Corporate development – Assessing the attractiveness of a new market

- A case study of Alfa Laval AB

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Abstract

Title: Corporate development – Assessing the attractiveness of a new market
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Issue of study: Expanding into new markets is associated with many risks and can be an expensive experience. Therefore it is important to have a good knowledge of the new market and how it works. Alfa Laval is one of the world's leading companies in its present markets, it is therefore most likely to strive to reach a leading position when entering a new market as well. The company has a strong history of acquisitions and uses it in combination with organic growth to expand the company. The question is what are the contributing factors to ensure that a market entry is successful?

Market entries are complex and there are many areas associated with risks in the process, many acquisitions fail thus expected synergies are never realised. This is a problem often left aside once a deal has been made and not dealt with in a proper way. A study of the M&A successful rate made by the consultancy firm Bain & Company concluded that about 70% of the large deals had failed to create meaningful value to their shareholders. Therefore it is of great interest to investigate how to increase the likelihood of a successful market entry.

Purpose: The purpose of this thesis is to identify key strategic factors that together will constitute a framework for market attractiveness. The framework will be applied on Alfa Laval

and help to define the level of attractiveness new market segments within the pump industry offers.

Objectives: The objectives of this thesis are:
- To investigate how to expand within fluid handling, namely within industrial pump markets, and describe critical success factors
- To develop a market attractiveness model.
- To apply the model on Alfa Laval and identify the most suitable sub-market(s) in the pump industry for them to enter.

Methodology: This is a qualitative case study of Alfa Laval. Theories have been conducted and analysed in order to create a new market attractiveness model. Necessary information for performing an evaluation of the market has been collected through interviews, internal documents at Alfa Laval and publicly available reports. The thesis is consequently based on primary and secondary data. A qualitative analysis in combination with fundamental issues will thereafter be presented. Drawn conclusions from assessing the market will final this thesis.

Conclusions: When entering a new market, theories find certain factors more interesting in order for the market entry to add value. When acquiring market access a thorough investigation of the market must be made in order to assess the market. The five factors found which form the foundation in the market attractiveness model presented in this thesis are market size, market profitability, future market growth, contingency with strategy, and market relatedness to current operations. With these parameters different alternatives can be rated relative each other. The last two parameters are hard to estimate without both company and market knowledge. However, they are found to be of most importance when examining if the market entry will add value. The model presented in this thesis will therefore serve as a strategic tool for management when deciding the future development of the corporate strategy and pave way for further research to bridge the gap between market attractiveness and company evaluation.

Key words: Business development, corporate development, corporate strategy, expansion, inorganic growth, market attractiveness, market entry, market relatedness.

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This section will give an overall view of what this thesis is about. It will give a brief description of the investigated market and case company as well as what the purpose and final goal is.

1 Introduction

1.1 Background

Today companies are developing rapidly and constantly face new challenges. One challenge is to create value from acquisitions. About 70% of all acquisitions fail to create substantial value to their shareholders it is more important than ever for executives to be active and sense where the markets are heading (Rovit, 2004). The challenge is not just to protect the current business but also to explore new opportunities that can open up for further growth. This thesis will perform a case study on Alfa Laval and investigate the attractiveness for them to break into the pump industry.

Breaking into new markets can refer to a geographical market, new use of present products, or developing a new product or service. A popular way of expanding into new markets is by acquisitions. However, this might be a risky strategy as it often fail at least to some extent (Kroon, Noorderhaven, & Leufkens, 2009, p. 20). However, a few may succeed on average they do not add or destroy shareholder value (Dyer, Kale, & Singh, 2004, p. 109). Even though much literature is written about the subject many findings are contradicting and confusing (Weber, Tarba, & Reichel, 2009, p. 2). This makes it difficult to predict why M&A sometimes succeed and sometimes fail. In 2010 Alfa Laval expanded their group with seven companies through M&A, spending approximately SEK 4.5bn. The largest of them was Aalborg industries, which was acquired for SEK 3.3bn (Alfa Laval, 2011).

1.2 The case company

Alfa Laval is a leading global supplier of products and solutions for *heat transfer*, *separation* and *fluid handling*. The company's key products – heat exchangers, separators, pumps and valves – currently play a vital role in areas that are crucial for society, such as energy, the environment and food. Alfa Laval's products are used in the manufacturing of food, chemicals, pharmaceuticals, starch, sugar and ethanol. They are also used in nuclear power, onboard vessels and in the engineering sector, mining industry and refinery sector, as well as for treating wastewater and creating a comfortable indoor climate. They can also be used to reduce the consumption of energy and water and minimize carbon emissions (Alfa Laval, 2011).

Since it was founded in 1883, Alfa Laval has developed into a multinational enterprise with customers in almost 100 countries and production in 30, where 25 of them are placed in Europe and Asia. In addition they have more than 12.000 employees where about 17% work in Sweden. Their business concept is to "optimize the performance of customers' processes, time and time again" (Alfa Laval, 2011, p. 14). As a confirmation that the chosen business concept has been successful, they last year got an order for decanters for water purification in the US worth SEK 250 million. The new equipment replaced decanters supplied by Alfa Laval to the same customer more than 20 years ago, providing clear evidence that Alfa Laval's products are of high quality and generates customer benefit (Alfa Laval, 2011).

The business is divided into four divisions "Operations", "Equipment", "Process Technology", and "Marine & Diesel". Marine & Diesel is a new division created after the acquisition of Aalborg industries. Operations do not have contact with any of Alfa Laval's 8 customer segments. The other three divisions manage over sales and contact with Alfa Laval's market segments, which are presented in Figure 1 (Alfa Laval, 2011):

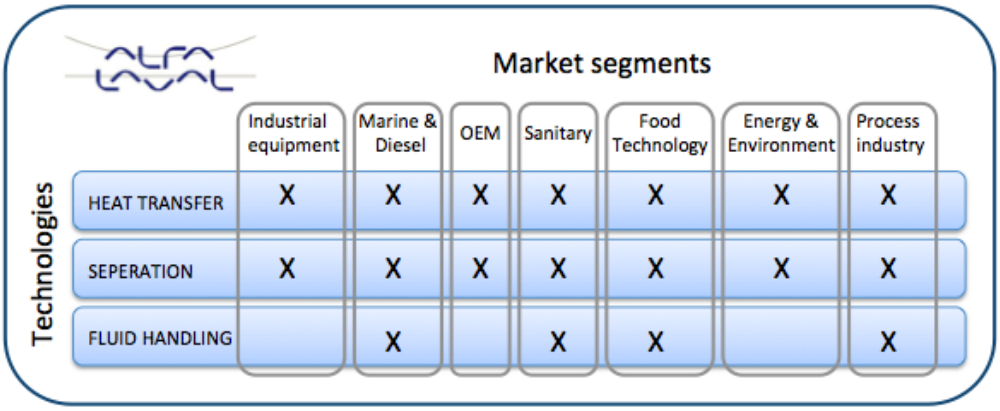


Figure 1; Alfa Laval technologies and market segments

1.3 Issue of study

During the last five years Alfa Laval has bought 26 companies for approximately SEK 8.63bn. During the same period of time they have divested only one company. The target is to grow 8% of revenues on annual basis over a business cycle, where 3-4% should come from M&A. Still, in the 2010 annual report, CEO Lars Renström emphasised that Alfa Laval's base is to grow organically. There are in general three reasons for Alfa Laval to grow inorganically; (1) to enter a new market, (2) to get access to a valuable sales or distribution channel, or (3) to get control over a specific product (Alfa Laval, 2011).

Alfa Laval believes their business will continue to grow in the future and has pointed out four factors that will contribute to accomplish that vision. Firstly the

world's escalating demand for energy requires efficient solutions. Secondly the demand for processed food is increasing with higher standards of living. Thirdly the increased international trade driving demand for transports, and finally intensified environmental focus creates opportunities for Alfa Laval (Alfa Laval, 2011).

Expanding into new markets is associated with many risks and can be an expensive experience. Therefore it is important to have a good knowledge of the new market and how it works (Syed, 2012). Alfa Laval is one of the world's leading companies in its present markets, it is therefore most likely to strive to reach a leading position in a new market as well (Halac, 2012). As shown in Figure 1 Alfa Laval's technology fluid handling is the only technology not serving all current market segments. Therefore it could be of interest how to expand this technology into new markets. A possible new market to examine is industrial flow market and within this the industrial pump market.

The company has a strong history of acquisitions and uses it in combination with organic growth to expand the company. The question is what are the contributing factors to ensure a market entry through M&A gets successful?

Market entries are complex and there are many areas associated with risks in the process, many acquisitions fail thus expected synergies are never realised. This is a problem often left aside once a deal has been made and not dealt with in a proper way. A study of the M&A successful rate made by the consultancy firm Bain & Company concluded that about 70% of the large deals had failed to create meaningful value to their shareholders. Therefore it is of great interest to investigate how to increase the likelihood of a successful market entry.

1.4 Purpose

The purpose of this thesis is to identify key strategic factors based on theories and company preferences that together will constitute a framework for market attractiveness. The framework will be applied on Alfa Laval to test the applicability of the framework on a company that uses M&A as a growth strategy.

1.5 Delimitations

This thesis is limited to examine the attractiveness of the pump market to Alfa Laval. In addition, it does not aim to make any comparisons with other markets nor investigate the pump market's relative attractiveness to other industries.

The market analysis is completed from Alfa Laval's point of view, hence no other stakeholder are taken into account.

Due to limited time and other confined resources the project have not enabled the authors to investigate specific companies within the end-market segments

and how attractive they might be for Alfa Laval to acquire. Consequently no financial valuation of companies will be performed.

1.6 Expected outcome

The outcome of this thesis is to present a model of key factors that are of strategic interest when assessing the attractiveness of new market segments. This will be tested on a case company (Alfa Laval) to determine the applicability of the model. The model is thought to be transferable to similar companies in similar situations and increase the likelihood of successful future inorganic development.

1.7 Process

Figure 2 describes the used work process of this thesis. As a first stage, relevant theory have been assembled and gone through in order to get a good foundation about the subject. Based on that knowledge, a market attractiveness model have been created to serve the purpose as a tool to the analysis regarding what market segment Alfa Laval should focus on when breaking into a new business area. In the third stage data about Alfa Laval and the markets have been gathered, please see section *2.3 Data gathering* for more information about how it has been performed. This data have been put into the model and then analysed in order to find out differences between the market segments and their attractiveness to Alfa Laval. A discussion about how the data has been interpreted and what assumptions that have been made, will be presented in this section too. As a final step a conclusion with recommendations will be presented.

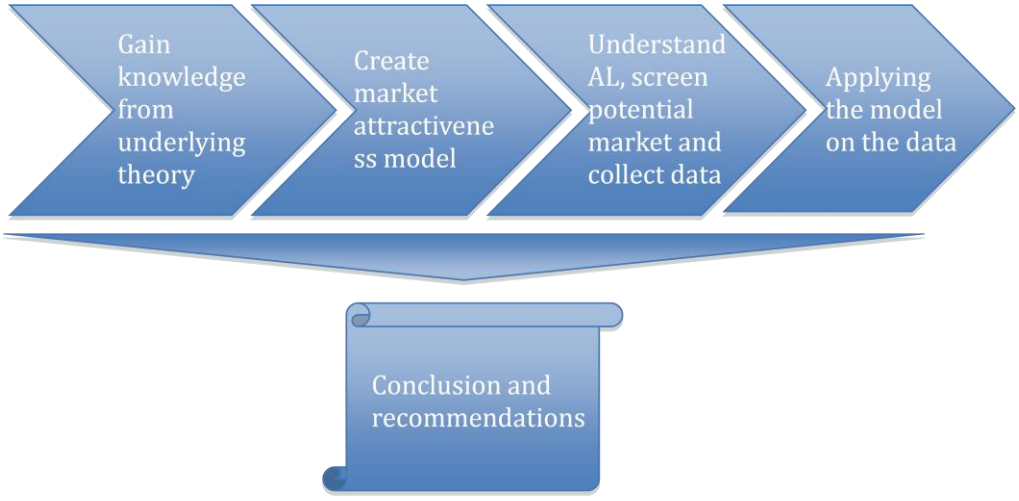


Figure 2; Work process model

This section will examine the methodological approaches that can be used in a scientific thesis. A motivation to each one of the approaches that the authors have chosen to use will be presented. The last part examines the used sources trustworthiness.

2 Methodological approach

2.1 Over all strategy and objectives

The main ambition of this thesis is to add valuable insights that can help companies with their future growth strategy. The focus will be on the strategic view of market entries, and identify the key factors and test them on the case company, Alfa Laval, in order to maximise the likelihood of a successful entry into a new market. By looking at M&A from a strategic point of view this thesis aims to contribute and give the fundamental perspective additional input. This thesis examines existing theories of M&A success (by a study of current literature) and specific case company market preferences which will result in a model of the most important factors when assessing a new market.

When analysing a new market, theories regarding how to maximise the likelihood of a successful market entry by using inorganic growth will be applied. This will distinguish top market segments, which can then be further evaluated by a model framework based on fundamental market analysis and key success factors of acquisitions. Articles regarding the subject will be the main source of theories as these consist of the most updated material and references. These will then be complemented with literature.

In order to determine whether it is strategically correct to enter a new market a great knowledge of the case company, Alfa Laval, is needed, therefore a key success factor is learning as much as possible about the company's resources, values, capabilities and future goals.

2.2 Methods

2.2.1 Qualitative and quantitative method

The academia differs between two general methodological approaches in scientific studies.

The qualitative approach is characterized by observations where the observer can take an active role as a participant. This method is commonly used on researches within the social science where the objective is to earn in-depth knowledge about how a group, organization or institution works (Bryman, 1997).

The quantitative approach is characterized by surveys with predefined answers and experiments as tools to collect information and understand the investigated the area. This method is commonly used on researches within natural science (Bryman, 1997).

In order to understand Alfa Laval's capabilities and a potential new market entry from their point of view, this thesis will use the qualitative approach where the authors take an active role in discussions, workshops et cetera. This is done in order to get an as comprehensive picture and in-depth knowledge of the studied area as possible during this limited period of time.

