikt, innenfor FOU i hvert fall».

Hva var det som førte til at man sa det da? At «nå!»

Det var jo egentlig en annen prosess, der vi diskuterte dette med fokus i FOU og produktutviklingsarbeid og særlig Asbjørn hadde en erkjennelse om at det nytter ikke å drive med 20 ting på en gang. Da gjør du 20 ting dårlig. Så vi ønsket å teste det å fokusere veldig hardt på en ting, selv om det blir ikke bare en ting. For vi hadde jo noen ting vi ikke bare kunne slippe. Men det var jo et ønske om å endre litt måten vi jobbet på.

Åja, OK.

Så vi var veldig tidlig ute med sånn Agile, det kan du godt skrive i oppgavene din. Hi hi..

Jeg har hørt mye om Agile i det siste. Men jeg har aldri hørt det ordet nevnt i Carbon sammenheng.

Nei, ja, jeg skal passe meg litt nå. Men sånn buzz words, det får jeg litt aversjoner mot. Og så er det, de som jobber med Agile metodologi, de sier at «Ja, alle sier at de har jobbet Agile før når de hører det beskrevet, men det stemmer ikke». Og da gjør det vel ikke det da. Men i hvert fall, i det prosjektet på PAH-fri elektrodemassee, i den tidlige perioden, så var det jo en oppdeling av arbeid i småpakker, og ta konsekvensen av de læringene vi gjorde løpende når det gjaldt prioriteringer vi jobbet med. Så sånn sett var

det Agile, men du trenger ikke bruke det ordet i noen sammenheng, for jeg skal ikke påberope meg hverken å forstå det eller å være noen ekspert på det.

Men det var interessant allikevel, for det var noe man gjorde mer intuitivt, og så ser man i ettertid at «Åja, det er jo det som er Agile». Eller var det noen som kom å sa at «Du, jeg har hørt om et nytt forretningskonsept som heter Agile, det må vi prøve ut!».

Det var det i hvert fall ikke. Jeg har ikke satt meg nok inn i Agile metodologien i det hele tatt. Men for meg er det sånn at hvis du skal løse et problem som har en helt ukjent løsning, da blir det jo tåpelig å lage en lang plan med mange ledd av aksjoner som du skal gjøre etter hverandre. For du kan ikke vite neste oppgave når du ikke et svaret på den første. Det er jo helt implisitt i en sånn oppgave.

Ja det er jeg helt enig.

Og det.. Jeg pleier jo å fleipe med det når det gjelder den bek-frie massen, at vi begynte nærmest med hele periodesystemet, og spurte oss «Hva kan brukes av dette?». Det var jo alle slags kjemikalier som på en eller annen måte herder eller karboniserer ved oppvarming som ble vurdert. Og vi har jo fortsatt en del spor som vi bare stoppet fordi vi så at andre var mer sannsynlige. Og det er vel akkurat sånn som det er meningen at man skal jobbe når det gjelder den agile metodologien da. Men utover det, så var det ikke noe agile prosjekt.

Nei, skjønner. Men det blir litt på... Litt intuitivt på en måte, så har man brukt sånn type tenkning.

Ut at man egentlig kalte det Agile, så har man intuitivt brukt litt sånn type tenkning, synes jeg det høres ut som da.

Ja, men jeg tror det er riktig å si at det gjør man alltid i FOU prosjekter. Og jo mer usikker en er på hvor en skal og hva som er løsningen, jo mer naturlig blir det jo å jobbe litt og se hva man finner, og så ta konsekvensen av det og jobbe videre. Så det er klart, hvis du har et prosjekt som går ut på å kvalitetssikre en resept, så trenger du ikke så mye Agile tankegang. Da er det et stykke arbeid med visse arbeidsskritt. Men hvis du skal finne en ny resept, så er det en helt annen natur i den oppgaven.

Men litt tilbake til det med driveren i utvikling hos oss. De tre tingene, som er på en måte ytre faktorer som gjør at vi utvikler oss. Så hvordan er det ift strategi? Blir strategien da et resultat av det?

Nå vet jeg ikke helt hva jeg spør om egentlig... Man har jo...

Kommentaren min til det er vel at Elkem Carbon sin strategi er ekstremt lite prinsipiell og ekstremt operasjonell. Og det er jo litt sånn den cash cow tenkingen som du var innen på. Men det er jo nokså fornuftig, vi er en moden aktør i et modent marked. Det som betyr noe er hvilke kunder eksisterer, og hvordan får vi de til å kjøpe vår masse på de produktsegmentene vi har. Og så er det jo da om en skal ha strategisk... prinsipiell strategi under der igjen. Altså hvor skal vi være om 10-15 år, og skal vi da være i nye markeder? Og det er ikke en løpende prosess, synes jeg i Elkem Carbon. Det er mer sånn forretningsmuligheter som vurderes, og så får man evt en operativ strategi rundt det.

Ja det er vel litt sånn jeg ser det også.

Men jeg vet ikke om... Det er ikke så sexy, men jeg vet ikke om jeg mener at det er et problem. Det ville vært et problem hvis vi ikke var en divisjon i Elkem. Hvis vi bare var et selskap som het elkem Carbon, så tror jeg kanskje jeg ville sett mer på det som et problem enn når vi er en divisjon i Elkem.

Hvorfor det?

For da har du et strategisk nivå over oss. Og sånn som dette med solcellesatsning som Elkem har vært igjennom og batterisatsing som går nå. Ikke vet jeg hva som kan komme, men det er jo ting som... hvis det passer i Carbondivisjonen så tar vi det her, og er involvert i det. Og hvis ikke så er det kanskje riktig at Elkem bruker ressursene på andre sånne overordnende strategiske aktiviteter.

Sånn at vårt mandat på en måte blir å fortsette å tjene penger sånn som dere gjør nå?

Det blir på en måte det. Ja, og så må vi ha en strategi for hvordan sikrer vi det, og hvordan utvider vi det. Men det blir jo ikke en sånn «øverste høyre boks»-fokus.

Det er jo for så vidt greit så lenge man har en tydelig ambisjon, eller vi ikke har noen kjempeambisjon om at nå skal vi utvikle revolusjonerende ting, men vår ambisjon er å holde butikken på dette nivået.

Og så synes jeg kanskje vi kan kritiseres med rette for at vi ikke har sett nok på det som er adjacent. Og for eksempel at ikke vi har noen kundeportefølje i stålindustrien. Det er jo etter 100 år med industrielle, eller metallurgiske karbon, produkter så er jo det ganske rart.

Ja, sånn prebaked produkter og sånne ting da?

Ja, eller foring eller forbruksvarer i karbon i ulike varianter. Det finnes jo. Og hadde vi vært involvert, så hadde vi kanskje påvirket og fått andre tekniske løsninger inn.

Vært involvert i hva da?

Med stålindustrien i det hele tatt, over 100 år.

Det høres ut som en tankegang som sier at «det markedet er interessant, la oss se hva vi kan får til der»

Ja, og det gjør vi ikke.

Vi kunne også sagt, som jeg har prøvd å si noen ganger, da.. Kompositt-elektroder, der ligger det mange vi ikke levrer til, det kunne vi tatt fatt på. Men da ser jeg det i hvert fall som en problemstilling at da må vi.. vi har så tung, mye kapitalbundet produksjon på en måte, at det krever store investeringer å gjøre ting.

Ja, det vil vel være min største kritikk til Elkem Carbon,

....

Jeg hopper litt videre. Flaskehalsen i prosjekter, er det noe du har kommentarer til? Hva er typiske flaksehalsen i våre prosjekter?

Hvilke prosjekter er vi på da?

Utviklingsprosjekter

Produktutviklingsprosjekter?

Ja, eller de prosjektene du er involvert i. Det kan være prosess utvikling eller produktutvikling.

Den enkleste flaskehalsen er kapital på infrastrukturprosjekter. Og det er vel som jeg begynt på å si... det er vel den største kritikken jeg ville reist mot Elkem Carbon. Det

er at vi har holdt på en antrasittstrategi i alle år. Og det er jo enkelt forklart med at vi ikke har sett muligheten for å skaffe kapital til å ha et mer fleksibelt oppsett med råvarer. Og i etterpåklokskap, så tror jeg Elkem har tapt penger på det, og Elkem Carbon har tapt penger på det., Og så er det lettere å være etterpåklok enn klok, da.

Ja, det er det jo. Men hvorfor satser vi ikke sånn, tror du?

Der tror jeg, å du er inne på konflikt mellom LEAN og innovasjon, så tror jeg at det er egentlig en fin kobling mellom det, og også dette med strategisk tenking mot operasjonell tenkning. At for å gjøre en investering i Elkem, forenklet sagt, så må du har et positivt business case for investeringen. Og det business caset må være konkret. Og det betyr at du ikke kan investere på risiko. Og det betyr at du er låst fra å gjøre store endringer fordi store endringer innebærer risiko. Så det betyr at hvis Elkem Carbon mente å forstå at det å være fleksibel på råvarer utover antrasitt, det ville gi på sikt gi en bedre markedssituasjon for Elkem Carbon, og en bedre teknisk performance for Elkem, så vil ikke det kunne regnes hjem i et forretnings case, fordi du ikke har tall på det som er skarpe.

Og det neste spørsmålet videre på det. Hvorfor må det være konkrete business case? For det er virkelig andre divisjoner i Elkem som klarer å gutse på noe.

Det handler om system, og det handler om risikovilje hos ledelse selvfølgelig. Begge deler.

Også litt kultur?

Ja. Så det er den store flaksehalsen. Hvis vi da går til mikroskala, så er jo flaskehalsen mer sånn... vi har ett sett av hvert utstyr, og vi kan ikke gjøre mer enn en ting av gangen type flaskehals. Når vi tester elektrodemasser så tar det en uke å gå igjennom sløyfa for en resept. Med det oppsettet vi har.

Ja, det er utstyr

Ja, det er utstyr og selvfølgelig så har vi da bemanning tilpasset den utstyrsparke vi har. Sånn at vi står jo ikke med bemanning heller klart. Hvis vi hadde hatt dobbelt av alt, så hadde vi gått tom på bemanningssiden. Så det er klart at det er alltid sånn at du har, vi har flotte ressurser med stor lab og myt utstyr og mye folk, og så må en prioritere.

Og hvordan foregår da de prioriteringene?

Det er nokså enkelt. Det er strategiske store prosjekter først, og så tilpasning av alt annet etter det. Så det er jo de prosjektene som du har blå kuler på her, det er stort sett de prosjektene som har prioritet.

Hva slags type prosjekter er det? Flex , bekr, batteri?

Ja, og anodebuttsmasse til Malaysia. Det er vel de som har sånn prioritet. Det hører med til bildet at så oppstår det jo operasjonelle kriser av og til, for eksempel så var det jo bløtbrudd på Island ganger 2 som er veldig alvorlig for Elkem og Elkem Carbon, og da er det klart at da står vi ikke i veien for å få gjort ting som har med det å gjøre for eksempel.

Men da er det jo noe som besluttes på divisjonsplan kanskje, de store prioriteringene?

Ja, og så er det i grunnen min oppgave å være godt påkoblet i de fleste sammenhenger i Elkem Carbon og ha en forståelse av hva som er viktig for Elkem Carbon.