2.2.2 Scientific reasoning

There are three different methods of how to understand the reality around an issue. The *deductive* approach uses existing theory and matches it with collected empirics (Jacobsen, 2002). This approach assumes models and theories to explain the investigated area (Alvesson, 1994). From the drawn conclusions the scientist can verify the used theory or condemn it, and then suggest his own conclusion. The *inductive* approach is the opposite of the deductive approach. Here the scientist collect data without any presumptions and afterwards analyse the data systematically in order to create new theory (Jacobsen, 2002). The last approach is the *abductive*. It is a method where the theory and the empirics change during the investigated process and can be described as a combination of the deductive and the inductive approach (Alvesson, 1994).

Since the purpose of this thesis is to investigate whether it is interesting or not for Alfa Laval to break in to a new market, the authors first of all want to see what the theory says about it. From the collected theory and gained knowledge a useful model for investigating market attractiveness will be created. An abductive approach will therefore be used.

2.2.3 Creditability

Jacobson (2002) defines validity as to measure what should be measured. Although the measured area is small it should reflect how something works in a larger scale. Bryman & Bell (2007) differs between internal and external validity. The internal validity is to what extent the researcher's observations are in line with their developed theoretical ideas. External validity is to what degree the findings can be generalized (Bryman & Bell, 2007).

From a validity point of view some parts can be classified as having a higher validity than others. Smaller and more specific data that have been investigated and measured such as market growth and profitability have a higher validity and trustworthiness since they are commonly used when to address market attractiveness. These are in addition based on sources that can be trusted. The information that may have a lower degree of validity is information regarding the potential synergies that Alfa Laval has with presented market segments. This

information has been collected mainly through interviews, hence no hard facts. In order to sort facts from opinions, the authors have on regular basis compared collected data and presented it to interviewees, in order to get a second opinion. Due to that, these kinds of information still have a relatively high validity, although not as high as the formerly described.

Reliability means that something should be trustworthy. The work process, how the authors have come to their conclusions et cetera, have to be done in a trustworthy way to be accepted as reliable. Since it is up to the reader to decide whether a text is reliable, it is more of an opinion. One way to judge the degree of reliability is to ask oneself "would the result be more or less the same if the investigation was done exactly the same again?". If the answer is yes, the text is most likely reliable (Jacobsen, 2002). Here, Bryman & Bell (2007) distinguish between internal and external reliability. Internal reliability is whether it is more than one observer and if they agree on what they see. External reliability to what degree the study can be replicated.

The internal reliability is considered as relatively strong. Both authors have through the whole work process been present during the performed interviews and workshops to minimise risk for misunderstandings. However, all information has been confirmed by at least one other person, which has eased the process of making reliable assumptions.

The external reliability is considered as relatively strong too. Gathered data have been analysed and drawn conclusions are backed up in each case. However, since the nature of this thesis includes analysis of data where the conclusions consist of perceived opinions about the issues, a certain risk for misunderstandings exists. Still, given the underlying data for the thesis it is very likely that the outcome would be replicated by someone else.

2.3 Data gathering

2.3.1 Interviews

Interviews can be held in different ways. A semi-structured interview is when the interviewer wants to know more about a certain subject by asking more open questions to give the interviewee the opportunity to explain his answer with his own words. These interviews can be performed under more relaxed circumstances and appear to be more like discussions between the two parties. The interviewer tries to lead the conversation as little as possible and instead listen and observe the interviewee answers. This method is to prefer when the interviewer is interested in knowing more about a phenomenon that has already happened and is of more private character (Halvorsen, 1992).

Halvorsen (1992) points out three benefits with open questions.

1. They give the opportunity to reveal sever knowledge, misunderstanding and unexpected conceptions.
2. They do not affect what the interviewee should answer.
3. They are more like a normal conversation and do not impose the respondent words that he may perceive as inconvenient or strange.

Structured interviews are more direct in its questions. The interviews often consist of surveys with predefined answers. No matter if the interview is a survey or not, the questions are always asked the same to all the respondents (Halvorsen, 1992).

Halvorsen (1992) points out four benefits with fixed questions.

1. They ease the interview processing and decoding of the answers.
2. The questions get more precise with predefined answers.
3. The opportunity to compare the respondents' answers is larger.
4. They help the respondent to remember.

To best possible answer the given purpose and its objectives, a semi-structured approach has been chosen to use. By performing semi-structured interviews the authors will get a chance to ask complementary questions and go more in-depth than they would have had under a quantitative approach.

2.4 Finding relevant theories

The theories are searched for in university databases by using key words such as "determinants of successful M&A", "factors affecting acquisitions", "mergers and acquisition success factors", "acquisition motives" etc. The authors' supervisors have been involved in this process and suggested theories. When examining the literature certain authors have been found to be more commonly cited which has served as a reference of the reliability and credibility of their conclusions.

2.5 Criticism of the sources

The thesis is to large extent based on internal Alfa Laval documents and interviews with employees. Due to the obvious connections to Alfa Laval, a potential risk is that the sources eventually lack a certain degree of objectivity and wider perspective. The authors have been aware of this issue and in order to get an as real picture of the given case study as possible, taken an unbiased approach and asked critical issues to more than one interviewee. Since the primary objective with the interviews have been to learn more about Alfa Laval and their capabilities, no external stakeholder or other expertise have been interviewed. Interviews with all stakeholders would have given a more comprehensive picture of the consequences of an eventual market entry. However, due to the given timeframe the authors have focused only on Alfa Laval.

In this section the motives behind acquisitions are examined by presenting theories which describes the subject. These theories will be used to form a model to evaluate a market and determine within which areas an acquisition can be motivated.

3 What motives are there for acquisition?

As market and industry conditions in all sectors are dynamic it is important for companies to adapt as the factors affecting growth and profitability are exposed to constant change. Resource allocation is critical and companies must evaluate their situation in order to sustain growth and profitability (Koller, Goedhart, & Wessels, 2010). Growth is necessary to ensure company survival and can be made possible in many different ways (Böske, 2009).

Many firms today do not have only one business concept or one product, but usually a portfolio of different revenue generating strategic business areas (SBAs). In order to remain control over the firm, these SBAs should be evaluated separately since each one of them offer a different growth/profitability and require different approaches depending on their market situation. This way of portfolio analyses enables managers to control to what extent the SBAs are related and also to what degree they should complement each other. Presented in Figure 3 is Ansoff's "Dimensions of the Geographic Growth Vector" (Ansoff, 1987).

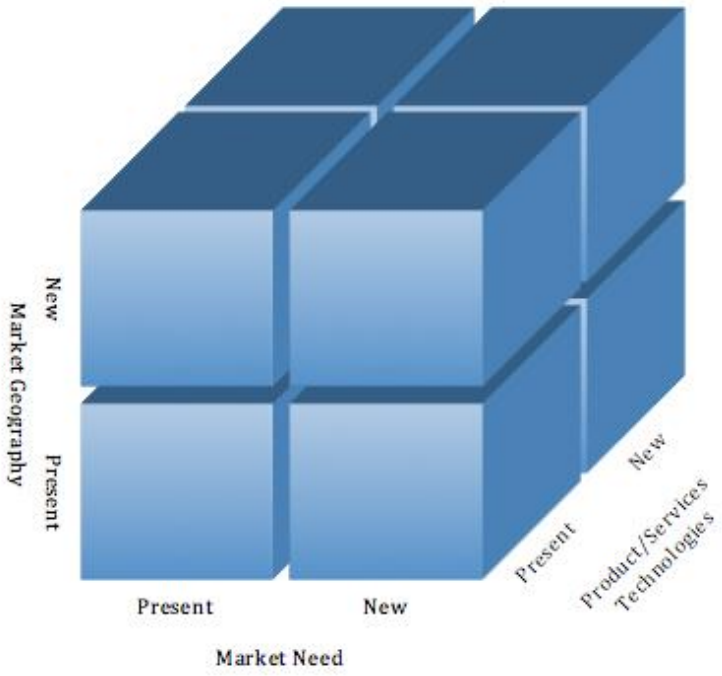


Figure 3; Dimensions of the Geographic Growth Vector (Ansoff, 1987)

The cube demonstrates in a simple way which growth options there are for a company (Johnson, Scholes, & Whittington, 2008). These different options are all ways of adapting to changing market conditions and developing the company further. A common way of moving in these different directions is by acquisitions (Koller, Goedhart, & Wessels, 2010). The "Market Geography" describes in what regions or nations the SBA intends to do business in while "Market Need" is whether it currently exists any demand from the customers, and "Product/Services Technologies" is if the SBA offers products that are related to the current portfolio of the firm. None of the alternative combinations can generally be viewed as the best way to go, but only be used as a helpful tool in order to develop and control an organisation (Ansoff, 1987).

Larger companies rely on acquisitions to grow in a further extent than smaller companies which emphasises the value of acquisitions as a part of corporate development programmes (Rehm, Uhlaner, & West, 2012). However by studying the strategic rational of acquisitions there are mainly six reasons they do occur (Bower, 2001):

1. To deal with overcapacity through consolidation in mature industries.
2. To expand into new products or markets.
3. Financial investments (investors buying a business unit or division from a multi-business company).
4. To roll up competitors in geographically fragmented industries.
5. To exploit eroding industry boundaries by inventing an industry.
6. As a substitute of R&D.

Of these six rationales presented it is argued that some are more often used in acquisitions which create value (Koller, Goedhart, & Wessels, 2010), two of these are:

- Create market access for the target's (or, in some cases, the buyer's) products.
- Acquire skills or technologies more quickly or at lower cost than they could be built in-house.

If the strategic rationale is placed in one of these categories the acquisition will be more likely to create value for shareholders. Studies also show that the financial market is only interested in what value the deal is estimated to create, thus the shareholders' value is maximised if the deal logic is clearly stated and demonstrates how value will be created and added to the acquirer. Vague motives for acquisitions tend to produce unsuccessful deals and destroy value for shareholders (Koller, Goedhart, & Wessels, 2010).

Acquisition motives and rationales are not as widely discussed as acquisition consequences, there are however different theories that can be used to explain different motives (Trautwein, 1990). These are presented in Table 1.

Table 1; Theories of M&A motives (from Trautwein, 1990, p. 284)

<table>
<tr><td rowspan="4">M&A as rational choice</td><td rowspan="3">M&A benefits bidder's stakeholders</td><td>Net gains through synergies</td><td>Efficiency theory</td></tr>
<tr><td>Wealth transfers from customers</td><td>Monopoly theory</td></tr>
<tr><td>Wealth transfers from target's shareholders</td><td>Raider theory</td></tr>
<tr><td>Net gains through private information</td><td>Valuation theory</td></tr>
<tr><td colspan="2">M&A benefits managers</td><td>Empire building theory</td></tr>
<tr><td colspan="3">M&A as process outcome</td><td>Process theory</td></tr>
<tr><td colspan="3">M&A as macroeconomic phenomenon</td><td>Disturbance theory</td></tr>
</table>

Efficiency theory suggests that acquisitions are based on a rational choice, that managers strive to maximise a company's value and that realisation of synergies will add value to the company (Böske, 2009).

Monopoly theory suggests that the main goal of acquisitions is to achieve a larger market share and to gain market power. Once the company has increased market power and reached a monopoly state it is able to determine optimal production output and the result is wealth transfer from customers to the company (Böske, 2009).

Raider theory suggests a corporate raider will be able to transfer wealth from the target's shareholders to the bidder's shareholders. One tactic for this is greenmailing. Greenmailing is when a bidding company (greenmailer) secures a large share in the target company and threatens to take over the company. This action forces the target company to buy the shares back at a premium. The theory has been criticized for being illogical due to the fact that a successful takeover may potentially hurt the raider and benefit the target company's shareholders (Böske, 2009).

Valuation theory suggests the manager of a bidding company possesses excess information not available to the stock market. By being better informed of the advantages which can be derived by combining the target company with its own

managers are able to determine if the target company is undervalued. Or managers believe the target company will be worth more if it was to be sold in pieces, another reason might be that new managers consider themselves to have better management skills than the current management and therefore will be able to add value by acquiring the company (Böske, 2009).

Empire building theory suggests managers are on a personal quest to maximize their own utility and wealth by acquisitions. One argument for this is as the size of the company increases so does managers' compensation, increasing prestige is another argument which will drive managers' will to acquire companies (Böske, 2009).

Process theory suggests strategic decisions are not rational choices, instead they are the effect of processes. Jamison and Sitkin (1986) have been particularly contributing to this perspective within acquisitions. They argue that the acquisition process itself will affect the outcome of the acquisition. They also emphasise how the process is connected to the strategic and organisational fit of the firms (Jemison & Sitkin, 1986).

Disturbance theory suggests mergers and acquisitions are effects of economic disturbances. These kinds of disturbance will increase the level of uncertainty and change individual preferences. Non-owners will value assets higher than actual owners resulting in acquisition activity (Böske, 2009).

Of these seven theories four are more probable than the others. These are efficiency theory, valuation theory, empire building theory and process theory even though the evidence for this is limited (Trautwein, 1990).

To sum up there are many motives for acquisitions. However, to add value from an acquisition to the acquirer it is important to have a clearly stated rationale for the acquisition and a purpose why the acquisition should be performed. As a result three of the seven theories presented above are more likely to be applicable for value adding acquisitions. These are efficiency theory, valuation theory and process theory. As a result of this a conclusion can be made (when using acquisitions to enter a new market): the market should be evaluated by using these three theories to maximise the likelihood of a value adding acquisition. Therefore three key questions to bear in mind are:

- What synergies are there between the companies' current operations and the new market?
- How can the acquirer leverage its own capabilities in the new market?
- Is entering the market by an acquisition a natural step in the company development?

If these questions are evaluated within the company evidence should be found whether to enter or not to enter the market.

3.1 Key factors when exploring a new market

To answer the previously mentioned questions a company must gain knowledge about the new market. The value added is dependent on market attractiveness and fit with the acquiring company. This is dependent on different market factors. These will be described below supported by an in-depth description of strategic fit and synergies ending with a summary of the key factors.

A fundamental part of a market analysis is the size of the market. A larger market is potentially more attractive than a smaller market as it has a larger potential of an increase in revenues by capturing a larger market share. However, there can be a situation when a larger market actor dominates the market which can hinder other market actors from strengthening their positions. Although this might be an issue it is preferable to be on a larger market as a small market share can provide high absolute revenue. In addition to market size the profitability of the market is crucial to appreciate. The size is also related to the global footprint of the market. A market with a larger global footprint is assumed to comprise many more actors since the chance of an international acquisition increases. It has been showed that international acquisitions create more value then national acquisitions (Böske, 2009)

The size and profitability of the market is most likely to affect the future growth profile of the market. Attractive markets offer an above average growth as the potential of higher earnings increases. However, it is beneficial to acquire companies in market lows (Kusewitt Jr, 1985). Therefore timing is an essential part of the acquisition success. The industry life cycle, see Figure 4, can be used to describe the different stages of an industry. The stages which are of interest are the growth, shake-out and to some extent the maturity stage.

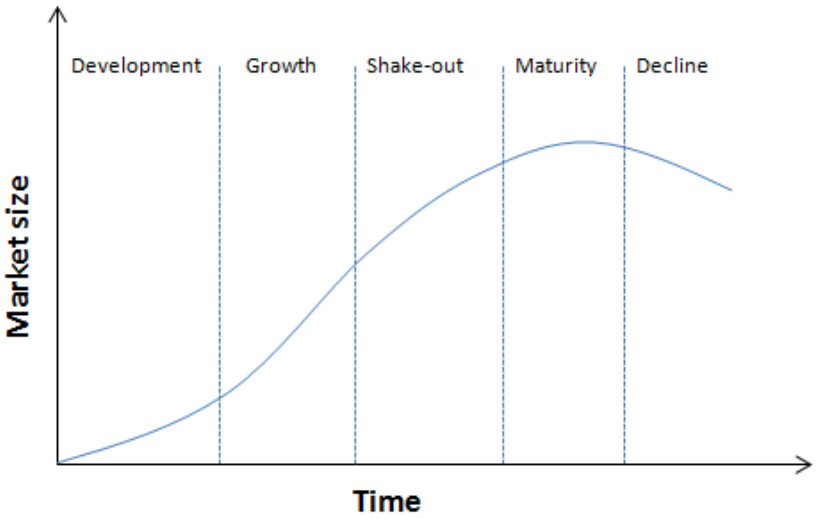


Figure 4; The industry life cycle (Johnson, Scholes, & Whittington, 2008).

The growth stage is typically identified by low rivalry and therefore plenty of market opportunity. As an acquirer, past experience of other business can be a competitive advantage as they are more experienced in securing both supplies and building a customer base. This can enhance barriers of entry for newcomers and drive the market into the next stage quicker. The shake-out stage is when the growth starts to decline and weaker companies are forced away, market consolidation is common. Next is the maturity stage where market power is essential and barriers of entry are high. This is preferable for companies that acquire a market share as the threat of new entrants declines further. The most attractive market for an acquirer is therefore to enter growth markets where they can leverage their previous capabilities and become a key market player (Johnson, Scholes, & Whittington, 2008).

Furthermore a critical success factor is that a potential acquisition must be consistent with the overall corporate strategy (P. C. Haspeslagh, 1993). This is related to the process theory previously mentioned as well. Therefore it is of interest to examine the markets long-term value drivers, challenges and restraints to ensure the market will fit the strategy of the acquirer, a so called strategic fit as well as the more long term vision of the company. Strategic fit is more often used when determining if a possible target company is suitable for the acquiring company. However, the same reasoning can be used when deciding if to enter a new market. Strategic fit can be connected to both efficiency theory and valuation theory since potential synergies that can be achieved are of interest (Risberg, 2006).

3.1.1 Strategic fit of the market

A first step when determining strategic fit relatedness between current operations and the new market must be decided. Many different classifications

have been presented for this ranging from related or unrelated acquisitions to more advanced and complex frameworks (Risberg, 2006).

One classification suggests three types of acquisitions which are related supplementary, related complementary and unrelated (Salter & Weinhold, 1981). This has formed the foundation of an additional framework which displays the relation between acquirer and what new opportunities the acquisition will offer for the acquirer, see Figure 5 (Shelton, 1988). This framework is similar in its structure to the previously mentioned dimensions of growth developed by Ansoff.

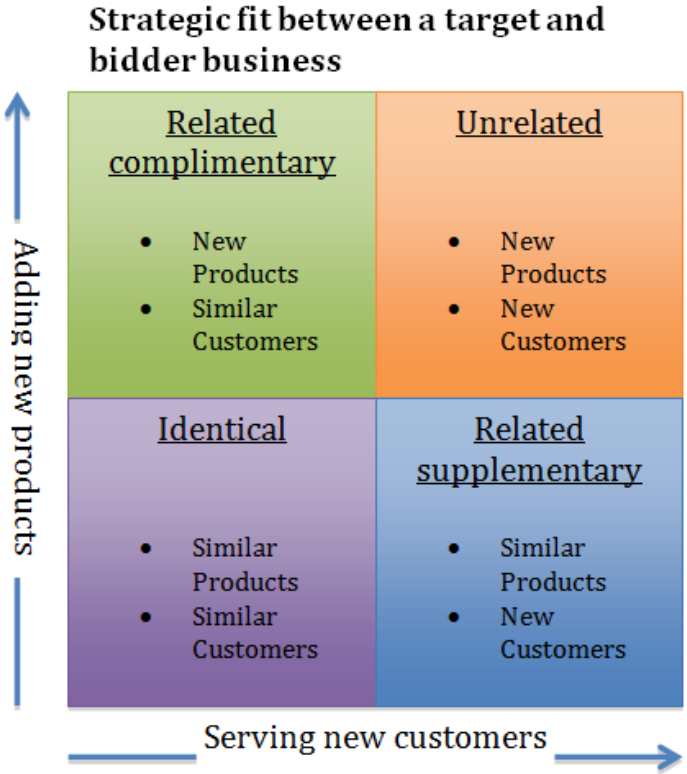


Figure 5; Categorisation of product-market opportunities (Shelton, 1988, p. 280)

Using the framework, see Figure 5, the acquirer can see how the new assets will change the product-market opportunities. Many researchers have come to the conclusion that entering new related markets will create the most value for the acquirer (Risberg, 2006). When discussing the strategic fit between companies synergies are of importance (Risberg, 2006), there are however many different types of synergies and the classification of them can differ in the literature.

3.1.1.1 Variation of synergies

Synergies can be of various kinds and occur in many different areas when different organisations are combined. A general classification of synergies

provides three different types, financial, operational and managerial synergies (Trautwein, 1990). These synergies are normally applicable on a company level.

Financial synergies will lead to a lower cost of capital by lowering systematic risk of the acquirer's investment portfolio (by diversifying the portfolio), increase the company size which can result in cheaper capital or finally create an internal capital market and allocate capital better due to superior information. This has however been criticised by researches as there is no evidence for a lower systematic risk or more efficient internal capital market (Trautwein, 1990). Financial synergies can also be divided into financial and collusive synergies, where financial synergy results in lower cost of capital and collusive synergy adds value as a result of increasing market power (Chatterjee S. , 1986). Financial synergies are hard to apply on a whole market as they are very company specific and will therefore not be included in the market discussion.

Operational synergies are a result of lower production costs as the company is able to combine business units or from knowledge transfers (Trautwein, 1990). One reason a company may possess these kind of capabilities may be due to an experience curve that makes the company more efficient than competitors or new entrants. It can also be due to a more advanced technology or production base (Johnson, Scholes, & Whittington, 2008).

Managerial synergies can be due to a superior management system by the acquiring firm which may include both managing and monitoring the company (Trautwein, 1990).

Even though different researches may have different typologies synergies can be traced back to revenue and expenses. Since all synergies will lead to either cost reductions or revenue enhancement, synergies can be classified as either cost or income synergies. Another way to distinguish between the two is hard or soft synergies where hard synergies are similar to cost synergies as these are easier to identify and soft synergies are similar to income synergies and increased revenues as these are harder to estimate (Karenfort, 2011).

To summarise the key factors to examine when exploring a new market, five factors are of greater interest. First the market stage which can describe growth profile and competition in the market. Profitability is fundamental and so is the size of the market. More soft issues like how well an acquisition will overlap with the corporate strategy are essential, in addition the strategic fit must be examined and potential synergies must be discussed, thus relatedness to the new market is of interest.

3.2 Attributes of a successful acquirer

As previously stated acquisitions are made in order to create and maximise value. However, often most value of a deal is captured by the acquired

company's shareholders due to the premium paid by the acquirer. To create value for the acquirer has shown to be much harder. However, one factor researchers have come up with that influences the likelihood of success to acquirers is as follows (Morck, Shleifer, & Vishny, 1990):

- Strong operators are more successful - if the acquirer has a strong historical performance among its peers empiric results have shown the market will react positive to the announcement of acquisitions.

This may seem intuitive as the main focus of the acquirer is to create and maximise value but even though a company has performed well historically it may not be the best owner at any given time.

With time the best owner of a specific business will differ as surrounding circumstances change. A start-up company has different needs compared to a multinational company and different owners are able to add value to a company in different phases. One way to add value is by connecting the target company with other businesses or subsidiaries. Such links can be crucial and be found through the whole value chain. (Koller, Goedhart, & Wessels, 2010)

A new owner can also possess managerial or process skills needed to develop the company further. This may also include overall governance of the company. Overall governance refers to the way owners interact with management team and support them in running the business. This may prove important to maximise the long-term value of the company (Koller, Goedhart, & Wessels, 2010).

Industry insight and foresight are also key success factors which can be achieved by new and more experienced owners. As they are experienced they are able to better predict industry movement and development and thus capitalise and expand the business accordingly. In addition the new owners may also play a more influential role in the market, enabling them to influence key stakeholders e.g. suppliers and governments. This is of more importance in emerging markets due to underdeveloped capital markets and government interference. Finding and sustaining key talents might also be more difficult for smaller size companies as they are not able to provide the same career opportunities as large corporations are able to do. (Koller, Goedhart, & Wessels, 2010)

These are some factors to bear in mind when deciding if a company is in a position to acquire other companies and also how the acquirer will leverage the acquisition with its own capabilities to add value.

In the next section an evaluation model of market attractiveness is presented. The model is based on fundamental market analysis and theories regarding successful inorganic growth. This has resulted in parameters which are given a multiplier that demonstrates its relative significance. This significance is based on how much emphasis it is given in articles, essay and books in combination with how often it is mentioned in the studied literature.

4 Defining the market attractiveness model

After the literature study critical success factors or parameters are identified which should be examined when exploring a new market and deciding on a potential acquisition within the market. The literature study is complemented with discussions at the case company of what parameters usually examined when analysing a new market. This resulted in five factors which are of most interest:

1. Market size
2. Profitability of the market
3. Market growth profile
4. Market consistency with corporate strategy
5. Market relatedness with current corporate operations

Based on these parameters a model is created to evaluate the market from different perspectives. The parameters gives the market an individual score, ranging from 1-5, which then is added up to provide the market with an overall score and thus demonstrate the relative market attractiveness. Each parameter is also given a multiplier, ranging from 1-5, which demonstrates the parameters relative significance. The multiplier is based on how much emphasis each parameter is given in theory regarding the outcome of an acquisition in combination with specific company market preferences. The multiplier will decrease the likelihood of valuing different alternatives with the exact same score. Each factor's multiplier is retraceable to the literature study presented in the previous section.

Since consistencies with strategy and market relatedness are key issues according to the theories found in the literature study these parameters are given a higher multiplier. Due to their strong theoretical emphasis these parameters are always given the highest multipliers 5 and 4. Remaining three factors are to a further extent influenced by company preferences and can therefore differ between case companies where the model is applied.

Starting with the profitability of the market the case company in this thesis values profitability high and are not interested in markets with low margins. A high profitability on the market is more likely to indicate an advanced product

offering and value adding services. As Alfa Laval has a premium strategy and is interested in keeping this strategy in a new market as well. The profitability of the market factor is thus given 3 as a multiplier.

Market growth profile is another element which is mentioned more extensively in literature and a discussion can therefore be if it should not be given a high multiplier. In addition it is interesting as it estimates the future outlook of the market as well. However, estimating future scenarios is always more uncertain than examining actual settings, and in addition the strong emphasis of the case company on high profitability gives the market growth profile factor a multiplier of 2.

Market size is given the lowest multiplier as it refers to current relative market size which is interesting as it demonstrates which market that are generating the highest revenues. This factor is seldom given attention in literature. However, it is critical to companies when evaluating market alternatives as investment areas.

The model is thought to be an aid in the acquisition justification process and to separate different market alternatives. The model will therefore help managers to decide if there is sufficient motive to look for acquisition targets. The parameters will be presented in further detail below.

4.1 How to score the different factors

4.1.1 Market size

A fundamental part of a market analysis is the size of the market. In this model the size will be demonstrated by the actual turnover in 2010, the year 2010 is chosen as it is the last full year from which data is available. A larger market is potentially more attractive as it has a larger potential of an increase in revenues by capturing a larger market share. However, there can be a situation when a larger market actor dominates the market which can hinder other market actors from strengthening their position. Although this might be an issue it is preferable to be on a larger market as a small market share can provide high absolute revenue. The markets investigated will be scored relative each other.

4.1.2 Profitability

The profitability of the market segment is determined by the average profitability of current market actors within the product segments presented in the market research. The different product types are given an individual score and then each market is given a score that is weighted to match which types of the products that are used. Each market is then scored relative the others.

4.1.3 Future growth profile

To ensure the future of the market a forecast of future growth is used. High growth markets are preferable. However, it is beneficial to acquire companies in market lows. Therefore the forecasted future growth is compared to the historical compounded annual growth rate (CAGR) to identify years of slower growth which are assumed to represent market lows. Since market data and forecasts are available until 2016 it is possible to compare how many of these years the market growth between years is lower than the 2005-2010 CAGR. In combination with the forecasted 2010-2016 CAGR this will demonstrate the attractiveness of the growth profile. When finding the growth patterns of the market it will also indicate which stage of the industry life cycle the market is in. A market, which has a higher growth, is thought to be more attractive as it is further away from the mature stage in the industry life cycle. Each market will be given a score relative the others.