Da er det en viss frihet der til å prioritere det som er igjen etter at de store prosjektene har fått sitt?

Ja, det er jo det. Og det er en frihet og en forpliktelse. Altså selv om vi har store og viktige prosjekter, så kan vi jo ikke la være å støtte ting som er funksjonskritiske for Elkem Carbon. Og så avvik av forskjellige slag eller hva det måtte være.

Og sånn tidshorisont-messig på de forskjellige oppgavene. For å ta de store, de som prioriteres først på divisjonsplan, er det noe typisk tidshorisont? Kan vi snakke uker, måneder, år?

Batteriprojektet er jo ekstremt, det er ikke under mitt ansvar heller. Men det er jo sånn 3 års perspektiv. De andre prosjektene, de har ikke av de store, de har i størrelsesorden 1 års perspektiv. Så har vi jobbet med noen av dem lengre enn det, men det er liksom det som er... hva skal vi si, den framtiden vi ser på. Også med da en erkjennelse av at det ikke alltid er sånn at vi blir ferdige innen for et års horisont, så tenker vi ikke mye lenger frem enn det på å utvikle prosjekter vil jeg si. Det er klart at flexprosjektet innebærer jo et stort byggeprosjekt som konsekvens, og det tar den tiden det tar. Det er jo i overkant av et år.

Ja, da kan man nesten si at prosjektet utviklingsmessig er ferdig, da er det execute fasen.

Ja, bortsett fra at det frustrerende nok for alle blir litt overlapping mellom de to fasene, da.

Ja, det er sant. Men noe helt annet. Stage gate holdt vi på med en stund. Og det er jo på en måte et EBS i verktøy i utvikling, altså i utviklingsarbeid. Hva skjedde der? Det hører jeg ikke noe om lenger.

Det er en lang historie som egentlig handler om organisering og omorganisering. Men det som jeg har lyst til å si om det, er at jeg har ambisjoner om at vi kommer tilbake til det systemet. Og jeg har bedt om at vi innfører... Det er jo innført en sånn idea generation programvare i Elkem, i noen av de andre divisjonene.

Ja, det Wazoku?

Yes. Jeg håper vi kommer med det snart i Carbon, og at som konsekvens av det, så blir vi også nødt til å få en tydeligere prosess for å utvikle modning av prosjekt og gjennomføring av prosjekter.

Men hvis jeg skal foreklare meg litt så var det 2 ting oms skjedde. Det ene var Asbjørns fokus på kjernevirksomhet, og et veldig lavt antall prosjekter.

Så det førte til at man tok det vekk?

Ja, for du trenger ikke noe porteføljestyring på 3 eller 5 prosjekter, så jeg følte i hvert fall det var veldig meningsløst å holde på med porteføljestyring, vi kunne heller hatt styringskomite i hvert prosjekt, og det har vært nok etter min oppfatning. Men så var det også en litt uheldig prosess med han Bache som kom inn og skulle være Markeds- og salgs ansvarlig, og da også ha ansvar for produktutvikling. Men derfor ble det jo som du sikkert husker... Han kom inn, og så forsvant ha ut igjen ganske fort, og så ble det pulverisert en del ting rundt det.

Det jeg hører andre div snakke om Stage gate, er at det er en fin ting, men det er så forferdelig byråkratisk og man ender opp med å bruke for lang tid, så de er litt på vei bort fra det.

Ja, det er det jeg har sagt om Stage gate. At hvis skal gjøre det, så skal det være på en så fleksibel måte at ikke det hindrer fremdrift. Og jeg synes jo det er tullede å Stage

gate vurdere et prosjekt som samtidig har en styringskomite med medlemmer som forstår utviklingsprosjekter og forretningsutvikling. Det blir dobbelt arbeid så vidt jeg kan bedømme.

Ja, det høres sånn ut. Og det er jo ikke EBS.

Men der tror jeg den Agile vinklingen er interessant, fordi konseptet er at man legger ned så mye arbeid som man har informasjon til å begrunne. På den måte kan man kanskje starte og stoppe ting litt mer effektivt. Men det jeg er livredd for er motivasjonsfaktoren, altså motivasjonseffekten i sånne prosesser. For som regel så er det noen andre som brenner for oppgavene enn de som har ansvaret for å starte og stoppe ting. Og det kan bli en veldig ødeleggende prosess da, hvis man ikke håndterer det veldig godt og er veldig samkjørte, alle som er involvert.

Ja, at man blir demotivert av å ikke få gjennomslag?

Ja, først så kommer du med forslag, så er det ingen som hører etter. Du får ikke noe svar. Og hvis du får svar, så får du lov til å jobbe litt. Og før du har fått gjort en alvorlig jobb, så er det noen som sier «Vi skal gjøre noe annet» eller «Dette var noe tull».

Ja, og da gidder man kanskje ikke en gang til

Ja, da blir det en gang og så er du ferdig med å bidra, så den må vi unngå. Og det er kanskje enda verre enn byråkratiet i Stage gate. For der er det i hvert fall sånn at du tar beslutninger basert på en grundig jobb, men så gjør du da en grundig jobb med ting som du kanskje kunne latt være å gjøre en grundig jobb med.

Ja, jeg har vært innom det så vidt da vi hadde det. Jeg følte at det var sånn tygge tygge på det samme, egentlig for å slippe å ta en beslutning, virket det nesten som.

Det som jeg er veldig opptatt av, uansett hva slags system man har, det er forventningsavklaringer ift de som bidrar. Det synes jeg er det viktigste i innovasjons og produktutviklingsarbeid. At man vet noe om hva slags respons og hva slags innsats man kan forvente som konsekvens av bidraget sitt. For hvis ikke, så ender vi med mange mennesker som har stor tro på at de skal bidra med noe viktig, og så får de ikke sjans til det.

Ja, det er godt poeng. Det er ikke alltid man tenker på det heller.

Ja jeg hører jo også... I Elkemsammenheng så hører jeg folk med lederansvar, som sier at «Det er ikke noe problem, ideer har vi nok av. Det er gjennomføringen som er det vanskelige». Men det får jeg angst av, for det betyr at vi har mange som kommer med ideer som ikke blir hørt. Og det er helt fair hvis det er en avklart forventning i forkant, at her kommer det til å komme 1000 ideer, det er bare 10 som blir hørt, det er basert på mer eller mindre opplyste beslutninger. Hvis alle vet det, såer det greit. Men hvis ikke det er sånn så ødelegger vi kreativiteten til folk.

Men det bringer meg inn på et annet tema. Det med kreativitet. Er det personlige initiativer... I hvor stor grad er man avhengig av det hos oss?

Ja det er vi avhengige av i veldig stor grad. Og det er ganske nifst, fordi noen av de menneskene med mest dybdeforståelse og kreative evner er også noen av de som har opplevd... Hva skal vi si... friksjon, ikke sant? Og så i alle organisasjoner så er det urettferdige ting med at noen blir hørt og andre blir ikke hørt. Det vil du alltid ha. Men jeg kan ikke skjønne annet enn at vi er veldig avhengig av personlig initiativ fra de dyktige folkene som vi har i organisasjonen.

Og så har vi litt historie som vi drar med oss

Ja, og bare for å være fair, så er det veldig tosidig. Det er noen som har blitt avvist, og så synes de at «Da er jeg lei, da vil jeg ikke mer». Og så er det noen som har avvist på bakgrunn av sin forståelse av en situasjon, som synes det er helt merkelig hvis ikke folk bidrar igjen. Så den dynamikken der, den er ikke ensidig. Det er jo sånn at vi har et sett med ressurser og vi har et sett med huer som har litt ulike forståelser, og hvis ikke du klarer å selge ideen din så er jo det frustrerende hvis du har rett, men samtidig så er det uprofesjonelt å si at «Da vil jeg ikke bidra».

Det hadde vært lettere kanskje, hvis vi hadde en litt tydeligere overordnet, uttalt plan for hva vi skal.

Ja det kan hende.

For det er også litt forventning kanskje... nå bare tenker jeg høyt. Hvis strategien vår sier litt tydeligere hvordan forventningene våre skal være i den retningen.

Ja, det er rett. Men det er liksom... Hvis man er uenig når man er i en stor organisasjon, så blir man i hvert fall ikke hørt og hjelper organisasjonen i riktig retning av å sitte med og ikke bidra. Det er dessverre sånn at en når ikke frem alltid.

De aller fleste vil jo helst bidra, det er bare å lokke frem. Man har det mye gøyere hvis man bidrar

Det som er veldig spennende når vi får kjørt prosjekter, det er at folk får ansvar. Og da er det en helt annen form for dynamikk som kommer inn. Når man har ansvar for gjennomføringen, da blir det ikke så lett å si at «Alt er feil, og jeg vet hva som er riktig». Så det er også en side av det. La folk bidra, så kommer det gode løsninger.

Er vi flinke til det da?

Ja dert varierer jo fra person til person det

Jeg mener, er organisasjonen flink til å gi folk ansvar og prosjekter?

Vi kunne vært mye bedre til det. Det synes jeg jo. Det er jo en Elkemtradisjon vil jeg påstå, dette med detaljinvolvering av helt opp til topps i organisasjonen. Og det jeg har ikke noen gode svar på hvordan vi kommer oss bort fra det, hvis vi skal det.

Ja, det er nok som du sier en kulturell ting.

Ole Enger var jo kjent for å være ekstrem på det punktet. Er det ikke der vi kommer fra, alle sammen?

Nå er det som sagt ikke jeg som skal intervjues... Men jeg kjenner på at det er en tradisjon, en arv som vi har der. Det er jo spennende med ny sjef da, så kan vi se når det har gått lit tid om det får noen konsekvenser. Nå nærmer det seg full tid uansett.

Har vi vært innom det du egentlig skulle skrive eller snakke om, da? Altså LEAN, det handler mye om standardisering i mitt hode. Det å ha en forbedret standard som du skal møte en utfordring med. Og etter min oppfatning, så er jo det et system som passer mye bedre inn i en drift, i en situasjon der man skal gjenta det samme, enn det passer inn i en... jeg liker ikke ordet kreativ prosess... Men en prosess der du skal gjøre noe helt nytt som du aldri har gjort før. Og så er det jo sånn at du kan jo standardisere på hvilke dokumenter skal du ha, hvilke møter skal du holde, en del

sånne ting. Men du kan ikke standardisere deg frem til nye tanker eller andre løsninger på gamle utfordringer eller ny teknologi. Det er annen form for prosess.

Men da i din organisasjon, din avdeling, der er det noen som har standardiserte oppgaver, og noen som skal være mer kreative. Styrer du dem forskjellig?

Ja, litt. Men jeg vil jo si at det er ganske interessant. På en lab har du masse prosedyrer og LEAN baserte arbeidsoppgaver. Og så er det jobbing med prosjekter innenfor prosedyrer og systematikk som gir deg den forståelsen du trenger for å kunne være kreativ og forstå hvordan ting kan kombineres på nytt eller hva som vil være problemet med en ny løsninger eller.. alle de tingene der.

Altså det bidrar til hverandre på en måte?

Ja, ikke sant? Så hvis ikke du hadde hatt LEAN tankegangen med orden og system og prosedyrer, så hadde det vært utrolig mye vanskeligere å lære. For da gjorde du noe greier, og så husker du ikke helt hva det var, og så kanskje du gjør det litt annerledes enn forrige gang, og så vet du ikke helt om du kunne sammenligne

Det jeg ser som problemstilling... Det er jeg helt enig i. Men et paradoks, det er at når man forbedrer noe, og så blir man veldig effektiv, og så på sikt trenger man mindre folk. Det er vel ingen som får sparken, men det blir allokert mindre ressurser. Og stil slutt har man kommet dit at man har en helt strømlinjeformet prosess. Og så plutselig så skjer det en ytre påvirkning som gjør at man må endre på noe. Og da blir det tungt å... For da kreves det litt mer ressurser i en periode før man kan forbedre eller utvikle.

Enig, men det er mer relevant for en produksjonsorganisasjon enn en forskningsorganisasjon.

Jeg vil jo si at det aller farligste med LEAN og prosedyrelegging av det vi gjør, det er jo den konsekvensen prosedyrelegging kan ha at man ikke trenger å forstå. Sånn at man utfører en prosedyre, og så forstår man ikke grunnlaget for prosedyren, og da er man hjelpeløs i avvikssituasjoner. Og man er også hjelpeløs for ukjente endringer som kan skje som ikke prosedyren har dekket på en eller annen måte.

Hvordan motvirker man det? Eller gjør vi, er vi der?

Nei altså, det vet jeg ikke. Det handler jo om kunnskapsoverføring som er videre enn bare prosedyreoverføring. Og jeg vet ikke om vi er veldig gode på det akkurat.

Men det er et veldig godt poeng å være bevisst på.

Jeg husker når vi begynte å prosedyrelegge alt i Elkem sånn veldig systematisk på midten av 1990 tallet, så var jo hver prosedyre nesten en bok. Så de var enorme med faglige begrunnelser for hvorfor prosedyren var som den var, og rapporter om testing og hvordan man hadde kommet frem til prosedyrer. Og alt det lå i hver prosedyre. Det gjorde jo... En konsekvens av det var at ingen leste prosedyrene for det var altfor... direkte vanskelige å trenge igjennom. Men det er ganske interessant allikevel, at i dag har vi noen arbeidsoppskrifter som er veldig effektive for å forstå hvordan man skal utføre jobben riktig, men som ikke sikrer på en eller annen måte den kunnskapen som ligger under hva som er riktig prosedyrer.

Det er også et paradoks da, synes jeg.

Ja, det er det.

Så det må da kanskje være en annen arena, eller man må sørge fr at man kan begge deler.

Ja, eller så må det være roller i organisasjonen som har kunnskapskrav til seg. Det er vanskelig selvfølgelig, men jeg vil jo si at prosessingeniørrollen, den hadde jo jeg gjerne sett var mere akademisk og mindre operativ enn det han er nå. Eller at vi hadde flere, at vi hadde begge deler, eller, ...

Men kan det ha noe med ressurser å gjøre kanskje?

Ja, det er jo å banne i kjerka å si det jeg sa nå, for det er jo en direkte bemanningsøkning, egentlig. Men noen ganger må det være lov å si at vi har lite ressurser, selv om jeg vet at det er politisk ukorrekt, eller politisk i noen miljøer og ukorrekt i andre.

Svaret er jo alltid at «Bruker vi ressursene vår smart nok?», er jo alltid svaret på den uttalelsen. Og det er jo en evig diskusjon. Men det går an å si at sånn vi bruker ressursene nå, hadde vi trengt noen flere. Men jeg er ikke... Jeg tror kanskje at mangelen er større i drift for å frigjøre innovasjon der, enn den er i FOU og produktutvikling. Og der har du og... Altså dette med å forstå anvendelsen av produktene våre i de som har ansvar i produksjon, der er det og noe som er helt sånn fundamentalt. Hvis oppgaven din er å få igjennom flest mulig tonn gjennom et

produksjonstrinn, uten at du forstår konsekvensen med hensyn til funksjonen av produktet, når du gjør endringer for å få igjennom mange tonn. Det er jo en veldig risikable situasjon.

Da har vi egentlig syndet mot et EBS-prinsipp, det mat man skal levere det kunden vil ha, eller altså det leddet vet ikke hva kunden vil ha.

Det er jo og en interessant diskusjon ifm risiko. Altså hvor tar vi risiko. Og det er i hvert fall sånn at når vi tar risiko, så burde det være bevisst.

Jeg fikk snakket meg varm nå.

Jeg er veldig spent på Louis, hva han blir når han får den hatten på seg, for det endrer jo folk og hva de prioriter og tenker på.

Ja, det blir jo sagt at han har masse tanker og ideer for utvikling av Carbon.

Han har jo gjort en kjempejobb i Brasil på produktutvikling og det å se verdien av muligheter og prøve ut ting. Selv om det kanskje virker smått, så hvis ikke du prøver, så finner du ikke ut dette.

Ja det gir jo litt håp.

Jeg er veldig positiv, han tenker veldig prinsipielt og det kan være ryddig for en divisjonsdirektør.

Ja, det er alltid gøy med litt forandring uansett.

Interview with I

I egenskap av å ha vært EBS coach, hva slags type prosjekter var du involvert i?

Jeg har vært involvert i skrekkelig mye, ikke bare fordi jeg har hatt den EBS biten, men jeg har jo jobbet med veldig mye rart de årene jeg har vært her. Men i Søderberg med også på KSM avdelingen og vdl.

Vi trenger ikke være opptatt av EBS prosjekter, det kan være alle typer prosjekter. Ikke heller bare Fiskaa for den del, for du har jo også jobbet andre steder, i Brasil for eksempel. Men hvis vi avgrenser til de siste 5 årene, av ting som har vært av utviklingskarakter.

Det er jo ikke veldig mye som har vært fryktelig nytt. Det er jo mye gammelt med litt ny teknologi og tross alt nye tanker og ideer. Blant annet dette med den paddlemixeren. Og nå har vi jo så smått begynt å, på en helt annen måte, å ha lager og lagerstyring på. Vi tenker da på sporingsenheter i først og fremst i bigbags. Og kobles opp mot da videre i lagerreoler med litt, halvautomatiske... der. Dvs at vi har lagerreoler som er, dvs at du putter paller innover som blir kjørt innover i en reol, men da vet vi hva hvor vi har hver enkelt bigbag. Så vi tenker det er noe. Så det er Anita og meg har laget en begynt å lage en A3 på dette med sporingsenhetene. Og Anne Mette og jeg holder på med lagerreoler trucker, den biten. Så akkurat den biten er forholdsvis, det er veldig nytt for oss det da.

Nå tenker vi jo også, vi prøver å tenke helt nytt når det gjelder lossing av råvarer måter, som at vi har mistet en kran og får noe erstatning, så må vi begynne å se fremover. Og da fabler vi litt om losseløsning med å suge det ut av båten i stedet for å løfte det ut. Og da få det rett til lagersilo nedpå kaia, for deretter å transportere det med belter eller lignende til produksjon til siloene for antrasitt og koks, før det går på ovnene.

Da kortslutter vi den frakten med bil opp til siloer

Ja, ikke sant.

Så der er vi jo på grønt, tendere mot rosa vil jeg påstå.

Hopper til noe helt annet. Vi peser jo våre leverandører av trucker for å komme opp med godt nok elektrisk kjøretøy i stedet for diesel. Det er heller ikke fryktelig nytt, men helt nytt for oss, for pr i dag har vi ikke funnet noe utstyr som vi kan bruke. Men det er mye på grønt her.

Nå vil jeg våge å påstå at det begynner å tenktes en del nytt innen produktutvikling, det har skjedd mer de siste 2-3 årene enn det har gjort i de andre 28 årene jeg har vært her. Selv om vi har hatt noen tester og sånt tidligere, men nå er det jo noe trykk bak. Så det har skjedd mye på bindersiden, ikke minst. Og til stampemasse og nå også etter hvert på Søderberg.

Jeg vil kalle det som den viktige biten på produktutvikling med tilsats av petrolkoks og grafitt, det vi drev vi med for nesten 30 år siden og, men til prebaked, ikke til Søderberg.

Så dette er jo veldig bra, synes jeg.

Ja det er jeg jo helt enig, det var på tide at vi fikk noe push og noe vilje i divisjonen til å satse. Det koster jo penger så klart.

Vi må jo bare innrømme det at vi er der at alt var mye bedre under krigen.

Tema: Arbeidsprosesser og prioriteringer og kultur.

Og da begynner det å bli fluffy og vanskelig.

Og så er nok det litt forskjellig hvem du spør. Spør du en operatør som kjører truck i Søderberg, så vi jo elendige på det meste. Men prater du med folk som føler at de er involvert så er vi jo ganske gode.

Det er ganske interessant fenomen. At når man er involvert..

Ja, det er det. Det viktigste vi kan gjøre tror jeg, er å bruke de folkene vi har tilgjengelig og involvere dem og prøve å trekke litt i dem, prøve å dytte litt i dem. For de har masse ideer, kjempemye ideer. Og det er klart å utfordre folk er viktig. Og jeg trekker igjen frem den utviklingen vi har hatt på krankjøring her etter at vi mistet en kran. Normalt så laset de 230 MT antrasitt i timen, og på mandag med , altså vi har jo gjort masse forskjellige og vi fortsetter å bruke å utfordre på mange ting, men nå på mandag losset de 350 tonn i timen, Så det er jo 50%.

Det er sikkert kjempegøy også for de som..

Ja, så legger de sin ære i at det faktisk skal gå veldig bra. Og så er det jo noen skjær i sjøen. Men altså de kjører 3 timer, så bytter de, de tar lunsjen før eller etter de er i krana. Alle sånne ting, de starter på tiden, de kjører på. Jeg sa til dem, «vi skal ikke kjøre med hjertet i halsen og risikere at vi gjør noe galt, vi skal gjøre det trygt og greit». Men vi må utfordre hverandre på alle mulige måter.

Så den involveringsbiten er ekstremt viktig.

Dette med ide-generering, det er litt sentralt. Hvor kommer ideer fra hos oss?

Vi har diskutert litt på lead-team møtet i dag. Fordi det viser seg at, kommer vi opp i en krisesituasjon, så bobler, så kommer ideene strømmende på løpende bånd. For da ser alle at her har vi behov for nytenkning, i det store og hele. Da pøses det på med ideer. «Ja vi kan prøve det , vi kan prøve det». Men når ting går godt, så er det veldig greit og det går så greit at, vi er verdens beste. Og liksom Hallo.. det holder det. Men så er det jo bare sånn at hvis ikke vi gjør noe, så blir de som er nummer 2 eller 3 eller 4 - tar oss igjen, og så vipper de oss unna. Og det har jo du merket nå ute i markedet, tenker jeg, de siste årene med div forskjellige masserespeter og utfordringer på løftehull i sylindrene og alt dette, ikke vel?