4.1.4 Consistency with strategy

A key factor when managing acquisitions is to ensure the acquisition is supported by the company's development strategy. If an acquisition is to be made in a new market it is essential it can be matched to the corporate development program to have a successful outcome. In order to determine if this is fulfilled and to what degree, the company's strategy is studied and compared with the drivers of the market and future challenges and restraints. Then it is possible to determine if the vision of the company is likely to match to the future market settings, if the right capabilities are supported and the right recourses are provided. This is connected to process theory in a way that the company's vision and strategy demand certain paths to be taken by the management in order to achieve their goals. Each market will be given a score relative the others.

4.1.5 Market relatedness with current operations

As mentioned researchers have come to the conclusion that targets offering access to new related markets will create the most value for the acquirer. It is also interesting to see the geographical profile of the market as it has been showed that international acquisitions create more value than national acquisitions. Therefore a market, which has a larger global footprint is preferable as it is assumed the possibility of finding international acquisition targets increases with global footprint. In addition potential synergies with the market must be discussed to further understand the relatedness of the market, such synergies as operational and managerial. Each market will be given a score relative the others.

4.2 The market attractiveness model

Below is the market attractiveness model presented. With three hard and two soft parameters, it will be used as a tool to evaluate the attractiveness of the pump industry to Alfa Laval. The model is not custom made to only suit Alfa Laval, but created to be applied on different companies in different industries.

Parameter	Multiplier	Market				
		Sub-markets				
		M1	M2	M3	M4	M5
Market size	1	1	2	3	4	5
Market profitability	3	1	2	3	4	5
Market growth profile	2	1	2	3	4	5
Consistency with strategy	5	1	2	3	4	5
Market relatedness	4	1	2	3	4	5
Total score and attractiveness		15	30	45	60	75

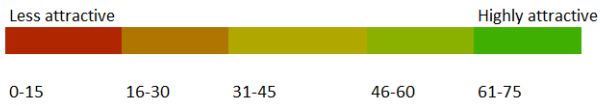


Figure 6; Market attractiveness model

In this section the markets of interest will be presented. The market will be examined from a global perspective and then broken down into segments. First the different technologies will be presented and then end-user segments that are of importance. The end-user segments, or sub-markets, will then be further analysed to identify future demand, drivers and restraints. As a result key segments will be distinguished from others and the market attractiveness model can be applied.

5 Mapping out the market

Fluid handling can be divided into four sub-segments: *industrial valves*, *pumps*, *mixers* and *filters*. This thesis will examine the pump industry. In 2010 the global pump industry had an estimated turnover of approximately USD 35.5 bn. The CAGR was 4.4% between the years of 2001-2010, and it was particularly the emerging markets such as the BRIC-countries that contributed strongly to this growth. The industry has, however, been affected by the last years' turbulent economic events and shown a slight decline in demand (Forecasting, 2011). The business is to large extent driven by macroeconomic factors, which later will be described more into detail.

The pump industry is fragmented with thousands of small manufacturers representing a significant portion of the market. Most of these companies are small private entities with sales less than MUSD 100 and operate in a limited geographic region, focus on one or two market segments/pump technologies and sell through distributors. (F & S, 2010)

There are different pumps that serve different kinds of purposes on different markets. The two major pump types are the kinetic/dynamic pumps and the positive displacement pumps. The latter one consists of two large groups; rotary and reciprocating pumps. (F & S, 2010)

Presented in Figure 7 is a classification of pumps and their market share in billon dollars.

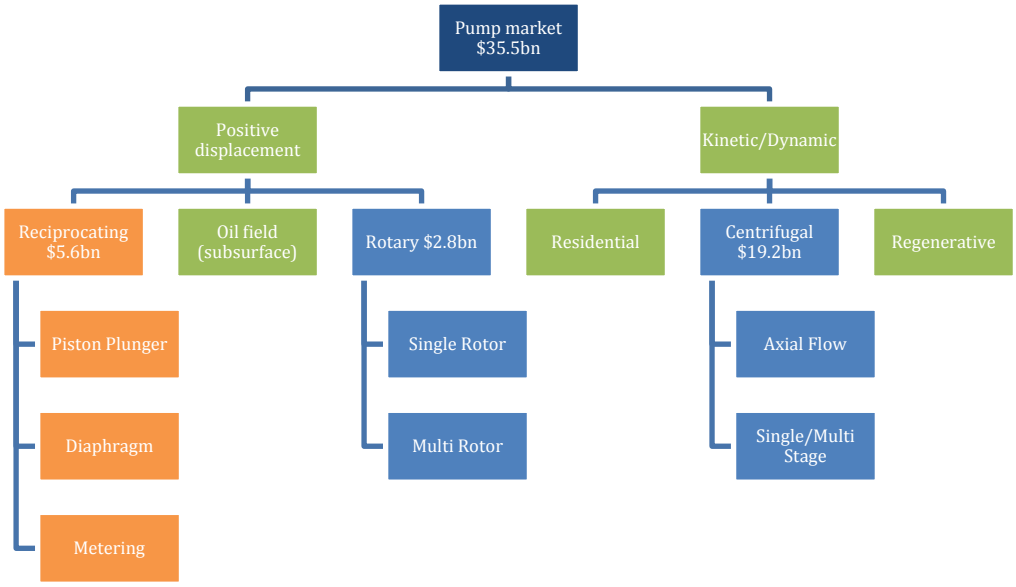


Figure 7; Pump market breakdown by pump type and turnover 2010 (WBC, 2010) (Forecasting, 2011).

Larger companies are likely to favour from the industry dynamics since customers increasingly seek:

1. Global capabilities
2. Broad product lines with strong brands
3. Strong aftermarket sales and support
4. Network advanced R&D capabilities to develop customised solutions, new technological upgrades and integrated pump systems (WBC, 2010)

5.1 What is a pump?

To understand what a pump is, it is essential to first of all understand what a pump actually ”pumps”. The usage of pumps ranges over several industries and cover a great amount of different materials, so to better understand what is pumped it is easiest to divide it into different states of matter. Matter exists in several different physical varieties and pumps handle most of them. The varieties of matter used are solid, liquid, vapour, gas and plasma. Characteristics for each one of them is presented in Table 2 (Nesbitt, 2008).

Table 2; Characteristics for different states of matter (Nesbitt, 2008)

State	Solid	Liquid	Vapour	Gas	Plasma
Change of state with pressure	No (practically)	Yes	Yes	Yes	Yes
Shape	Almost fixed	Variable	Variable	Variable	Variable
Volume	Almost fixed	Slightly variable	Variable	Variable	Variable
Density	High to low	High to low	Low	Low	Low
Tensile strength	Very high to low	About zero	Zero	Zero	Zero
Fluidity	About zero	Variable	Very high	Very high	Very high
Compressibility	Very low to low	Low to medium	High	High	High
Plastic deformation	Yes	No	No	No	No
Localised stressing	Yes	No	No	No	No
Uni-directional	Yes	No	No	No	No

5.2 Positive displacement pump

There are three kinds of positive displacement pumps – reciprocating, rotary and oil field. Their function is to transport liquid from one inlet connection to an outlet connection. It is characterized by producing the same flow at a given speed no matter the discharge pressure (Nielsen, 2012). A positive displacement pump is, however, pulsate which means that it has a volume flow in a cycle that is not constant. The pump fills up a cavity of liquid and then displaces the given volume. Depending on what matter it transports, this process might work differently. However, on a general basis the matter is usually "squeezed" forward. Compared to centrifugal pumps, positive displacement pumps do not rely on speed, but can still create high pressure with almost any motion (Grundfos, 2004). Of the positive displacement pumps reciprocating pumps constitutes about 15% of the world pump market and is expected to maintain this relative position until 2016. Rotary pumps constitute about 8% of the world pump market and are also expected to maintain this relative position until 2016 (Forecasting, 2011).

5.3 Centrifugal pumps

A centrifugal pump can be very advanced but in its most simple shape it consists of one inlet, one motor and one outlet. The inlet is where the fluid enters the pumps and between the inlet and the outlet is a motor placed in order to increase pressure and make the fluid flow. Impellers are connected to the motor, which catches the fluid when it comes from the inlet. By spinning around a

centrifugal force is created within the impellers and their blades, which pushes the fluid out from the centre and into the outlet where it continues its path. The motor transforms kinetic energy to pressure, which provides a constant flow that is characteristic for centrifugal pumps. In addition it can be noted that centrifugal pumps generally handle larger amounts of liquid (Grundfos, 2012). The market for centrifugal pumps constitutes about 54.0% of the pump market 2010 and is expected to maintain this relative market share until 2016 (Forecasting, 2011).

5.4 Pump market geographical breakdown

The top ten pump markets by country in 2016 are showed in Table 3.

Table 3; Top ten pump markets by country 2016 market share and CAGR '10-'16 (Forecasting, 2011)

Country	Market share 2010	CAGR '10-'16
China	21.8%	11.1%
US	11.3%	5.0%
Germany	7.2%	5.6%
Japan	6.5%	3.6%
India	3.8%	7.3%
Brazil	2.9%	7.1%
Italy	2.3%	3.8%
South Korea	2.3%	5.0%
UK	2.1%	4.8%
Russia	2.1%	5.7%
Average		6.2%

Of these ten markets China, Brazil, and India are expect to have a '10-'16 CAGR above average (6.2%) followed by Russia with 5.7%. These countries often, referred to as the BRIC countries, are therefore to be viewed as future geographical growth areas where a strong presence is preferable. In Brazil the Oil & Gas offshore end-user segment is expected to have the largest growth from 2010-2016 with a CAGR of 15.6%. In Russia the end-user segment nuclear power generation is expected to witness the highest growth followed by the oil and gas offshore segment with CAGRs of 11.0% and 9.8% respectively. Nuclear power segment is also expected to be strong in India with a CAGR of 19.8% followed by the end-user segment biofuels that is estimated to have a strong growth of 15.6%. China is interesting as almost all end-user segments investigated are expected to witness a growth above average. The top end-user segment is the biofuels segment with an expected growth of 17.1%. These markets are interesting as the can give an indication of which end-user segment that are of future interest (Forecasting, 2011). Next follows a breakdown of the pump market in the world regions Americas, EMEA and Asia Pacific do discuss general drivers and constraints in these areas.

5.4.1 Americas

Prior to the economic crisis the pump market in Americas witnessed a steady growth contributed by end users in mainly oil and gas, chemicals and water. In 2009 a number of planned projects got either postponed or cancelled causing a decline in the demand of pumps. As there was a decline for new pumps there were opportunities in upgrading existing facilities, especially in the water and wastewater sector. This has caused suppliers to shift focus toward strategic services in this region, particularly in the USA. On the other hand there is an increase of customers shifting their manufacturing base to countries in Latin America that will drive the demand for pumps in the Latin American region (F & S, 2010). In addition Brazil and Argentina are expected to witness investments in the oil and gas sector and in the north Canada is expected to increase investment in oil and gas exploration (F & S, 2010). The largest markets for pumps in Canada are the oil refining market and oil and gas onshore operations (Forecasting, 2011). Canada is also expected to witness a demand for green buildings which supports the demand for energy efficient pumps (F & S, 2010).

The oil and gas sector are in demand of both single- and multi-stage radial flow pumps and sealless pumps. In the mining sector, that is expected to attract investments in certain countries in Latin America, submersible and axial and mixed flow pumps are demanded (F & S, 2010).

The market for pumps is still fragmented in the Americas although consolidation trends are noticeable. In 2009 five companies held 56% of the market (F & S, 2010).

5.4.2 Europe, Middle East, Africa (EMEA)

The EMEA market is the largest market with almost 40% of the global market share in 2009. The emerging economies of Eastern Europe, Russia, the Middle East and Africa have historically been stable growth opportunities. The mature parts of Europe are on the other hand staggering and in later years due to the economic situation growth opportunities are hard to find. In the Eastern Europe countries there are opportunities in water and wastewater segment as well as the power generation segment. Regulation regarding rising standards and more environmental friendly production with reduced emissions will also increase the demand for pumps in these areas. Some particularly interesting countries in Eastern Europe are Poland, Estonia, Romania and Bulgaria (F & S, 2010). This will be supported by substantial EU stimuli packages particularly within the utility and sanitary sector (F & S, 2010).

Western Europe is expected to be similar to the North American market with a focus towards upgrading plants strategic services. Low life cycle cost of products will attract customers and the demand is expected to increase (F & S, 2010).

Pumps of interest will mainly be submersible pumps used in dewatering applications as well as slurry pumps for mining industries in countries such as Bulgaria, Estonia and South Africa (F & S, 2010). Multiphase pumps are gaining prominence in the deep-sea exploration of which the Middle East is expected to be an investment hub (F & S, 2010). Russia is also an interesting market for single and multistage radial flow pumps as oil and gas will continue to play an important role in the country's industry (F & S, 2010).

In addition to this the awareness of environmental impact and energy consumption will drive the need of enhanced technologies, providing smarter pumps allowing users to be in better control of usage, prevent breakdowns and monitor energy consumption. The environmental focus attracts investment in carbon capture and storage projects which enhances the opportunities of growth for sealless pumps (F & S, 2010).

Just as in the Americas' market the EMEA market is witnessing a consolidation trend. The top five participants held 54.5% of the market in 2009. Consolidation is especially expected to take place in Russia and Eastern Europe when other companies try to expand their presence into these future growth regions (F & S, 2010).

5.4.3 Asia Pacific (APAC)

The need of clean drinking water and sanitation has long been a strong driver for the need of centrifugal pumps in the APAC market. In contrast to other markets the APAC market showed a positive trend during 2009 due to investments and improvements in the utility and sanitary infrastructure. Manufacturers located in this market are able to keep pressuring their competition as they are able to push cost, which enables them to gain market share in price sensitive markets. This is made possible due to cheaper labour, availability of cheaper raw material. Many Asian countries such as Japan are witnessing a growing energy crisis, which attracts investments in the power industry, and this will benefit the pump market as well (F & S, 2010).