Ja absolutt

Og nå som... Som jeg sier, kriser generere kreativitet. Men det å få til å ha en kultur for å, og en arena for å kunne komme med ideer og innspill... Men det vanskelige er jo å være nøye på å sette av tid til å ha gjerne et møte eller en brainstorming sammen med operatørene og de rundt det, for hverdagen blir bare mer og mer hektisk, og det blir ofte vanskelig å sette av tid til dette. Personlig så prøver jeg å, jeg sier jeg prøver, jeg får det langt ifra til, men å være tilgjengelig et par tre timer om dagen. Altså så døra står oppe stort sett alltid, så «vær så snill», sier jeg, «kom inn». Men sånn som nå står det en lapp på døra om telefonmøte og da vil jeg jo helst ikke bli forstyrret. Men det å sette av tid... Vi er et stressa folkeferd, eller vi er fryktelig flinke til å være på møter.

Ja det er sant. Men i forhold til ideer, for det er jo ideer så bringer oss videre - det må være der det begynner. Og da er det minst 2 ting: Det ene er at folk er motivert til å komme på ideer, og så er det det med at vi fanger dem opp, og så er det å ha tid til å gjøre noe med dem. Har vi noe, er det noe system for oss som vi har på dette?

Jaja, vi har disse forbedringsgruppene som fungerer... i forskjellig grad av suksess. Det er veldig sånn at til å begynne med er dette gøy, og hvis vi får til noe er det enda gøyere. Og så går det en stund, og så er vi så dumme, i hvert fall hos oss her på Fiskaa, at vi gaper over for store utfordringer som en forbedringsgruppe skal løse sjøl. Du kan tenkte deg når en forbedregruppe skal gå i gang med automatisk brikettpakkeanlegg. Det blir jo helt feil. Men det var der det startet. Og allikevel så har vi nå holdt på med heltids ansatte for å gjøre ferdig en investeringsøknad. Vi har en tendens til å gape over for store biter av gangen på den vanlige operatør.

Ja for da ser jeg det litt sånn at det er grensesnittet for det å komme opp med en god ide, en forbedring, og så bringe det over til business case, og da kan det fort bli fort stort for den forbedringsgruppen, så det med å få tatt det videre i systemet...

Ja den er en liten bøyg det faktisk, for det at... Det kan fort bli sånn «Å nei, dette ble for vanskelig, det kan vi ikke få gjort noe med». Og så bare dropper vi det også går vi ut og gjør noe annet.

Og det er jo dumt hvis det skjer, for da ødelegger det motivasjonen for senere greier.

Så det å klare å holde opp den motivasjonen, og det... Den måten jeg prøver på, vi prøver å få til disse forbedringsgruppene. Jeg hadde et par stykker i begynnelsen her, men så får du for mye å gjøre og så er det ting som svelger deg med hud og hår. Men jeg prøver å kjøre avdelingsmøter hvert kvartal i hvert fall, for vi gjør forbedringer allikevel uten at det er via en forbedre gruppe. Så vi er nokså tett på hverandre her i logistikkavdelingen. Men å bruke forbedringsgruppe eller jevnlig møter for å diskutere... har vi noe skulle, noe vi brenner for, noe ville ha forbedret, videreutvikle, og så få tak i den, det er viktig altså.

Ja, og da – det videre etter det er på en måte prioriteringen. Gitt at man har fått tak i disse ideene og mulighetene, da lurer jeg på hvordan det foregår?

Ja, som jeg prøver å gjøre, jeg sier prøver, ikke dermed sagt at man får det til.. Men så tar jeg gjerne en operatør og si gir jeg dem en utfordring, dere har vært på EBS universitetet, dere har hatt en uke fri fra jobb og hatt det gøy. Prøv å lage en A3 på dette, prøv å skrive det ned. Og så er det noen som sliter litt med måten å lese og skrive på, så setter jeg dem sammen med noen som kan det, og så diskuterer de seg

frem, og så blir de enige om ett eller annet. Og så får jeg det, og så går vi igjennom det, og ser vi er det sånn vi vil ha det? Kan vi rette noe på det eller kan vi forbedre det på ett eller annet vis, og så går vi videre derifra. Så jeg prøver å utfordre operatørene.

Ja, det kan jo bli en læreprosess også, som kan være positiv.

Jajaja, det blir en læreprosess, det gjør det.

Men hvis man da har kommet så langt at man har fått frem en del sånne A3'er, så kan vi sikkert ikke gjennomføre alt på en gang.

Nei, det er ikke alltid. Men så er det liksom sånn, da, jeg går til han sjefen, og så presenterer jeg det, og sier «Er ikke dette en god ide? Kan vi gå videre med det?» Ja, gjør det, så prøver vi. Blir det for stort så javel, så må vi koble på noen flere eller noen andre, og hvis ikke så kjører vi på.

Og hver er det som skal til for at et sånt forslag skal gå igjennom?

For å ta det konkrete nå: Jeg utfordret både Gundersen og Nils Henrik på å lage en HMS A3 på... Vi slutter med at det kommer inn trailersjåfører som ikke har vernebekledningen i orden og som ikke vil høre at vi snakker til dem.

Det er tydeligvis en gjenganger.

Ja det er det. Og dessverre så er det operatørene i logistikk som sitter igjen med svarteper hver gang dette skjer. Og dette vil vi ikke ha noen mer av. Vi lagde en A3, og så har jeg kjeftet litt på HMS på Fiskaa, de har fått A3en. Så sier jeg «Vis meg hva dere kan, vis meg hva dere kan få til». .Og så har vi tatt tak i dette på området her .Og så viser det seg at vi har forskjellige HMS regler når det gjelder dette. Og det er jo helt feil. Og nå har de tatt tak i det og det er jo bra. Så nå har de gått videre til HMS avdelingen.

Så i det tilfellet så var det på en måte oppmerksomhet rundt problemstillingen som skulle til?

Og forslag til løsninger da, selvfølgelig. Så har de i hvert fall fått en del gode innspill. Så blir de nødt til å... vi tvinger dem til å svare.

Hvis man har 5-10 forskjellige ting man gjerne skulle gjennomført, og så er det noen som blir prioritert og noen som kommer litt lenger bak i rekken. Er det mulig å si noe generelt om hva man prioriterer? Ift tilbakebetaling, eller tidshorison, risiko, strategi, eller what ever. Er..

Ja.. Hvis du kan vise til forbedring på alle 4 punktene, så er ikke det noe problem. Inntjening, HMS, effektivisering og alt det der. Hvis vi kan se forbedringer på alt det, så er det nesten, det er jo kriminelt å ikke gjøre det.

Men hvilken av dem er viktigst?

For å si det sånn, vi sier alltid at HMS står øverst. Men det er bare tøys altså. Når det gjelder store, tunge prosjekter, så er det bare tøys. Det er ikke HMS som betyr noe, det er betaling innen rimelighetens grenser. Hvis det er greit, så er stort sett alt greit.

Så gjenbetling er viktig. Det er ikke overaskende det, da.

Neida, men bare se til det med automatisk brikettpakking. HMS er jo den viktigste biten der, men... Så det er sånn. Men kan vi plassere på alle 4, så går det greit. Og det er klart, kan vi tjene penger på det uten at det går utover HMS'en uten at det forverrer den, eller spare tid, så er det kurant å gjøre det.

Og hvis man tenker på sånne litt større, litt mer nybrottsarbeid, slik som paddlemixer var, for eksempel. Var det annerledes å få gjennomslag for en sånn tanke?

Den er litt rar den der. Hvis du snakker litt med Harald J. Den er rar. For dette jo noe Harald kom opp med, det begynner å bli noen år siden, 2012-2013. Han som sitter og piper i hornet inne på hjørnekontoret i ganga di, så skrøt han av at han lagde verdens beste masse da han var i USA på den Keokuk fabrikken, men det var.... Og da var det jo ikke noe som var bedre. Men da vi skulle prøve å teste det ut her, så var det jo ville motstander. De i hornet der inne. Det var jo bare galskap, det var jo bare tøys, det var jo helt meningsløst. Så det er jo faren da, med å komme opp med noe forholdsvis nytt når du har en gjeng med folk som har vært der og drevet med det samme i alle år, som meg selv bla. Når du har vært der i 30-40 år, da kan du alt og du vet alt og du er best i alt. Det er faren med de som har vært så lenge, for de bremsar.

Det er den ene siden, men den andre siden er at «Hallo, vi har prøvd dette før, og vi har feila grusomt».

Men heldigvis så har vi en verkssjef som er åpen for nye og spennende ideer. Han sier aldri tvert nei til noe som helst. Han sier bare «Dette må vi finne ute mer av, undersøke mer, kan vi tjene noe på dette, kan vi hente ut mer, kan vi produsere mer. Så det er nok en av de store styrkene som vi har her i dag med han sjefen vi har.

Det er nok en nøkkel, for det farger jo selvfølgelig mye av hva som blir gjort og jobbet med av sånne prosjekter.

Jaja helt klart.

Ift risiko, det er jo da et nøkkelord i den sammenhengen. Når skal vi innføre noe nytt, så er det jo stor forskjell på... Jeg lurer på.. det er litt der det henger. Noen våger å prøve noe, og noen skal ha veldig mye dokumenter før man prøver noe som helst.

Ja, og det er klart, når man har verdens mest optimistiske mann som sjef... Så er han ikke der at han tar noen forferdelig store sjanser. Han er veldig på at dette må vi teste ut, dette må vi vurdere og det er veldig bra at det ikke er noen sånn villbasse som hopper på alt mellom himmel og jord. Men han hører, han er villig til å høre etter. Så akkurat der er han kjempegod. Og så er det ikke alt han er like godt til, men sånn er vi jo alle.

Nei, for jeg opplever at å komme opp med nye ideer det er han villig til å høre på. Det er bare å komme med dem. Og så får du beskjed om «OK, jobb mer med det, finn ut mer, sjekk ut, sjekk ditt og sjekk datt, finne ut og prøve, gjerne prøve hvis vi har mulighet, og så er det å prøve og feile, prøve, feile, justere, det er helt innafor det.

Men har vi nok ressurser til å prøve og feile?

Nei, ikke alltid. Det kommer an på hvor stort.. I det daglige på småting så har vi det. Men på større ting så sliter vil nok litt. For det er klart at han Harald han har støtte i Bjarne og alt det der, men nå heldigvis har han fått inn Daniel også. Det vil hjelpe ham .For det er klart, Harald har ekstremt my å gjøre.

Han blir på en måte den trakten som alt skal gå igjennom .Ikke det at han er en brems, men det er veldig mye som må igjennom han sin regi.

Og så er det klart, Harald er voldsomt flink, synes jeg. Men ting, det kan bli litt mye av og til. Og dermed kan også ting stanse opp.

Er det da et ressursproblem, eller er det et prioriteringsproblem?

Det er nok hvis vi går tilbake til et steg, så er det nok svakheten han sin at han vil så mye. Så vi tar på oss for mye av gangen. Og så er det jo det... Vi vil jo fremover, vi vil jo mer, vi vil produsere mer, vi vil selge mer, vi vil tjene mer, vi vil ha det bedre. Vi er litt der. Det er litt vanskelig. Og så er det litt sånn. Hvor topptung skal vi tillate en organisasjon å være..?

Jeg synes jo det begynner å bli mange som skal bestemme de andre tingene. Bare ut ifra min egen hverdag, så ser jeg ikke helt nytten av det

Akkurat det hører jeg på deg av og til når vi har telefonmøte... For det er helt greit, du må si ifra. Jo flere kokker, eller jo mere sjefer, jo mer søl og jo større beslutningsvegring blir det.

Men jeg har noen... Jeg ser noen paradokser i denne EBS filosofien vår.. For det skal jo være pull, sånn at vi sjekker hva kundene , om det er interne eller eksterne, eller hvor vi er i prosessen, om hva de vil ha, og så lager vi det, og så prøver vi å redusere waste. Og sånn vil vi jo også gjerne tenke mot våre eksterne kunder. Men når de vil ha noe, så er det et paradoks med at vi har vært så flinke med å strømlinjeforme og kutte waste, at når det kommer noen ønsker som er utenfor den prosessen vi har strømlinjeformet, så skorter det på ressursene til å ta tak i de innspillene som kommer fra markedet.

Ja, jeg er veldig enig med deg, Og så har jo, jeg må jo bare glatt innrømme at jeg har jo vært en av de bremseklossene selv. «Dette har vi gjort før, dette har vi prøvd før, dette gidder vi ikke».

Jeg opplever det ikke helt sånn, det er ikke vond vilje hos noen. Det er bare at det får så konsekvenser.

Ja, ikke sant, for du sier strømlinjeformet. Vi kutter, altså vi - åssen skal vi si det. Vi vil ikke ha flere folk til å produsere enn det vi trenger der og da. Det er klar når vi kommer med noe nytt som det er manuell handling på, så skorter det på ressurser, for operatørene er fullt opptatt egentlig med den normale hverdagen. Stor sett i hvert fall, og hva er det som skjer da, hvem må da være de som tar den manuelle biten? For i en startfase på noe nytt så blir det gjerne litt manuelt. Litt heising av ditt og litt røring med en spade oppi datt. Så men du har rett i det, det kan være ulempen med å være

strømlinjeformet. Så vi må ikke være så strømlinjeformet at vi ikke kan begynne med noe nytt.

Ja det er akkurat det. For det krever ressurser. Og så synes jeg at vi får det til, men det går jo sakte nettopp av den grunn.

Ja det er riktig, det gjør det.

Så det er en problemstilling som jeg ikke helt vet hvordan man skal komme seg ut av. For man vil jo alltid forsøke å kutte waste. Men det er en slags kritisk grense der, som man kan komme under.

Og så er det jo det der. De må ha muligheten til å kunne gjøre nye ting. Og så får vi... Da må vi kanskje tenke sånn at, «Okey, trenger vi 2 operatører i et halvt år for å gjennomføre et forsøk og videreutvikling av ett eller annet». Ja, må ikke bare leie inn det da? Må vi ikke være litt tøffere i trynet til å ta inn folk på et prosjekt? Det må være mulig.

Der er det et begrep som jeg har hørt når jeg har snakket med noen av de andre, i de andre divisjonene, som er i ferd med å bre seg litt. Det nye buzz ordet, det er Agile, akkurat som EBS og LEAN og sånt. Det er egentlig veldig mye det samme som EBS, med strukturer og sånne ting. Men så.. deres tanke er at man skal teste ut ting litt kjapt og enkelt og prøve ut, uten at det er så mye risiko, prøve ut ting. Og det synes jeg det handler om litt, det du sier der. Hvis man kan bare leie inn noen, sjekke det ut, var det hurt eller ikke?

Ja, så kan det jo være sånn at vi er avhengige av, for å teste nye ting, at vi er avhengige av våre egne fagfolk, javel. Men da leier vi inn noen til å erstatte de i det daglige, og så gyver vi løs på et selv.

Ja, er det noe støtte for sånne tanker rundt i organisasjonen?

Vanskelig å svare på egentlig. Jeg er ikke sikker fordi at det er så lenge siden vi har gjort noe sånt. Det er klart han Harald Schreiner tar på seg veldig mye av dette manuelle arbeidet på flex-massen. Og det vil jeg, altså, jeg har gjort det samme på andre ting vi har testet ut. Men man kan ikke gjøre det over tid. Du kan gjøre det litt, de 2-3 første gangene, og så må du si «Ah hallo, dette må vi – dette er en operatørjobb». Hvis vi ikke kan ta det med våre faste operatører, så må vi gjøre noe annet. For Harald kan ikke holde på å løpe på dette viset. Før eller siden så snubler han

også. Og det er INGEN tjent med. Så den ideen der med å kunne ta, K det er et prosjekt. Men alle andre gjør jo det. OK, om NOV trenger å ta inn 100 mann pga et prosjekt, så gjør de det

Jeg tror man må erkjenne at hvis vi skal videre, eller hvis vi skal fortsette å være med i løpet, så må vi utvikle oss på et minimum.

Ja også må det gå kjappere.

Og for å utvikle oss, så må vi ha bittelitt ressurser utenom alt det som er strømlinjeformet helt inn til beinet på en måte. Der ser jeg absolutt et lite paradoks eller dilemma. Man vil jo selvfølgelig kutte kostnader så mye som mulig og være kjempeeffektive på det vi gjør.

Ja, jeg synes at det å kutte kostnader er faktisk noe av det verste jeg hører. Fordi at det er jo ikke det det handler om. Det handler om å tjene mer penger. Den dagen vi slutter å prate kost og bytter det ut med å tjene penger, da får du et helt annet fokus. For hvis fokuset er å kutte kost, så det er negativt ladet. Skal vi tjene mer penger, det er jo alle interessert i, ingen er interessert i å kutte kost.

Da er man litt mer inn i en negativ spiral

Ja, jeg er så lei av å høre det uttrykket, beklager, men jeg er det altså. Og derfor prøver jeg nå på den EBS diamanten, den biten med kost, den prøver jeg den endrer jeg ofte til inntjening. Det blir et helt annet fokus.

Nå hopper jeg litt

Ja det gjør jeg og..

En ting som er interessant i mange sammenhenger, er kommunikasjon. Hvor mye kommuniserer vi mellom avdelinger hos oss? Og hvor mye kommuniserer vi utenfor Fiskaa, med andre Carbon-enheter, og enda lenger utenfor der - med andre Elkem enheter? Har du noe... Det er ikke så lett å si da, om det er litt, mye eller midt i mellom?

Frem til dette koronagreiene kom, så synes jeg at vi var veldig flinke til å ta imot folk fra andre Carbon-verk og dele våre erfaringer og ideer og nye ting som vi har en sjelden gang kommet opp med. Noen av oss har jo vært rundt på de andre Carbonverkene både en og to og fem ganger, og det er spennende det. For vi har, vi tror jo at vi er best til alt, men det er vi ikke. Det er faktisk de andre verkene er gode på

en del ting, de og. Så vi har ting å hente der. Men ah, kommunikasjonen går vel veldig ofte mellom verkssjefene tenker jeg. Når det gjelder carbonverkene, men jeg er usikker. Det er klart, nå kjenner jeg mange etter hvert og har hatt de på mail og stadig vekk så har vi litt mailutveksling på problemer og løsninger. Det synes jeg er greit.

Vi hadde jo sånne team som var på de forskjellige verkene. Har det stoppet opp litt?

Ja, vi har jo det kalsineringssteamet. Det tror jeg faktisk pågår enda pr telefonmøter. Men jeg er ikke helt sikker, men.. Og Søderberg også. For både Tor og Harald Schreiner har jo vært mye på sånne telefonmøter. Noen ganger i året. Jeg synes jo det er veldig bra å ha de der, og så må du ha sånn face to face møter i alle fall en gang i året. Fordi at, jeg var jo med på det forbedringsteam Søderberg for mange herrens år siden, tilbake i 2005-2006, det var veldig nyttig. Vi lærte av hverandre ganske så kjapt og en god del.

Jeg tror det er my å hente der. Jeg lest en artikkel om noen som hadde forskjellige tiltak. Dee hadde en pris for årets beste ide, men de hadde også «årets beste not invented here». Sånn at de hadde bare lånt fra naboen. Det var litt smart, å lage det som en skikkelig positiv ting, å kopiere av hverandre.

Ja, ikke sant. Det er sånn, å kopiere eller stjele rått, det er jo lurt. Også der har Odd vært rimelig flink til å komme med sånne ideer når han har vært på vekene, og komme til meg med... I hvert fall da jeg holdt på med den EBS biten. Men vi kunne nok hatt mye mer erfaringsutveksling, kommunikasjon, vil jeg tro, med våre søsterverk. En annen ting som jeg... som har vært en av mine kjepphester i mange mange år, det er: Få operatørene ut til kundene av og til. Få med skipning ut, få med kunde, de som driver med kundeordre, hils på kunden! Men så ikke sant? «Hva er problemet, hva har dere problemer med, hva kan vi gjøre?». «Jøss, er det ikke mer enn det, det kan vi jo hjelpe dere med». Eller også motsatt.

Ja, det har jeg kjempetro på, jeg sitter jo veldig i glasshus der.

Ja, jeg sitter ikke å kritiserer det. Igjen så er jeg vel en av de som har vært mest ute, og sånn sett er et ikke for min egen del jeg sier det. Tvert imot det er for de andre. OK, det koster noen kroner for fly og hotell eller tog og hva det skal være. Men det gjør så ufattelig mye på... å se problemet på kundens måte samtidig som det er en ekstrem motivasjonsfaktor.

Ja, jeg er så 100% enig. Så det skal vi bare fortsette... eller det er bra å fortsatt bli minnet på det.

Nå spoler jeg sikkert helt av. Vi har jo et sånt skipningsmøte en gang i uka eller no for å se på uka som gikk, uka som er, og uka som kommer. Og da kommer det jo, det er jo sånn... «De der på salg marked de skjønner ikke dette». Og da sier jeg «Men hør nå, hvorfor gjør de ikke det?». Jeg er nokså overbevist om at når vi kommer forbi august, så tror jeg rett og slett vi må ha en samling med dere som er i marked og de som sitter i første etasje på skiping.

Det høres fornuftig ut

Ja, fordi, la oss gå igjennom hva, hvordan skal ting gjøres, hvordan skal vi gjøre det, hvordan skal dere gjøre det, og hvordan skal vi gjøre det i sammen. For jeg orker ikke å sitte å høre på tuting.

Ja, det er veldig lite konstruktivt.

Ja det er i hvert fall en nedadgående spiral.

Og så gjør alle det i beste mening sånn som det er i dag, det er jeg overbevist om. Og så tror jeg at det ikke er store forbedringen som skal til for at «Yes, der er vi». For vi vil det samme.

Nå sporet jeg av, det er jeg god til.

Det er lov. En ting vi var innom da vi pratet tidligere en gang, var det med personlig initiativ. I hvilken grad er vi avhengig av det, ift nye ideer? Har vi et system som lokker det frem i folk, eller er vi egentlig ganske avhengig av at det finnes folk hos oss som har entreprenørskap i seg? I hvilken grad er vi avhengig av personlige initiativ hos folk?