With the growing trend of urbanisation the need for clean drinking water and sanitation increases, this will support demand of submersible pumps and single- and multistage radial flow pumps. In Australia and New Zealand droughts are common which have resulted in large investment in water treatment and reuse, in addition the mining industry is also strong in this region. As already mention energy is an issue that have led to rising prices. As a result investment in thermal desalination has decreased which has increased the presence of desalination through reverse osmosis, which supports the demand for submersible and energy-efficient pumps (F & S, 2010).

The need for energy is also applicable in both India and China, two countries that are expected to invest heavily in both conventional power and alternative energy plants. This will benefit the growth prospect of axial flow, circulator and sealless pumps. Further infrastructural development will also increase the need of circulator pumps. As oil is a scarce resource in the area, mainly in China, natural gas exploration will be more prominent, which will need pipelines thus supporting the need for centrifugal pumps (F & S, 2010).

In comparison to the other markets, the APAC is even more fragmented. The top five participants accounted for 34% of the total market in 2009. This is due to the price sensitivity in the market, which has paved way for local producers manufacturing replica products (F & S, 2010).

5.5 Pump industry challenges

European pump manufacturers have long been subjected to fierce competition from Asian producers. One reason for this is regulatory influence enhancing the product quality of Asian manufactured products. Another factor is the Asian manufacturers' ability to produce low cost products, this in combination with development in price sensitive areas such as Eastern Europe will intensify competition from Asian producers. This is due to price still being a key factor for purchasing pumps which is intensified by the economic situation in this region (F & S, 2010).

In the present market it is estimated that OEM business represents a major part of the market. However, this is likely to change. A shift from stand-alone products to complete integrated solutions is demanded by customers. This will force suppliers to extend their product offering and knowledge to be able to service their customers. Strategic partnerships and acquisitions are therefore likely to increase as companies must develop their knowledge base. This can prove difficult for many suppliers as there economic situation does not allow them to acquire the needed competencies or capabilities (F & S, 2010).

In combination with offering customers integrated solutions a demand of improved product differentiation is increasing. Customers tend to get confused in the product selection process. Thus product differentiation will be a key competitive advantage in order to break through the market noise. New technologies, materials and intelligent solutions will add value in combination with enhanced service offerings. Although there is a demand for all of the above, price sensitivity will likely force producers to reduced margins (F & S, 2010).

As customers are becoming more interested in integrated solutions suppliers will have to improve their lead-time as time for suppliers to cater the OEM market is shortened. Hence the suppliers who are able to quickly respond to customer needs will have a competitive advantage over their competitors. The

key factors will be sourcing of raw materials and availability of foundries for making casts (F & S, 2010).

Raw materials used for pumps have been subjected to considerably price increases, which will affect product prices as well. Higher raw material prices and customers are demanding higher quality products without a higher willingness to pay which might reduce suppliers' margins further. Another effect might be the use of new raw materials to be able to produce high quality products at lower costs (F & S, 2010).

A final challenge for suppliers will be the availability of skilled service and installation personnel. As the emerging economies are expected to increase the number of projects launched there will be a strong demand for personnel. At the same time regulations will push wages higher resulting in higher production costs (F & S, 2010).

5.6 Market drivers

The growing demand for power in combination with a rise in demand of clean drinking water is likely to drive the worldwide demand for pumps. By 2030 global water consumption is expected to have increased by 40%. Urbanisation and increased population provides a growing need for pumps, as wastewater management becomes more important. Filtration and flood management are other areas that will support this growth (F & S, 2010).

In addition the growing demand of power have also made end-user more aware of energy consumption thus demanding energy efficient products and at the same time focusing on life cycle costs. As customers are becoming more aware of their spending, efficiency and life cycle cost are important criteria when deciding which products to purchase. Centrifugal pumps tend to reduce energy costs and are therefore on key component (F & S, 2010).

Strategic services such as repairs, services, replacement and refurbishing of products have long been important for suppliers. Now when the market has become more price-conscious this has become more important as customers focus on these services. Aftermarket services are increasing its position and are expected to have continued growth in the short term (F & S, 2010).

Environmental regulations will also increase the demand for higher quality products as products must live up to higher standards. Regulation concerning hygiene standards will also affect the need of more sophisticated products (F & S, 2010). More sophisticated products will also be demanded due to a shift towards automated processes. Products with technologies which are able to monitor the processes and provide real time feedback will be essential for long term growth as it enables customer to measure and monitor their processes.

This will prevent breakdowns and also provide energy consumption information etc. (F & S, 2010).

5.7 Pump market restraints

The global economic crisis made the entire industry more aware of costs. This has resulted in end users shifting their supplier base towards Asian companies which was especially noticeable in the chemical sector where Asian companies have been able to strengthen their position relative European companies (F & S, 2010).

Overall the situation in Western Europe is quite harsh as many countries and companies are facing problem due to the economic crisis. This has resulted in a lack of production upgrades and stagnation in production in some segments as pulp and paper for instance. Eastern Europe is however, still considered to be a hub of future investment (F & S, 2010).

5.8 The pump market by end-user

Analysing the pump market by end-user gives a more relevant analysis of the market than analysing by product type. Defining by product type describes the technical classification that is relevant for production but from a market perspective it is not as useful as same product type of pumps are used in various end-user industries. Analysing by end-user industry will be more relevant as different industries have different drivers for demand and different trends. Therefore the end-user industry will be analysed and then adding the application of the pump within this industry (Forecasting, 2011).

Although analysing the pump market by end-user will make more sense when discussing drivers and trends, the data will be less reliable due to lack of information compared to product type information (Forecasting, 2011).

In the industrial countries the markets are in a mature stage and consist mainly of a replacement market in addition to products need to be updated to fulfil environmental regulations. In the developing countries the markets are experiencing higher growth rates and demand for new products are high, this may in some countries be constrained due to poverty. World market growth per end-user segment is forecasted to average at 6.4% 2011-2016, which is a bit below the average of 6.9% 2005-2010 (Forecasting, 2011).

The identified end-user segments are presented in Table 4.

Table 4; End-user segments turnover 2011, CAGR '05-'10, CAGR '11-'16 (Forecasting, 2011)

End-user	$ million 2011	CAGR '05–'10 (%)	CAGR '11 – '16 (%)
Oil & Gas – Onshore (includes liquefied gas)	2724	3.4	8
Oil & Gas – Offshore (excludes offshore Africa & Caspian Sea)	1884	12	7.1
Oil Refining	2039	9.2	5.6
Basic Chemicals	2921	8	5.4
Biofuels	130	27.6	14.6
Other Chemicals	1276	8.6	6.6
Coal/Oil Power Generation	1354	11.6	7.3
Gas/Cogen Power Generation	994	13.1	8.6
Hydro Power Generation	389	13.3	7.1
Nuclear Power Generation	695	7.4	9
Pulp & Paper	1319	8.3	6.1
Mineral Mining	1158	13.1	6
Metal Manufacturing	1622	10.4	6.8
Food	1233	7.1	7.1
Drink	651	7.6	6.5
Pharmaceuticals	568	7.3	6
Marine	937	10.3	6.9
Harbours/docks/canals	127	10.8	7.2
Other industry	4381	4.8	5.8
Municipal Water/Wastewater	4841	2.7	5.8
Building Services	2293	5.4	5.7
Domestic	3206	6.4	5.9
Construction Dewatering	1774	6.3	6.3
TOTAL	**38508**	**6.9**	**6.4**

When the end-user segments are defined it is possible to identify the applications of pumps within the segments. To understand the applications further the pump which is usually used is divided into one of three categories:

- Standard Pumps (STD)
- Engineered Pumps (ENG)
- Special Purpose Pumps (SPE)

Standard pumps are characterised by being produced in large numbers and at a relative low cost per unit. The size of these pumps varies from small to large and they are often manufactured with sophisticated computer aided techniques to ensure economies of scale. Although the pumps are standard within in a particular application they can often be used outside of this particular application as well. The pumps can be made of a wide range of materials such as cast iron, stainless steel and exotic alloys. A standard pump may also change over time, what was once considered a special purpose pump can today be considered an industry standard and in the same way standard pumps might to

be less effective than special purpose pumps which might be more expensive (Forecasting, 2011).

Engineered pumps are commonly large in size and built to high specification. Pumps that correspond to API 610 will categorise pumps as engineered. For instance oil refinery pumps which are included in engineered pumps due to this rather than size. The main end-users of engineered pumps are: oil and gas; and power generation. The market is characterised by contracts being worth multi-million and there are relatively few clients in the major area of applications, being oil companies or power generation plant operators (Forecasting, 2011).

Special purpose pumps are produced in a relative small number often by specialist companies and provide more efficient solutions than standard pumps. This enables the manufacturers to charge a price premium compared to standard pumps. Many manufacturers that produce special pumps are not able to achieve the same economies of scale as standard pump manufacturers and therefore choose not to compete in this segment as they are not price competitive (Rehhoff, 2012). However, they usually have a large number of customers as their products can be used in various end-user segments. In addition as process plants become smaller and more diversified they are more dependent on specialist techniques. As a consequence the average contract is of relatively small value and marketing cost can be relatively high to be able to reach their numerous clients. To add value many SPE manufacturers supply their clients with systems in addition to pumps (Forecasting, 2011).

This broad distinction of pumps is interesting as it demonstrates the market segmentation, shown in Chart 1.

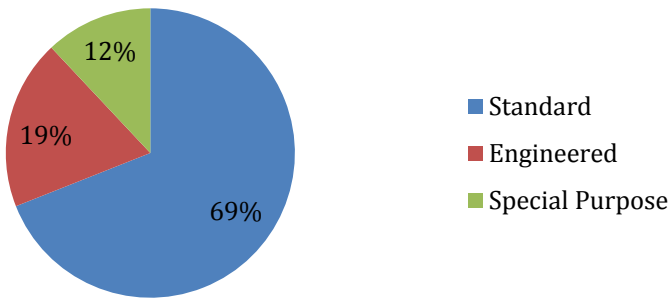


Chart 1; Breakdown of pump demand by type (Forecasting, 2011)

To find out the profitability of different pump types, comparable universes are constructed of companies within the STD, ENG and SPE segments. Their average EBITDA margin will demonstrate the profitability of the pump types. Each universe consists of a minimum of six companies with a well defined product offering matching their category. These companies were chosen from a list of

over 60 global pump companies operating worldwide. They were chosen on how well they were able to be defined in the product type group and their global presence to be able to represent the world market.

Of the previously presented end-user segments some are more interesting as they have a connection to the current market segments of Alfa Laval. These are presented in Chart 2. The y-axis represents the forecasted CAGR from 2010-2016, the x-axis is divided into the previously mentioned pump types STD, ENG, SPE. The percentage in parenthesis represents the average EBTIDA margin of companies offering these kinds of pumps. The size of the bubble is the actual 2010 market size of the different pump types within the different end-user segments.

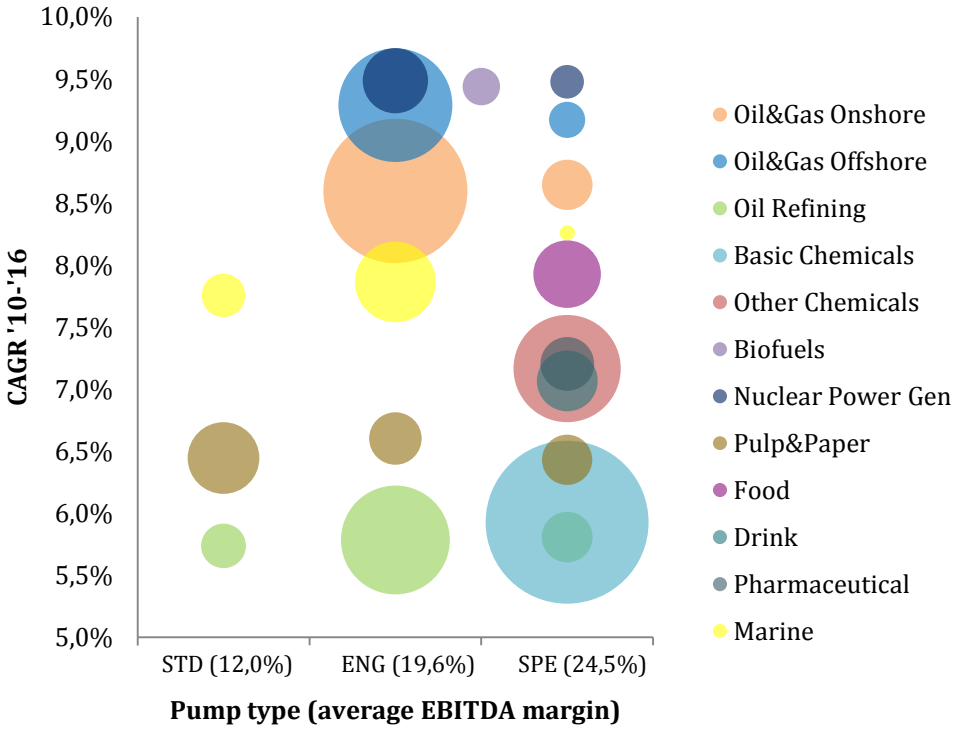


Chart 2; All End-user segments' (with a connection to Alfa Laval) growth, size and profitability by pump type

As a second sorting it is interesting to examine the end-user segments in which Alfa Laval today has no sales of pumps. This screening presents us with the following end user segments, demonstrated in Chart 3 and divided into pump demand and size of the market.