Det er og litt opp til... Vi er jo avhengig av det. Så lenge vi er linke til å utfordre folk, utfordre hverandre. Hvis vi tør å utfordre hverandre og utfordre gamle sannheter, så kommer ideene opp. For da sitter vi og prater, og så begynner du å spinne, og så oj, så var det plutselig noen som kom på noe.

For skal vi sitte å vente på de gode ideene og sitte og vente på at noen skal komme å banke på døra og si «Jeg tror jeg har en god ide». Da har vi tapt.

Nå er jeg på en ny plass. Jeg har ikke greie på noe her nede, det begynner å hjelpe litt, men ikke mye. Jeg må jo spørre, «Hvorfor gjør vi sånn, er det sånn vi skal gjøre det, er

det sånn vi vil ha det?». Jeg prøver å utfordre de kanskje litt mye av og til, og kanskje litt lite av og til. Men jeg prøver å utfordre.

Men har vi en kultur for det, tror du - i Carbon - sånn rent generelt? For å...

Det tror jeg varierer fra avdeling til avdeling. Fra teamleder til teamleder. Det varierer tror jeg veldig.

Jeg har inntrykk av at noen er veldig flinke på det, og noen er ikke fullt så flinke. Noen lytter til seg selv, noen lytter til alle rundt seg på ideer. Så der er vi forskjellige, og sånn er jo ofte verden.

Ja jeg er enig det

Men igjen, så er vi tilbake til det med hvordan tar vi det videre, hva gjør vi, har vi tid og anledning, har vi ressurser til å gjøre ting. Jeg heller jo veldig til det at er det noe vi kan gjøre enkelt og greit, så bare gjør vi det. Så gjør vi ikke noe mer med det å involvere folk, vi bare gjør det.

Og det jeg ser som strukturelt, er KP team. Og så tror jeg ikke vi har noe særlig annet enn det. Av strukturer og virkemidler.

Nei, vi har ikke det. Det er liksom sånn vi gjør det.

Jeg har også lest en annen artikkel. Det går egentlig litt på ressurser igjen, der de snakker om det med... Hvis man har en problemstilling, så kan man enten jobbe hardere, eller så kan man jobbe smarte. Og EBS er jo veldig den at da skal vi jobbe smartere, forbedre for å jobbe smartere. Men så er problemstillingen at det krever ressurser. Og så lenge man ikke har ressurser, så blir det bare at man klatter på det man har, og så jobber man bare hardere, og det er negativ spiral for da kommer man egentlig aldri videre. Jeg vet ikke om du har sett det tegneseriebildet; noen som står og dytter på en bil i steinalderen, som dytter på en bil med firkantede steinhjul.

Og så «Hvorfor lager dere ikke runde hjul?». «Nei vi har ikke tid».

Har vi mye firkantede hjul hos oss, eller hvordan ligger det an der?

Vi har nok en del av det.

Går det an å si noe om... Har vi kultur for, eller forståelse for, at «Nei nå må vi slutte å dytte på det firkantede hjulet, vi må sette på litt ressurser her sånn at vi kan se på det nye lure runde hjulet».

Har det vært noen utvikling de siste årene i den ene eller andre retningen?

Jeg synes at utviklingen hos oss går riktig vei, for det gjør jeg. Det er klart at folk som ikke har vært hos oss på de siste 10-12 årene kjenner seg jo ikke igjen i det hele tatt hos oss. Og både hvordan det ser ut og hvordan det jobbes. Sa der har det... Nå har jo du også vært der en god stund, og du har jo og merket at ting har blitt endret over tid til det mye bedre.

Og så var du vekke en stund også, det var jo ikke lenge, men det var i den tiden du kom tilbake at endringene begynte å skje.

Før det så var jeg ikke så mye i Carbon.

Nei nei, du var jo ikke det, da. Men det har jo skjedd en god del.

Det går fremover. Jeg er redd for at vi skal – som vi var inne på i sted - at ressursene naturlig nok blir tilpasset at vi har blitt mye flinkere på mange ting. Og så kan man komme så langt ned, at vi da plutselig ikke har tid eller ressurser til å fortsette å ha den forbedringsloopen. At vi da kan komme i en sånn felle at vi løper rundt og brannslukker.

Ja det er jo faren.

Og da lurer jeg på – hvordan ser du den trenden? Er det noen sånn trend, eller er det stabilt, eller bedre i det siste?

Det er jo noen tanker om det. Med mer automatisering vil vi jo frigjøre mer tid til andre oppgaver. Og noe av tanken der er jo være med å forbedre ting. Så kommer jo den andre biten inn, der «Ja, nå har vi fått frigjort noe mer tid, så da kan vi jo teste ut mer nye produkter med masse manuelt arbeid». Så det ene slår det andre i hjel. Men altså, tanken er jo faktisk det at vi skal bruke til noe annet enn på å sitte og trykke på de knappene oppi kontrollrommet. Eller sitte å heise, henge på bigbages og klistre lapper på brikettpakkeanlegget. Odd sier, og et tror jeg han på, det er ingen som skal sendes ut porten. Her skal vi ha de folkene vi har, og slutter det noen, så er det ikke dermed sagt at vi erstatter dem, men at vi skal være de vi er, det er ganske ålreit måte å si det på. Det tror folk på nå. For det har vist seg over mange år at det er faktisk sånn det er.

Det synes jeg er en veldig fin tenke egentlig, det høres jo veldig riktig ut. Både at vi frigjør ressurser til å komme i en «work smarter loop» i stedet for å «jobbe hardere loop», å bruke automatisering til det, for å sørger for at vi kan fortsette å forbedre. Det er det jeg er litt ute etter... Og litt redd for... Snubler vi i vår egen EBS med at vi blir så effektive at vi ikke har tid til å holde på med EBS lenger, hvis du skjønner hva jeg mener?

Ja, jeg skjønner veldig godt hva du emner. Vi prøver jo å fortelle, og banke inni hodet på folk, som jeg kanskje har lært selv også. At det er ingenting som er perfekt, alt kan forbedres, absolutt alt. Og så lenge vi har den i pannebrasken at alt kan forbedres, så går vi riktig vei, tror jeg. Men den dagen vi er tilbake til der at alt var så mye bedre under krigen, det er starten på slutten. Så lenge vi kan tror på det at vi kan forbedre alt, så tror jeg at verden går riktig vei. Eller at vi går riktig vei.

Det synes jeg hørt ut som en veldig fin avslutningsfrase.

Ja, men jeg tro på det. Det tok meg, for å si det sånn, det tok meg veldig lang tid før jeg skjønte dette EBS greia. For meg var det svada lenge, og da snakker jeg om år, før jeg plutselig, «Oi sann, jaha det er faktisk ikke noe annet enn sunt bondevett satt i system». Det er det jeg kaller det.

Er det noen ting jeg skulle ha spurt om, eller som du gjerne vil si?

Nja, vi pratet, vi var litt innom det der med kommunikasjon. Kommunikasjon kan jo aldri bli god nok, men det jeg er litt opptatt av... Når vi prater kommunikasjon, så er det mange som mener at de har krav på informasjon, så sier jeg at «Javel, nei det du har... Du har krav på å spørre, og du spør altfor lite. Spør meg, så skal du få svar». Jeg kan ikke gjette meg til hva folk ønsker å vite. Så når det gjelder kommunikasjon, så må vi bli mye bedre til å spørre.

Jeg kom på en siste ting forresten, det handler litt om det. Om strategi. Har Fiskaa en tydelig strategi? Eller, spørsmål 1. Og spørsmål 2: Er den kjent for folk? Og hvis ikke, stiller folk spørsmål om hva strategien er?

Både ja og nei, vi har jo en klar strategi, Vi har jo 5-års planer og dette har vi jo på disse... det vi kaller strategisamlinger med alle ansatte en gang i året, som jeg synes er knallbra at vi har. Det tror jeg ikke det er... det er mange som har strategisamlinger, men det er ikke så mange som drar med seg rubbel og bit.

Det synes jeg har vært dødsbra, at de står frem og presentere prosjekter, det er veldig veldig bra.

Og odd legger frem det ene tallet etter et andre, planer for de eneste årene, du kommer med dine ting på marked og det der. Jeg må si, når jeg prater med min kamerater som jobber i andre bedrifter, de skjønner nesten ikke, «Er det mulig?», sier de.

Hvis du hadde spurt noen av operatørene hva strategien til Fiskaa er...?

Nei, da hadde de sagt «Det er noe vi får vite på høsten». Men det er jo fordi at for noen så er det, «Ok det er noe vi får vite, og så tenker vi ikke noe mer over det». Så har du andre igjen som er opptatte av «Ok, nå skal vi bygge et nytt pakkeanlegg på KSM, vi skal inn med en ny blandemaskin». Dette har vært i loopen i mange år, og at vi begynner å planlegge dette, dette er strategien, vi skal øke på der. Og så har vi jo dette med miljø som vi er alle opptatte av. Dette får folk med seg.

Men hvis du spør dem hva strategien er , så er det ikke alle som kan svare deg med en gang. Men hvis du sier åssen planer har dere for miljø? «Åjo ja, vi skal redusere utslipp», så kommer det litt an på åssen en spør.

Ja absolutt. Jeg synes jo faktisk personlig at vi er litt svake på strategi. Men vi har noen helt klare mål. Men hvor denne skuta skal de neste 5-10-15 årene synes jeg er en svakhet hos oss, at vi ikke har noe uttalt om det. Det er litt utenfor dette. Vi er flinke på å ha de målene og presentere det i det små. Men hva er det egentlig vi skal, Hvorfor er vi her?

Når jeg ser på materials-biten is SiMat, så har de en kjempeklar strategi, om at innen 5 år skal de utvikle så og så mange ting. Og så er det sikkert vanskelig å etterleve, men de har i hvert fall sagt veldig tydelig at «Det er dette vil», og «Nå skal du utvikle så mye», for de forskjellige business direktorene. Og der tror jeg vi kunne vært litt mer...

Ja, litt mer håndfaste. Og litt tydeligere.

Ja, og ikke bare si at vi skal vokse, men hvordan.

Ja, jo du har kanskje et poeng der. Vi er nok ikke helt enige der, du og meg. Men jeg ser det kanskje på en litt annen måte.

Jeg synes at produksjonsmessig er vi mer flinke der. Men markedsmessig synes jeg det skulle vært mer sånn at «Dette markedet er interessant, la oss satse der». Men vi er mer på at «Hvor mange tonn skal vi produsere til neste år», og da må vi prøve å selge det.

Det har du nok veldig rett i. Men vi har vel vært i...

Det har ikkeno med dette her å gjøre egentlig. Nå er det jeg som begynner å bable..

Det er godt det, at det ikke er bare meg.

Interview with J

(...)

Exploitation er inkrementelt, og exploration er radikalt?

Ja, vi kan godt se det sånn.