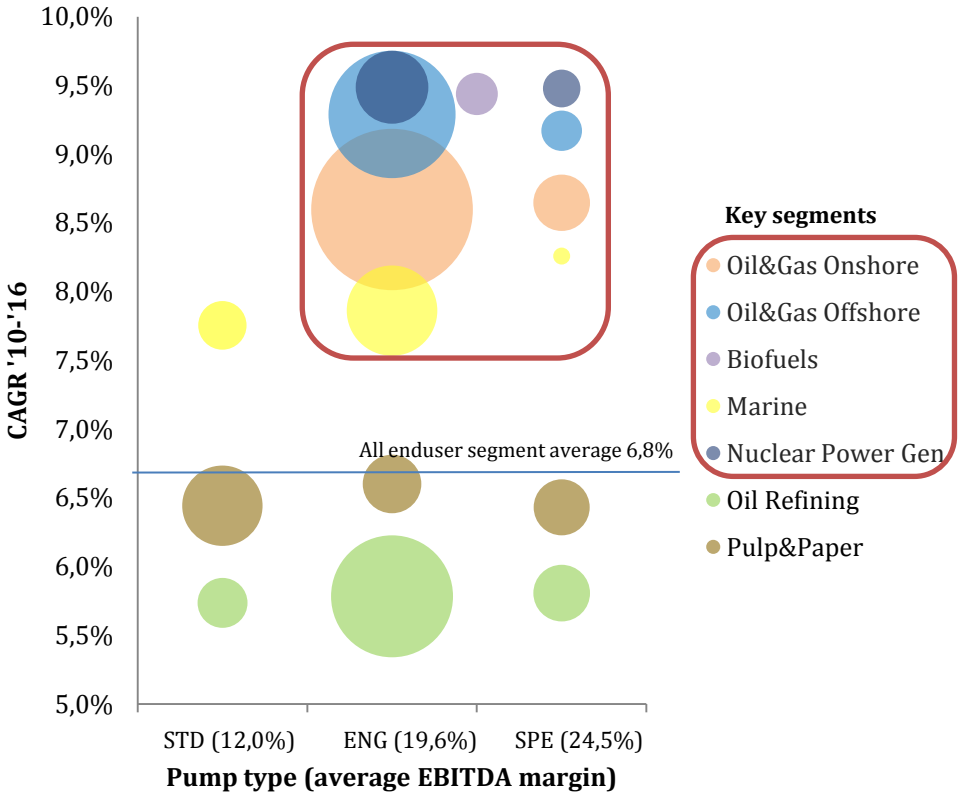


Chart 3; End-user segments' (not served by Alfa Laval today) growth, size and profitability by pump type

Chart 3 presents the segments that offer the strongest growth profiles and pumps which are not considered standard pumps. These types of pumps are often hard to imitate and are demanding to produce, therefore clients are less price sensitive and quality is important. Both ENG and SPE pumps are often used in environments where their function is consider being more critical and allows the producer to focus more on product quality and performance. However, price is often the critical order winner. Therefore it is important to be able to add value adding services such as after sales, repairs et cetera. Thus these segments are well suited for Alfa Laval's current strategy and positioning as a premium brand (Söndergaard, 2012).

The segments identified as potential future Alfa Laval markets for pumps are:

- Oil & Gas (Onshore and Offshore)
- Biofuels
- Marine
- Nuclear power generation

In the next section each segment will be described further and some drivers to why these segments are expected to experience such strong growth are discussed.

5.8.1 Oil & Gas

The oil and gas segment refers includes the exploration and production, transportation and refining of oil. These are the earliest stages in the value chain. Oil and gas is a source of energy which can be used in various end-user segments. Oil is most commonly used in the transportation segment, 61.7% of 2009 oil consumption, and natural gas is most commonly used to provide electricity (IEA I. E., 2011).

The world is highly dependent on the oil and gas industry as it remains the main source of energy (energy ≠ electricity). Oil has had a stronghold as the main source of energy since the 70's and even further back. However, as the world becomes more environmental aware criticism towards the use of oil resources have grown stronger. There is a climate policy framework, the 450 policy, under debate which aim is to stabilize the concentration of greenhouse gases at 450ppm CO_2-equivalent. With this debate alternative energy sources have received much attention and if passed it will affect the forecasted outcome of which sources our energy supply will come from. Although this policy will benefit alternative resources the estimates still show a strong dependency on oil and gas and it will be long before the dependency of these will end (IEA I. E., 2011). See Chart 4, 5 and 6.

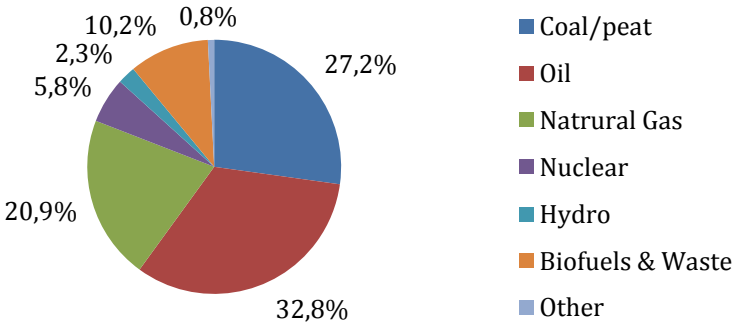


Chart 4; 2009 fuel shares of total primary energy supply (TPES) (IEA I. E., 2011, p. 6)

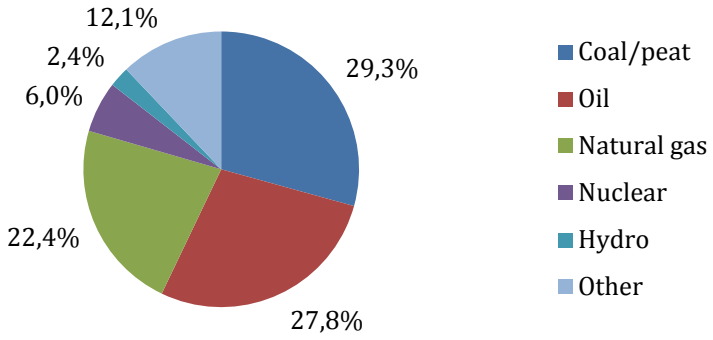


Chart 5; 2035 fuel shares of total primary energy supply current scenario (IEA I. E., 2011, p. 46)

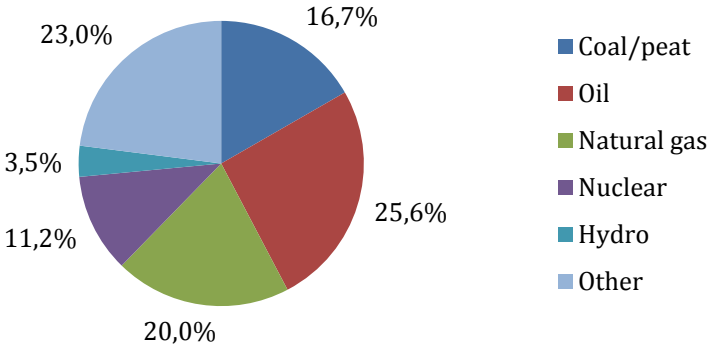


Chart 6; 2035 fuel shares of total primary energy supply 450 policy scenario (IEA I. E., 2011, p. 46)

As shown in Chart 4, 5 and 6 oil and gas is estimated to sustain a strong position reaching as far as 2035. If current policy is held there will be only minor changes and if the 450 policy is valid the main effect will be a decrease of coal/peat energy and increase in alternative source sorted in *other*. As a clarification it is important to remember that in the 2009 chart *other* include geothermal, solar, wind power etc. and in the 2035 chart *other* also includes *biofuels and waste* segment. Thus the relative change between different energy sources will be considered to stay relatively unchanged worldwide and the increase of oil and natural gas demand as an energy source will be assumed to stay proportional to the increase in overall energy demand. However, for oil and gas to maintain this position and be able to fulfil environmental regulations in addition to demand, more efficient products and more sophisticated technology will be needed thus support demand of pumps (F & S, 2010).

Oil and gas is the largest end-segment for centrifugal pumps and with the rising demand of energy it is expected to maintain this position. The already mentioned need for efficient products is also likely to increase future

investments in the upstream oil and gas production, especially in the deep sea exploration segment (F & S, 2010). Most national oil companies have strong financial and will therefore be able to fund investments even in economic downturns (WBC, 2010). Investments can be expected in order to comply with environmental legislation as well as safety legislations on oil platforms, oil refineries, and pipelines. Investments is also expected in aging oil fields in Russian and Norwegian markets as well as the continued development of energy infrastructure in emerging markets such as China, India and Brazil. Furthermore new oil and gas initiatives and nonconventional oil projects is expected to increase, areas such as liquid natural gas are especially attractive (WBC, 2010).

5.8.2 Marine

The Marine end user segment is divided into ship production and repair. The market size depends on the production of civil and naval vessels which is strong in Europe, Japan and North America, and commercial ships which is concentrated in China, South Korea and Japan (Forecasting, 2011). The marine market is interesting as it is a true global market, ships can be built in on country registered in another, owned by a third and travel all over the world. This makes the industry truly global and complex. Legislation is driven by conventions which has to be approved thus some environmental questions for example might not be as up to date as in many other industries (L. Sørensen, 2012). The different ships within the marine market can be divided into five general groupings. These are oil tankers, bulk carriers, general cargo, container ships, and other ships (for example chemical tankers, liquefied gas tankers, fishing, passenger, and all other types) (Asariotis, et al., 2011). The ships that currently are of most interest to Alfa Laval are tankers. Tankers are often more complex in their construction as they carry goods which are dangerous and often need to be monitored with more advanced systems than for example container ships (K. Sørensen, 2012).

As in many other areas China is an interesting market and is expected to exceed other countries growth capacity in the next coming years. Other areas of interest are the Middle East and the Pacific Rim (Forecasting, 2011).

Since the marine industry account for almost 90% of goods traded across borders the production, upgrading and service of ships is highly affected by the world economic state. In 2008 the shipbuilding industry was slowed down by the financial crisis. Orders were cancelled and new orders were decreasing due to the problem of raising capital to fund the purchasing of the ships. Companies with smaller fleets and low debt were able to handle the crisis better than the larger and more indebted companies. The economic crisis hit owners of bulk carriers and container vessels hardest. In all of the different sectors of the shipping market a key concern has been excess capacity especially in the tanker market (GIA, 2012).

Such issues will increase the demand of efficient usage of power aboard ships. In combination with higher fuel prices, equipment aboard needs to increase efficiency in order for companies to be profitable. Even small percentages saved in energy consumption will result in a lot capital saved for operators and owners. Therefore the need for more advanced equipment will increase. The key for producers of equipment is to add value-adding capabilities, which can decrease the energy consumption on-board the ship. In combination with stricter legislation and energy consumption concerns efficiency will be a key issue and order winner for pump producers (Andersen, 2012). Further customers want integrated solutions and be able to use fewer contractors, a so called "one-stop-shop". Therefore a larger product portfolio will add to the attractiveness for customers (Sørensen, 2012).

The demand for pumps in the marine market will be strong in the Asia-Pacific region as this area promises higher growth than the Western region. There are many indicators of this strong growth, such as an increase in chemical and oil transport. Both China and India are predicted to be more stable through the crisis than Western countries and is expected to rebound quicker in terms of new builds. Advances in technology are also expected to increase growth in the marine industry as ships will be able to work more efficiently and at lower costs (GIA, 2012).

Although the economic situation has brightened since the 2008 crisis there are multiple risks that can undermine future growth. In 2010 there was an increase in demand. However, the marine industry is highly affected by macroeconomic conditions. Political turbulence, natural disasters, and volatile energy prices are issues causing concern about the future (Asariotis, et al., 2011).

As previously mentioned oil is of key strategic importance as is constitutes such a large share of the world's energy supply. There is therefore a strong connection between the production of oil and the marine segment as oil tankers are needed in order to import and export oil. In 2010 about 45% of the crude oil production was loaded on tankers. Major importers are China and India in order to satisfy the countries growing energy demand, and Chinese oil companies have boosted their investment overseas in oil extraction and production during the resent years. Resent oil discoveries have also showed a shift in export patterns as Brazil and West Africa are growing as major exporters. This is interesting as the demand for oil is correlated with the demand for oil tankers, and in 2010 1.8billion tons of crude oil were loaded which is a return to pre-crisis levels (Asariotis, et al., 2011).

In addition to oil natural gas is also of key strategic importance as it is the world's third largest source of energy after oil and coal. Natural gas also has the advantage of being considered a much cleaner fossil fuels as its carbon content is lower. This has strengthened the attractiveness of natural gas as a fuel source.

More recently liquefied natural gas (LNG) has emerged as an alternative to nuclear energy. 2010 witnessed an increase in LNG shipments of 22% mainly driven by a 50% increase in Qatar's output. Qatar is the main exporter of LNG followed by Malaysia, Indonesia, Algeria and Nigeria. Several exporters are emerging which include Angola, Australia, Peru and Saudi Arabia. A number of export terminal projects are planned in these regions and also in Canada and Brazil as plans for liquefaction facilities are undertaken (Asariotis, et al., 2011).

The development of the marine segment will affect the pump market as ships will need service and repairs, be able to handle cargo more efficient in combination with loading and unloading terminals which are planned. Construction of new ships will increase the demand for pumps and the demand of more sophisticated pumps and controls will benefit the pump market. Although excess capacity is an issue at the moment warnings are that in 2013 there might be a shortage of oil tankers (Asariotis, et al., 2011).

5.8.3 Nuclear power generation

The drive for products serving the nuclear power generation segment is also based on the growing future demand of energy. As population growth will continue the need and demand for electricity will rise as well. New investments in the energy sector are essential to maintain and increase living standards. Significant growth of electricity demand in both China and India are also encouraging increasing demand of power. Furthermore investments are planned globally to increase capacity and upgrade, maintain and repair aging plant in order for them to live up to security standards and also optimise production levels (WBC, 2010).

In the annual IAEA rapport of 2011 projecting future nuclear power generation the accident of Fukushima-Daiichi is taken into account which lowers the future projections. However, still an increase of power generated by nuclear power plants is expected. The IAEA presents two scenarios, low and high, of future nuclear power plants. The low scenario presents that by 2030 the number of operating nuclear power plants will increase by 87 (254 reactors are constructed and 167 are retired). The high scenario presents that by 2030 the number of operating nuclear power plants will increase by 348 (440 reactors are constructed and 92 are retired). Both projections are based from a base of 441 reactors at the end of 2010 (IAEA, 2011). Figure 8 demonstrates the projection of future nuclear power capacities.

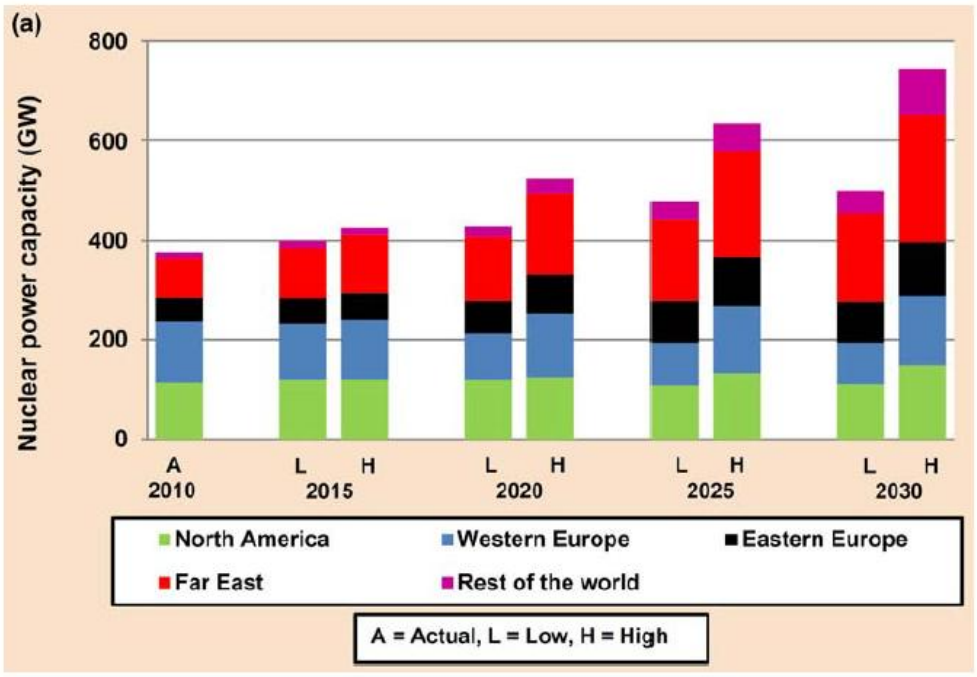


Figure 8; Prospect for nuclear power in major world regions (IAEA, 2011, p. 33)

Experts who operate around the world with great insight in the industry have developed the projection scenarios. They construct the projections project by project and evaluate the project given certain assumptions for the high and low scenario (IAEA, 2011).

Although deep public anxiety has grown after the Fukushima-Daiichi accident and a number of countries have decided to review their nuclear programs and even phase out nuclear entirely some re-emphasised their intention to develop nuclear power programmes. The strong global interest is based on the increasing global demand for energy, volatile fossil fuel prices and securing energy supply (IAEA, 2011).

From a pump perspective it is interesting with the large number of new builds projected. In addition the concerns about safety are also an interesting point of view. As many countries are reviewing safety standards the demand on reliable and safe products will increase further. Therefore more sophisticated and advanced products will be needed. Since this is such critical service, price sensitivity can be expected to be put aside to product quality.

5.8.4 Biofuels and biorefineries

Biofuels is biomass that is transformed into fuels, such as biodiesel and ethanol. Biofuels is a growing market and between 2000 and 2007 global production

tripled, see Figure 9. The continuous rise in oil prices has boosted the interest in alternative fuels including biofuels (Coyle, 2007).

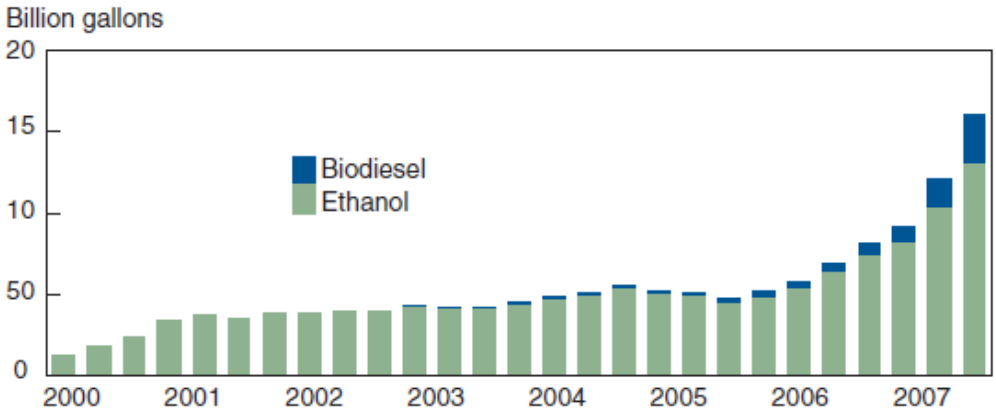


Figure 9; Global biofuel production between 2000 and 2007 (Coyle, 2007)

Biofuels can be produced in biorefineries. A biorefinery converts biomass into fuels energy, chemicals and materials, so called bio-based products. Bio-based products can be divided into three product categories:

- Biofuels – biodiesel and bioethanol.
- Bio-energy – heat and power.
- Bio-based chemicals and materials – succinic acid and polylactic acid.

Since a biorefinery is able to convert biomass into a wide range of different products is can be compared with petroleum refineries which also produce multiple fuels, power and chemical products (King, Inderwildi, & Williams, 2010).

Various types of feedstock can be used when producing bio-based products. There are two dominating categories of feedstock dominating research made in the area.

- First generation feedstock – eatable biomass e.g. sugar/starch crops and vegetable oil.
- Second generation feedstock – non-food parts of current crops or other noon-food sources e.g. lignocellulosic biomass, jatropha oil, micro-algae.

The first generation of feedstock has been criticised as it has contributed to higher food and feed prices (Coyle, 2007). However, the second generation of feedstock is considered to be a potential replacer of fossil-based products (King, Inderwildi, & Williams, 2010).

Biorefineries use a variety of different processes to convert the biomass into bio-based products. The most commonly used processes include fermentation, gasification, transesterification and research is constantly performed to find new methods. A particularly popular segment of this is concerning the development of synthetic biofuels, such as biomass-to-liquid (King, Inderwildi, & Williams, 2010). The variety of processes in biorefineries all have a key success factor which is optimisation and efficiency of the process in order to attain economic viability and making biorefineries sustainable. Therefore the technological demand of product is high which from a pump perspective is appealing as products are hard to copy in order to live up to demands (King, Inderwildi, & Williams, 2010).

Converting biomass into energy has a long history dating back as far as the 1860's. However, as the exploration of crude oil exploded biofuels never got a stronghold and have not been able to compete with the production of oil. In later years concerns about global warming, environmental concerns and sustainability are on the world agenda biofuels have gained interest once more. This has resulted in the development of biorefinery projects and national and regional legislation enhancing the industrialisation of biorefineries. See Table 5 for an example of legislation and subsidises worldwide (King, Inderwildi, & Williams, 2010).

Table 5; Worldwide mandate s and subsidies for production of bio-based products, (*) denotes key feedstock (King, Inderwildi, & Williams, 2010, p. 16).

United States	Brazil	EU	China	India
Mandate of 36 billion gallons of biofuels by 2022.	30+ year commitment to 'alcohol program'.	5.75% blending target by 2010 and 10%by 2020.	Plan to substitute 20% of crude imports by 2020.	Blending targets in current drafts are 5% by 2012, 10% by 2017, 20% for long term.
Volumetric tax credit: USD 0,51/gal + ethanol + USD 1,00/gal biodiesel.	Annual blending target for ethanol (25%). Biodiesel target of 5% by 2013.	Discussion on target waiver triggered by food crisis, but no change of policy so far.	Target of 1.7billion gallons of ethanol by 2010.	Target of 20% biofuels by 2020.
Cellulosic biofuels producer tax credit: USD 1.01/gal. Small producer tax credit: USD 0.1/gal.	Lower taxes for ethanol (E100) than for gasoline.	Country-level subsidies average USD 1.90/gal for ethanol and USD 1.50/gal for biodiesel.	Investments in feedstock-rich countries.	Duty free imports of jatropha to support biodiesel.
USD 1 billion in support for 2nd generation technology.	FFV sales tax of 14% compared to 16% for gasoline vehicles.	Penalty fee in 5 countries for noncompliance with biofuels target	Commitment to develop non-food based biofuels – COFCO (Nat. Food Corp.) with PetroChina and Sinopec – 2nd generation multiple projects.	Individual states may set additional measures to promote biofuels or restrict transport of molasses over state boundaries.
*Corn/ Lignocelluloses	*Sugarcane	*Rapeseed/ Lignocelluloses	*Lignocelluloses/ Various	*Various

Biorefineries will play a key role in coming years to tackle the issue of world sustainability and as a replacement source of energy to fossil energy sources (King, Inderwildi, & Williams, 2010). As shown in Diagram 1, world consumption of biofuel is expected to increase dramatically over the next ten and 40 years.

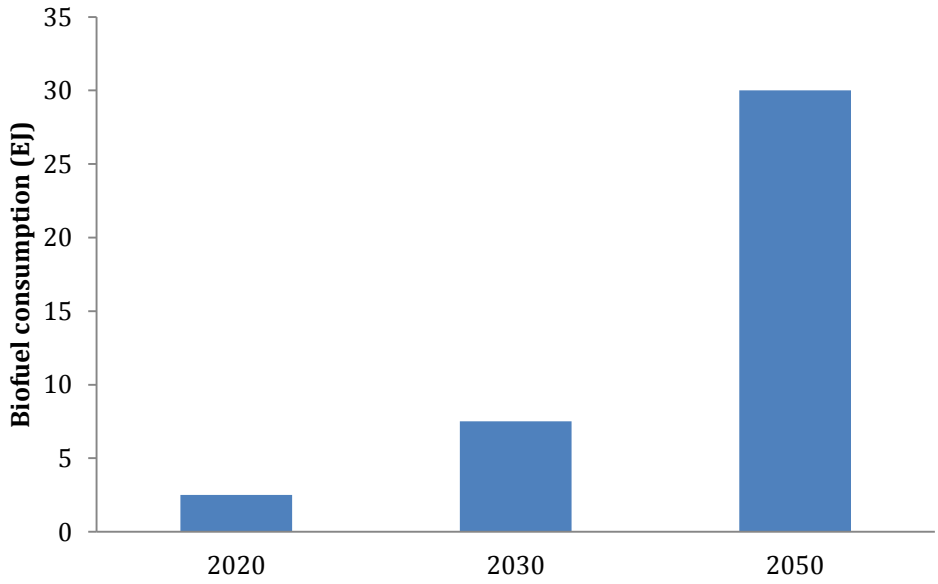


Diagram 1; Estimate of world future consumption of biofuels (IEA, 2010, p. 2)

In this section the developed market attractiveness model will be applied to the five key end-user segments (sub-markets). It will determine their relative market attractiveness. thus finding in which market a value added acquisition will be most likely for Alfa Laval. Each end-user segment will be evaluated and a discussion about their final score will sum up this section.

6 Applying the model on the market

The model previously described will be used to test the five key end-user segments to determine their attractiveness and which segment(s) that should be a focus area for Alfa Laval. Each end-user segment will be evaluated and scored relative each other. Thus only one market can receive the highest score and only one market can receive the lowest score.

6.1 Oil and gas onshore

6.1.1 Market size

The onshore market for oil and gas has a market size of MUSD 2445 (2010) (Forecasting, 2011) making it the largest of the submarkets investigated. Thus it also receives the highest score in market size.

Score: 5

6.1.2 Profitability

Within the oil and gas onshore market the pumps are mainly split between ENG (89%) and SPE (11%). This gives the market segment an overall profitability score of 3. The data presented only refers to new units sold. Therefore aftersales and service is not taken into account. However, oil and gas is a segment that operates under rough conditions and the service level of equipment is important as a failure easily becomes expensive for operators.

Score: 3

6.1.3 Future growth profile

The future growth profile score of the oil and gas market onshore is based on the estimated CAGR from 2010-2016 and how the year-to-year growth is estimated to be and then compare with actual CAGR between 2005 and 2010. This is to identify so called market lows. This sub-market has a relatively low CAGR ’10-’16 of 8.6%. However, when estimating market lows, representing preferable years for acquisitions, the growth will is estimated to be higher for all years. Therefore it will be hard to time an acquisition well in this market. In addition, a strong political goal worldwide is to decrease emissions that affect the environment negatively. Consequently the future growth of this market is hard to predict and include a high degree of risk although it is estimated to remain strong.

Score: 1

6.1.4 Consistency with strategy

The future of oil and gas onshore market is considered to continue to be strong. As the dependency of oil will continue onshore oil exploration, drilling and production will continue to demand pumps. The largest markets for new pumps in the onshore segment are the US, Chinese, Iraqi and Russian market. In China the energy infrastructure is being developed and in Russia old and aging oil fields will need to upgrade their equipment and service and maintenance are key issues. This is well in line with Alfa Laval's argument to continue their expansion into BRIC countries as well as continue the expansion of their aftersales market.

The possibility of selling new products which are more efficient and environmental friendly is also in line with Alfa Laval's strategy. Although making a contribution to more environmental friendly processes the oil and gas is a controversial market that is exposed to a lot of criticisms from an environmental point of view, which lowers the overall score for the market. Furthermore pumps used in this segment are engineered however in the onshore segment the pumps can be more of standardised character which makes it harder for pump companies to provide premium products which is current Alfa Laval strategy.

Score: 2

6.1.5 Market relatedness with current operations

The oil and gas segment both onshore and offshore is currently a strong segment within the Alfa Laval group. As a result this segment can be seen as a present market need, present geography and new products in the geographic growth vector by Ansoff presented previously. It can also be sorted as entering into a related complimentary market in the framework presented by Shelton. Therefore this sub market is quite well related to Alfa Laval's current operations offering customers more value and complete solutions. Cost synergies are likely to be possible due to combining sales forces and production capabilities, as well as purchasing of raw materials. The ability to offer clients "one-stop shop" by expanding the product portfolio is in favour of increased revenues possibilities. The market is also well spread globally, market presence in 50 of 63 countries examined, which increases the potential of an international acquisition.

Score: 3

6.2 Oil and gas offshore

6.2.1 Market size

The offshore market for oil and gas has a market size of MUSD 1560 (2010) (Forecasting, 2011) making it the 2nd largest of the submarkets investigated. Thus it also receives the second highest score in market size.

Score: 4

6.2.2 Profitability

Within the oil and gas offshore market the pumps are mainly split between ENG (91%) and SPE (9%). This gives the market segment an overall profitability score of 2.