Dette er jo et kjempeinteressant spørsmål som får forskjellig svar ift hvilken tidsperiode du ser på, hvilket prosjekter enhver har vært involvert i. Hvis vi sier Solartiden, så var det ganske radikalt. Fordi da..., vi brukte kunnskap ifra det vi kunne i Elkem, men vi hev oss inn på en et helt nytt kunde grunnlag og et helt nytt område, og teknologitrinnene var også helt nye. Så det var egenutvikla og patentert selv. Så da var vi veldig radikale. Det må jeg kalle en radikal innovasjon. Da tok jo Elkem en sjans, en tok en stor risiko, og sa at dette gjør vi ved å ta det ut av organisasjonen. At man ville ikke fortsette dette i den vanlige organisasjonen, fordi man så at da ble man tatt av den vanlige driften og mer inkrementell innovasjon. Det ble tatt ut, og det ble en egen business unit etter hvert, og man tok en mye høyere risiko enn det man normalt gjør i Elkem. Så når man ser på det, så vil jeg si at man er på «explorations» siden. Og det var veldig lærende, vi ser jo at vi har brukt veldig mye av den kunnskapen som vi utviklet i Solar, brukes jo nå ellers i Elkem.

Altså mer den reelle kunnskapen, eller mer metoden? Altså fagkunnskapen, eller tenker du metodikken?

Jeg tenke på fagkunnskapen når jeg sa det. Men det kan nok være med metodikk også, må jeg si. Alt ifra systemene, fra mess systemet som ble implementert i Solar, i injeksjon av fines som vi nå holder på med i resten av Si divisjonen, mye innenfor overflatekjemi som vi har tatt videre nå, så jeg tenkte egentlig på det faglige. Men det er sikkert begge deler.

Ja, det var ikke jeg klar over, det er spennende, at man klarer å dra læring over i andre divisjoner.

Ja, så bare for å ta litt kort, så har Elkem også den her radikale type innovasjonen. Men hvis du snakker med en mere driftsperson og kanskje i det store og det hele, så er nok Elkem mer på den inkrementelle delen, at vi hele tiden utvikler oss utifra kundens

behov og vi får disse små skrittene som gjøre at vi blir bedre og bedre, og vi er veldig forbedringsorientert egentlig, i alt vi gjør. Så det er nok der dvi er tettest på.

Men hvis vi nå sier i Elkem Technology, så har jo vi... Nå må jeg også si at nå... Organisasjonen ble snudd litt rundt her, ift det som skjer med Elkem Silicon Products. Så jeg kan ikke helt si hvordan dette blir fremover nå, om det blir endret. Men sånn det har vært, så har jo Elkem Technology hatt ansvaret for å ha den mer langsiktige forskningen, mens det kortsiktige skulle ligge hos divisjonen. Det var sånn det var satt. Nå jobber vi på begge akser, men vi har i hvert fall noe begrenset konsernbidrag for det mer langsiktige. Og om det er radikal eller exploration, det skal jeg ikke si, men det har i hvert fall en tidshorisont som er lenger enn disse hva skal jeg si... På det kortsiktige som er lengre enn 1-2 år. Selv om vi har bare budsjett fra år til år, så har vi fått lov til å holde på med dette Si 2020 programmet i hvert fall nå i 3 år. Og kunnet se litt lenger enn til neste kampanje. I styringskomiteen i det prosjektet sitter teknologidirektørene i divisjonene, så der... Eller divisjonene – Carbon er ikke med i det – Men det har vært Foundry og ESM, det er de som... Pluss Håvard Mo som er i Elkem Technology, men det er divisjonene som bestemmer hva som skal gjøres. Og plant managers er med i alle disse komitemøtene, så de bestemmer retningen, og tar med seg og implementerer det som er ferdig. Og så er det referansegrupper, dette er en porteføljeoversikt, og så er det småprosjekter. Og der sitter referansepersoner i divisjonene inn, sånn at det hele tiden blir tatt ut den kunnskapen som kommer, for dette er ikke på noen måte isolert, sånn som Solar var, dette er veldig integrert i dagens... Men man skal forsøke å da... Å tenke litt lenger fremover.

Er det verkssjefene og divisjonssjefene som er oppdragsgiverne, som bestemmer hva som skal ses på og prioriteres?

Ja, for de prioriteres... I de styringskomitemøtene så er det de som gjør det. Men samtidig så har prosjektlederen en del å si, altså. For å påvirke. Dette er et samarbeid

Hvis jeg forsto det riktig, så er dette Si 2020 en overordnet... et overordnet prosjekt med masse underprosjekter, eller en porteføljetype?

Ja, program kaller vi det.

Ja nettopp, med masse underprosjekter, da?

Ja, det er det. Men så er det: Hvordan skaffer vi oss finansieringen til dette? For vi får et mindre konsernbidrag, men så er det vårt ansvar å skaffe et større budsjett. Og det skaffer vi ved å søke forskningsrådet om midler. Så vi søker om forskningsmidler sammen med forskningsinstitutter, typisk Sintef, NTNU, IFE, PFI, men det kan også være utenlandske institutter. Og dermed så kan vi spe på det budsjettet, så vi lager dette som en mix.

Er det litt IP problematikk ute og går da?

Det kan det være. Jeg tenker... Det samme gjør vi på batteridelen, for det er en annen måte, en annen ting vi burde snakke om.

Jo det er jo en IP-diskusjon, alltid. Men i forskningsrådet så har du jo IPN'er, hvor det er organisasjonen, eller altså vi, bedriften, som står i førersetet, og da er det vi som eier IP'n. Det går frem av konsortia avtalen. Men hvis det er en KPN et kompetanse prosjekt, så... Nå har byttet navn til KSP, faktisk fra veldig nylig. Det er kom? prosjekter hvor det er et forskningsinstitutt eller et universitet som søker, da er det vanskeligere med IP'en. Da må vi være mye mer forsiktige med hva vi gir fra oss. Men slik som det fungerer, så er det det at vi er med og lager en retning eller et program, og så tar vi hele tiden med oss de resultatene som forskningsinstituttet eller universitetene utvikler, og tar dem i bruk hos oss. Så de er ikke så involvert i applikasjonene, eller hvordan vi velger å bruke kunnskapen i våre applikasjoner. Men det er på en måte å forsyne seg fra et bord, og så bruke det på vår måte. Men det er forskjellige typer programmer.

Jeg tenkte på en ting. Solar og Batteri er eksempler på explorative prosjekter, som er store og blir løftet ut. Og det er sikkert en lur strategi, å løfte de ut av det vanlige. Men hvor kommer disse ideene fra? Det er ikke så mye hvis vi har 2 sårne ila 15 år.

Ja, det er et godt poeng. For dette med front end innovation, helt på den venstre siden av Stage Gatene... Nå har det vært veldig opp og ned. Jeg husker vi hadde forslagskasse for å få opp alle ideene. Så har det nå over lengre tid vært en intranett-knapp hvor du skal sende inn, som Jorunn og Bernt Friede... Den her forslagsdelen har gått inn der. Så vi har hatt flere hundrevis av ideer, og så blir de gitt ut til divisjonene eller til prosjekter eller hvor de hører hjemme. Og hvis de ikke har noe hjem, så har det vært i Elkem Technology som har hatt et mindre budsjett. Men det har

vært et velig lite budsjett, men mest for å behandle disse ideene, og se om det er noe spennende. Men ofte er det inkrementelle ideer som kommer. Sånn at det er en forbedring på jernnivået til den kunden, og sånne ting. Men det har kommet mye rart og mye spennende, absolutt. Mens nå har jo Wazoku tatt over for den delen. Så nå er det det som er... Det er jo ikke implementert overalt, men det er Wazoku som skal ta over ide front-end delen.

Man har en forslagskasse da på en måte, om den er fysisk eller på web. Men er det noe aktiv oppfordring i organisasjon til å motivere folk til å komme opp med ideer? For dette er en veldig passiv måte: Her kan du putte forslaget ditt. I hvilken grad etterspørres det nye ideer?.

Det er et godt spørsmål. I Wazoku nå, så er det sånne challenges, så der oppfordres. Det har vært et par konkurranser. Så nå har vi en challenge innenfor bærekraft for eksempel, så kan du putte inn innenfor det området. Og så har det vært premier som en lystenner og sånne ting som det står Elkem på. Så det har vært sånne ting. Og så oppfordres det jo i forskningsmiljøet fordi det er en del av jobben din, til å komme på nye ideer hele tiden.

I Technology da, tenker du?

Ja i hvert fall i avdelingen hos meg, så er det hele tiden på medarbeidersamtaler. «Har vi fått inn noen nye forskningsprosjekter, Har vi fått inn noen nye ideer, Hva har vi gjort av nye ting?». Det er nok ikke noe som er overalt. Det tror jeg ikke, så det er nok ikke veldig utbredt.

Det er litt på den enkelte leder, kanskje da

Ja, jeg tror det. Jeg tror ikke det er noe som står skrevet noe sted. Men det er jo en del av jobben til forskerne. Hele tiden å komme opp med nye ideer, nye løsninger og nye muligheter. Men det blir jo innenfor det området du jobber på, sånn at når skal vi finne ut sånn som nye batterier eller... Det er jo ikke på det nivået.

Nei så det er jo... Det kan være veldig innovativt og smart og bringe oss fremover, men det er likevel i den kjente loopen, i den exploitative.

Ja, jeg vil si det. For ellers så... Jeg bare tenker hvordan batteri kom i gang, da. For det kom i gang her som et lite prosjekt. Kanskje for en 6-7 år siden begynte man å se på... Egentlig var det litt i forlengelsen av Solar, for vi så at en del av den læringen vi hadde

i Solar kunne også brukes til batterier på silisium. Det var en god del likhetspunkter. Og da kom det opp som et prosjekt her, og under Ragnar Tronstad, som tok det opp og fikk noe penger til et lite prosjekt, med 1 person som jobbet med det. Og så kom markedet, og så på hva de tekniske utfordringene kunne være. Det er det som har gjort at man har kommet opp til batteri, at man startet med noen sånne småprosjekter.

Det er litt basert på initiativ og ide fra en person? Sånn er det kanskje bestandig da-

Men ja, som har jobbet i Technology da, som har sett på nye muligheter. Men det er ikke mange som har en sånn type jobb, som har tid til det. Men det er litt på måten som det med 3D printing har kommet opp nå. For det har kommet fra miljøet her, som ser det at silisium kan inngå i legeringer, og så 3D printes det, som nye Si applikasjoner. Så der har vi et mindre prosjekt, et NFR type prosjekt, for det er sånn vi kan dekke det. Vi får jo ikke konsernbidrag, i hvert fall ikke for store deler. Når det har begynt å bli noe, så kan vi få noe, sånn som på batteri. Men når det bare er ideer, så må vi prøve å være med på forskningsprosjekter på en måte, for å få penger til det. Vi er med på 3D printing prosjektet å...

Ja, for Elkem har ikke en kasse med penger for nye ideer?

Nei, vi får noe konsernbidrag. Men det er det samme... At du må i hvert fall lage en A3 og vise business caset. Og det er et... Ikke et problem, men en utfordring. Hvordan lager du et godt business case av et marked som ikke er utviklet? For da skal du lage en nåverdi på det, og den er veldig vanskelig. Så jeg har lest en del forskningslitteratur på det. Når det er radikal innovasjon, så bør man heller bruke andre indikatorer enn de finansielle, og heller se på match mot strategi, hvordan passer dette inn i porteføljen vår, har vi kompetanse innad i konsernet, og sånne type argumenter bør heller brukes enn verdibegrepet. De Finansielle begrepene.

Og hvordan er Elkem der, fra din vinkel, ift å godta et prosjekt hvor du ikke kan vise frem de vanlige indikatorene?

Det er veldig vanskelig. De spør om business case. På en måte så forstår jeg det også, for man ønsker å ha et marked og vite at man har et marked som kommer der. Men det der er en utfordring, hvis du ikke kan vise til business case på A3en din så er det veldig vanskelig å få penger til prosjekt.

Og det kjenner jeg så godt igjen. Hvis man skal prøve noe nytt, så er det jo nytt. Og da vet man jo ikke.

Jeg leste en artikkel på det her som sa at «Trust your gut feeling». Så heller ta magesfølelsen. Men den går ikke! Der er det et stykke.

Er det en kultur tror du, i Elkem, som er sånn? Det er jo ikke alle firma som er sånn, det er ikke noen naturlov.

Det tror jeg nok er en kultur. Vi er litt sånn at de ønsker å ha... Du har jo EBS som står veldig sterkt. Og EBS er jo typisk inkrementelle innovasjoner. Eller vi skal bygge hele tiden, forbedre, det er forbedringspoenget. Og da må du jo vise til et forbedringspotensial hele tiden for å komme videre og i loopen. Så jeg tror nok det er noe med kulturen vår. Vi har EBS. Vi er jo ganske nøysomme. Vi har jo hatt det som en verdi. Jeg sier ikke at vi har det nå lenger, men at vi hele tiden ønsker å se faktabasert. Og da... Det er mange teknologer og realister som ønsker å se tall. Ja og økonomifolk også, som ønsker å se tall. Det er nok ikke så mange som er veldig risikovillige og ønsker å ta den sjansen. For du er jo litt... (sat man?) skal ikke si... Man liksom blir tatt på det. At «Her hadde vi dette business caset som vi har jobbet med», og vise til det etterpå. Jeg tror kulturen er ganske sterk der.

Ja, det er og min følelse.

Ja det er det jeg også..

Det kan bli veldig spennende med helt ny toppsjef. Det er jeg litt spent på om kommer til å endre på ting eller ikke

Det er jeg spent på og. Det er klart at det setter sine spor, toppsjefen nedover i organisasjonen.

Det tror jeg også. Kanskje til og med mer enn det toppsjefen er klar over selv. Hvor mye det sildrer igjennom organisasjonen.

Du ønsket å avsluttet litt tidlig. Er det noe du gjerne ville ha sagt i denne sammenheng før vi legger på?

Samtidig er ikke bildet helt svart her. Man har jo en teknisk organisasjon og man ser jo verdien av å utvikle seg og kjøre tester og som du sa, det er å teste ting. Vi har jo en pilotstasjon. Vi har jo et laboratorie. Så man ser jo verdien av det det, vil jeg jo si. Det

kunne jo vært verre her. Man kunne jo lagt ned det her på et tidspunkt. Så jeg tror ønsket er der. Men jeg tror kanskje det ligger litt i det der med kost. Vi er veldig kostdrevet. Jeg ser når divisjonene... Om de skal kjøre forsøk eller ikke. «Ja, hvor mye koster det? Åja, det koster så mye, ja. Da tror jeg ikke vi gjør de testene allikevel». Så det er kanskje en del av kulturen igjen da, at man er jo kostdrevet.

Ja, det er nøysomhetsprinsippet igjen, kanskje. Ja, for vi er jo et suksessfullt selskap. Det må vi ikke glemme, så vi må jo gjøre noe riktig.

Ja, og vi har jo også et innovasjons team under Luois. Det er jo litt spennende. Ha er jo en litt annen type enn gamle Elkem.

Nå sitter jeg i Carbon i markeds og salg. Jeg merker ikke noe til den innovasjonsgruppa, jeg visste ikke at de fantes en gang. Eller dere, du er kanskje med i det selv?

Ja, jeg har vært med i et års tid. Og da hadde dette pågått før... før jeg kom inn. Og driveneren her er Louis fra den franske siden. Sterkt. Og Sophie Schneider som er R&D sjef der. Men så har jo Gro vært inne ganske lenge. Og ganske påvirket vil jeg si, av det. Og derfor har jeg kommet inn nå. Og de snakker mye om «Open innovation». Og det er jo å bruke forskningsinstitutter og universiteter inn mot oss. Men jeg må jo si at det er noe vi har gjort i mange år. Så det er ikke noe ukjent for oss å ha prosjekter mot forskningsinstitutter. Men kanskje kommer det nå igjen i en litt annen form. Og kommer mer inn på ledelse. Så jeg synes det er spennende. Så når du sier at du ikke har merket noe til det, så er det en måte å påvirke ledelsen på det, tror jeg.

Jeg vet ikke, er det kommet i stand fordi... basert på en erkjennelse om at det trengs? Eller hvorfor har man innovasjonsteamet?

Ja, det er jeg faktisk litt usikker på, fordi at jeg ikke var der da det startet opp. Men Louis har jo en rolle innenfor R&D, sånn som det har vært på kartet i hvert fall, R&D og innovation. Mens Håvard har jo teknologi, og Elkem Technology rapporterer til Håvard og ikke til Louis. Men så får vi disse dryppene fra Louis, som jeg føler er veldig positive. Men vi har jo ikke noen linje. Så vi du vet jo hvor innsatsen går når det er mye å gjøre. Så går det der.. Så det tør jeg rett og slett ikke svare på. Det kan tenktes at Gro er bedre til å svare på det. Det er veldig bra at du får inntrykk av mange forskjellige, for jeg tror vi blir veldig påvirket av hvor vi sitter i organisasjonen og hva slags erfaringer og hva slags prosjekter vi jobber med.

Det er litt forskjellig, men det er også ganske mye som er likt etter hvert som jeg har snakket med folk. Så dert er litt spennende.

Appendix D. Reflection note

Reflection note for the thesis:

“Exploitation and exploration in a company with institutionalized Lean principles”

University of Agder, 2020.
School of Business and Law, Department of Management

1. Summary of thesis

The thesis *“Exploitation and exploration in a company with institutionalized Lean principles”* investigates the difficult task of balancing continuous improvement of existing business on one side, and exploring new opportunities on the other. The two strategies are equally important for a company’s long-term success, but also fundamentally different. While one is associated with control, refinement, efficiency and reduced variation (exploitation), the other involves risk-taking, experimentation and innovation (exploration).

Inspired by literature pointing to Lean manufacturing as a possible hindrance for innovation and exploration, a multinational manufacturing firm with institutionalized Lean practices was chosen as case company.

The research question *“How is a company, where Lean practices have been institutionalized over more than twenty years, balancing exploitation and exploration?”* was explored through semi-structured interviews of ten key members of the organization. Based on the interviews, the current balance between exploitative and explorative projects within the case company was mapped, and organizational and contextual factors that may influence this balance were collected, analyzed, discussed and compared to relevant theory.

The thesis concludes that despite a highly explorative origin, the case company’s current orientation is mainly exploitative. This is successfully achieved through their mature adaption of Lean philosophy. But in contrast to literature pointing to Lean and similar philosophies as

potentially harmful for a company's ability to explore, the findings rather propose that the tool or the philosophy itself is not to blame for limited entrepreneurial orientation. The observed hindrance is rather due to the ever-existing issue of scarce resources, combined with an overall company culture. The company culture is regarded as the sum of many factors, both internal such as management orientation, attitude towards risk and award systems, and external such as market competitiveness and macro trends.

2. International trends and forces

2.1 The unit of analysis – a multinational manufacturing firm

The thesis' unit of analysis, a multinational manufacturing firm, is heavily exposed to international trends and forces. With a large fraction of their products being commodities, the company's market share is under pressure from global competition - a competition that is becoming all the fiercer along with increasingly efficient transportation, digital solutions and an accelerating development pace.

The economic macro-trends of shift towards financial investments and short-term gains are influencing the company on a managerial level, in the sense that long-term investments and explorative activities are becoming harder to defend. A counterbalance to this is that the company has a Chinese conglomerate company as majority owner, and that Chinese culture (as for instance reflected in "Hofstede's Insights") is thought to have a more long-term orientation.

Also other megatrends are influencing the company's offerings. The product range is being oriented to meet needs stemming from trends such as a growing and aging population (supplying products used in well-being and health care industry), increased focus on sustainability (supply of products used in electrical vehicles and solar panels) and urbanization and increased standard of living (supply of products used for construction and infrastructure).

The international industry trend of increased focus on corporate social responsibility has motivated the company to implement a dedicated ESG organization (Environment social Governance).

2.2 The topic - the exploitation-exploration dilemma

The same megatrends are making the topic of this study, the difficult task of balancing continuous improvement of existing business on one side, and exploring new opportunities on the other, ever more relevant. In a time when globalization is tightening the competitive landscape, and in a market that is perhaps more dynamic and rapid-changing than ever, mastering this balance is becoming increasingly important.

In today's landscape it is not enough to be good at what you do, you also need to continuously improve to maintain a competitive position. This will assure success on short-term. But for long-term success, not even this is sufficient. Firms must also look to the future for what might be coming. A solution that is good today, may be obsolete tomorrow. How to handle this balance, in an era of scarce resources, cost reduction and efficiency?

3. Innovation

The thesis has a clear connection to innovation. Innovation is typically associated with exploration; inventing a new technology, or establishing an entirely new market. For a company to pursue explorative activities, innovation is essential. In order to succeed in this direction, the thesis points to possible hindrances that must be overcome. These are typically company specific cultures related to management orientation, reward systems, worker autonomy and risk aversion. External factors may also limit motivation for exploration and innovation, for instance when operating in a conservative market – typically a market of complex processing industry where the consequences of a failure is deemed too high to risk experimenting with a potentially new and improved solution.

Innovation is not necessarily only radical and disruptive. Innovation can also be important for exploitation, in the form of incremental improvement.

4. Responsibility

Data for the thesis was gathered through semi-structured interviews. In order to comply with the GDPR regulative, each interview-subject gave their written approval of recording prior to the interview. The interviews were transcribed, and the original recordings were deleted.

The interview-subjects were anonymized, and only referred to by letter codes in the thesis. However, even in a company of more than 6000 employees, it may be possible for readers of the thesis to speculate who the different codes refer to. This issue was discussed with the interview-subjects. After each interview, a summary was prepared and presented to the interviewees, for their modification and approval.

5. Summary and conclusion

The thesis “*Exploitation and exploration in a company with institutionalized Lean principles*”, complies with the School of Business and Law’s mission statement and key concepts of International, Innovative and Responsible.

The international trends of globalization and accelerating development pace is relevant for the topic of the thesis, the exploitation-exploration dilemma: Companies need to pay attention to both exploitation and exploration in order to keep up with competition in an increasingly competitive market, and to be successful in the long run.

The unit of analysis, a multinational manufacturing firm, is also exposed to these trends, and others such as aging population, increased focus on sustainability, urbanization and increased standard of living, and are adapting their product offering to meet these.

Innovation is at the core of this thesis, as in important part of explorative activities. Also exploitative activities can include innovation, in the form of incremental improvements.

Responsibility is ensured by complying with the GDPR directive, and by allowing the interview subjects to review and modify the author’s summary of the interviews prior to analyses.