Score: 2

6.2.3 Future growth profile

The future growth profile score of the oil and gas market offshore is based on the estimated CAGR from 2010-2016 and how the year-to-year growth is estimated to be and then compare with actual CAGR between 2005 and 2010. This is to identify so called market lows. This sub-market has a relatively average CAGR '10-'16 of 9.3%. In addition when estimating market lows, representing preferable years for acquisitions, 4 years to come are estimated to represent good timing for acquisition which results in a higher attractiveness score. The data presented only refers to new units sold and as with the onshore segment aftersales and service is not taken into account. In the offshore segment, conditions can be even rougher than the onshore segment and consequences of failure more sever, therefore requirements are even higher on equipment within this segment and service and reliability is highly important.

Score: 3

6.2.4 Consistency with strategy

The oil and gas offshore market have in the past years developed very well and the demand for pumps within this segment is high. A key market of offshore oil and gas is Brazil as many new projects are planned. This is also an interesting market already for Alfa Laval as the BRIC countries have witnessed strong growth.

The capability of pumps in the offshore industry is often more advanced than those in the onshore oil and gas industry. One reason for this is the increased demand in deep-sea drilling. Pumps used in this segment are exposed to harder conditions and need to be more custom-built and specialised. Therefore this segment will fit well with the Alfa Laval strategy of offering premium product with enhanced functions and value added services. Since the pumps serve a

critical role in the processes it is possible to take out a price premium and compete with quality in a further extent. Therefore this kind of pumps will fit the product profile of Alfa Laval even better than onshore pumps.

Score: 3

6.2.5 Market relatedness with current operations

The oil and gas segment both onshore and offshore is currently a strong segment within the Alfa Laval group. As a result this segment can be seen as a present market need, present geography and new products in the geographic growth vector by Ansoff presented previously. It can also be sorted as entering into a related complimentary market in the framework presented by Shelton. Therefore this sub market is quite well related to Alfa Laval's current operations offering customers more value and complete solutions. Cost synergies are likely to be possible due to combining sales forces and production capabilities, as well as purchasing of supplies. The ability to offer clients "one-stop shop" by expanding the product portfolio is in favour of increased revenues possibilities. The offshore market is a more advanced market than the onshore market which makes slightly more related to current business operations.

Score: 4

6.3 Marine

6.3.1 Market size

The marine market has a market size of MUSD 831 (2010) (Forecasting, 2011) making it the 3rd largest of the submarkets investigated. Thus receives the third highest score in market size.

Score: 3

6.3.2 Profitability

Within the marine market the pumps are split between STD (22%), ENG (75%) and SPE (3%). This gives the market segment an overall profitability score of 3. Marine pumps are interesting as the efficiency of the pump is directly connected to large cost savings as they will increase the energy consumption of ships.

Score: 3

6.3.3 Future growth profile

The future growth profile score of marine market is based on the estimated CAGR from 2010-2016 and how the year-to-year growth is estimated to be and then compare with actual CAGR between 2005 and 2010. This is to identify so called market lows. This sub-market has a relatively average CAGR '10-'16 of 9.3%. In addition when estimating market lows, representing preferable years

for acquisitions, 4 years to come are estimated to represent good timing for acquisition which results in a higher attractiveness score.

Score: 4

6.3.4 Consistency with strategy

With the development of Alfa Laval the marine division has expanded as well and now represents its own business division, Marine & Diesel. This demonstrates the company intension to explore this market further. In addition international trade is one of the four future growth factors of the company as well as for the marine industry. This demonstrates the contingency between the corporate development and the marine market for pumps. In this market it is also possible to compete by offering clients more advanced and sophisticated products. As efficient products can simplify surveillance of process aboard and also decrease fuel consumption a lot of money is at stake for ship operators. Ship yards are also interesting as they will be able to offer enhanced products. Asia is particularly interesting as China, Japan and South Korea all are growth areas.

Since the marine industry truly is global Alfa Laval will also be able to offer the service needed by its well developed global network. This will add value to future customers and be in line with Alfa Laval strategy of expanding aftersales operations.

Score: 5

6.3.5 Market relatedness with current operations

The marine market is a key industry of Alfa Laval's products. About three quarters of the world's ocean going vessels carry Alfa Laval products (Annual report 2011). Offering these customers pump as well makes the market a related complimentary market to current operation, thus making it attractive from an acquisition point of view. Furthermore it could be argued with previously made investments a natural process would be to expand further into this market to expand the service offering to customers and being able to deliver even more comprehensive solutions. Therefore both cost and revenue synergies are possible. The market will also further strengthen Alfa Laval's global operations with market activity in 52 of the 63 countries investigated.

Score: 5

6.4 Nuclear power generation

6.4.1 Market size

The nuclear power generation market has a market size of MUSD 621 (2010) (Forecasting, 2011) making it the 4th largest of the submarkets investigated. Thus it receives the fourth highest score in market size.

Score: 2

6.4.2 Profitability

Within the nuclear power generation market the pumps are mainly split between ENG (79%) and SPE (21%). This gives the market segment an overall profitability score of 3. The profitability is expected to maintain a high level as pumps are part of the critical applications and reliability is a must. Service and maintenance is therefore likely to boost aftersales services.

Score: 3

6.4.3 Future growth profile

The nuclear power generation segment is estimated to have a high estimated CAGR between ’10-’16 of 9.5%. However, this estimation might be high as nuclear power is controversial and public opinion is hard to ensure. Although energy demand is increasing nuclear power may be uncertain. Some debate it is a good contribution to a cleaner environment and others argue the safety level of the power plants are too low. In addition this strong estimate shows few market lows when an acquisition could be preferable. However the strong estimated growth drives up the score for this sub segment.

Score: 4

6.4.4 Consistency with strategy

The nuclear power industry demands products which are reliable and of high quality as they are part of critical process which can have devastating consequences if a breakdown would occur. As a result premium and customised products are needed. However, the nuclear industry has in later years faced a lot of criticism and is not considered to be as safe as once stated. As a result of this the market growth although estimated to be high can be questioned. Another problem is if projects get cancelled and uphold revenue streams might be harder to sustain. Today Alfa Laval delivers products to the nuclear industry however compared to the other industries it cannot be considered to reach their level of contingency. In addition to this it is important to think in which direction Alfa Laval would like to develop.

Score: 1

6.4.5 Market relatedness with current operations

The nuclear power generation industry is today provided with products from Alfa Laval. However, it is not a core industry in its own like marine, oil and gas and biofuels. Therefore the relatedness is deemed relatively low.

Score: 1

6.5 Biofuels

6.5.1 Market size

The biofuels market has a market size of MUSD 137 (2010) (Forecasting, 2011) making it the smallest of the submarkets investigated. Thus it receives the lowest score in market size.

Score: 1

6.5.2 Profitability

Within the biofuels market the pumps there is not such a great distinction between the product types used. However after studying the market and companies that offer products to the segment it can be concluded that it mainly is ENG and SPE pumps that are offered. Therefore a split of 50-50 between the segments is estimated. This gives the market segment an overall profitability score of 5. The pumps used in this segment are used in critical processes, however the consequences of a failure may not be as harsh of those in the nuclear segment, and pumps are highly customised.

Score: 5

6.5.3 Future growth profile

The biofuels segment has witnessed remarkable growth since 2001. The CAGR between ’10-’16 is estimated to 9.4%. The biofuels segment has had an even stronger actual growth the last years. As a result of this the market is estimated to provide good timing of acquiring companies. Since biofuels also is expected to increase its influence in future industries the growth profile is considered to be highly attractive as the demand for biobased products will increase so will the need for production capabilities. The fast growth of the segment indicates the industry is in a preferable stage in the industry life cycle as well.

Score: 4

6.5.4 Consistency with strategy

Biofuels is a rapidly growing and innovative market. The segment is in need for highly developed products, which are customised and the need for innovative solutions is essential. This segment is a good opportunity for Alfa Laval as it will be in line with the environmental friendly focus, innovative products and high margins. BRIC countries are future growth markets which is inline with the focus area of Alfa Laval. This segment will also be good for future environmental focus of Alfa Laval and as markets in the future will be more dependent on biobased products Alfa Laval will be well positioned if they were to invest in this industry.

Score: 4

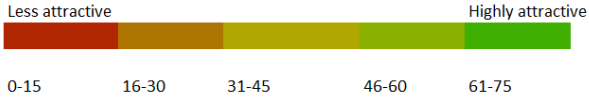
6.5.5 Market relatedness with current operations

Alfa Laval has some relatedness to the production of biofuels today. However, it is not a particularly large market therefore the relatedness is quite low today although there is a will within Alfa Laval to develop a strong position within this segment. Both cost and revenue synergies are potentially large.

Score: 2

6.6 Final score of the model and discussion

Parameter	Multiplier	Pump Industry				
		Sub-markets				
		Oil & Gas onshore	Oil & Gas offshore	Marine	Nuclear power generation	Biofuels
Market size	1	5	4	3	2	1
Market profitability	3	3	2	1	4	5
Market growth profile	2	1	3	4	2	5
Consistency with strategy	5	2	3	5	1	4
Market relatedness	4	3	4	5	1	2
Total score and attractiveness		38	47	59	27	54



0-15 16-30 31-45 46-60 61-75

Figure 10; Market attractiveness model final score

The ranking of the key end-user segments previously identified resulted in what can be viewed in Figure 10. When judging the result it is important that the given score each market been assigned is relative to each other within the same parameter. The three markets that gave the highest total scores and therefore are expected to most likely result in value adding acquisitions are Marine, Biofuels, and Oil & Gas offshore. These markets should therefore be screened with a particular interest in order to identify acquisition targets. However, the result is not saying that the onshore oil and gas market and nuclear power generation market are uninteresting, only that they should be approached with more caution.

The next steps after using this model is to look for candidates operating within these segments in order to further understand potential synergies between companies and what capability transfer that could be achieved. A thorough due diligence must be performed in combination with a proper valuation of potential target companies.

6.6.1 "What-if?" analysis of the model

Since the market attractiveness model is affected by the subjective market knowledge and future market implications the score given to the different parameters may vary. There are two factors that are more vulnerable to

subjectivity than the others. These are: consistency with strategy and market relatedness. In addition the future growth profile can also be affected by the subjective view of the user of the model. In order to examine how valid the result of the model is a "what-if?" analysis is therefore performed.

In a first stage of the what-if analysis these three parameters are therefore given the lowest multipliers to examine how this will affect the overall score of the market segments. The result is presented in Figure 11.

Parameter	Multiplier	Pump industry				
		Sub-markets				
		Oil & Gas onshore	Oil & Gas offshore	Marine	Nuclear power generation	Biofuels
Market size	5	5	4	3	2	1
Market profitability	3	3	2	1	4	5
Market growth profile	4	1	3	4	2	5
Consistency with strategy	1	2	3	5	1	4
Market relatedness	2	3	4	5	1	2
Total score and attractiveness		46	49	49	33	48

Figure 11; What if analysis 1"reversed multipliers"

The results show that the market segments are harder to separate. However, the most attractive segments are in the top and the least attractive segment is still far behind. Even more interesting could be to see if no multiplier at all is used, see Figure 12 for result.

Parameter	Multiplier	Pump industry				
		Sub-markets				
		Oil & Gas onshore	Oil & Gas offshore	Marine	Nuclear power generation	Biofuels
Market size	1	5	4	3	2	1
Market profitability	1	3	2	1	4	5
Market growth profile	1	1	3	4	2	5
Consistency with strategy	1	2	3	5	1	4
Market relatedness	1	3	4	5	1	2
Total score and attractiveness		14	16	18	10	17

Figure 12; What if analysis 2 "no multipliers"

This result shows that the validity of the model can be concluded to be high as long as the user has insights of how the markets are positioned relative each other.

Other factors that might affect the model results are regarding the future outlook of the different markets; oil prices, environmental legislation, government approvals and legislation. When scoring each market these factors have been of interest and the future of each segment is based on the most updated reports and estimates. Therefore the result of the model is considered to be strong. Especially factors like market relatedness and consistency with strategy is considered strong due to the close collaboration with Alfa Laval when examining the markets.

In this section the results of the market attractiveness model will be discussed. Conclusions and recommendations for next steps in the market entry process will also be presented in order to maximise the utility of the results.

7 Conclusions and final remarks

7.1 Market attractiveness model evaluation

The model created in this thesis is derived from a wide-ranging literature study during which the most cited works have been studied to create a strong foundations of M&A theory in combination with market analysis. This resulted in a new type of model which can be used as a tool when examining the market attractiveness of different alternatives thus bridging a gap between market attractiveness and target identification in the acquisitions process.

By adjusting the multipliers used the model can be applied on different companies. The multipliers should be adjusted to represent and be in line with company preferences, for instance if high growth is preferable to market size. This makes the model transferable to other companies than the case company used in this thesis. The model is therefore to some extent vulnerable to subjectivity when deciding on the three of the parameters multipliers. However, this subjectivity is tested with a what-if analysis which demonstrates the credibility in the results presented by the model.

A drawback of the model is how it can be exposed to subjectivity when scoring different market alternatives. The relative scoring is always based on a subjective view when valuing different alternatives relative each other. Therefore the guidelines for the scoring criteria must be adjusted to match the available data if the data recommended in this thesis is not available. The parameters which are hardest to estimate with numbers are consistency with strategy and market relatedness. These parameters demand good company insight and market knowledge. However, as this model is thought to be an aid at a strategic level, its users are thought to possess this knowledge.

To sum up the model used in this thesis can be used to determine if other markets are attractive for the case company in the future. It can help the company in their strategic planning and be used as part of a corporate development tool kit. Learning where to go and how to go there is complex and therefore this tool will help management in their decision making. Then company strategy can be motivated even better and as a result easier to communicate throughout the company and to stakeholders. Advantages of the model is its ability to distinguish different market alternatives and as a result simplify the allocation of resources for investigating new markets and thus save

both time and money. This will then result in better motives when entering new markets.

7.2 Results of applying the model

After applying the model to the examined market two sub markets stands out as most attractive, the Marine market with a score of 59 and the Biofuels market with a score of 54. These two are followed by the Oil and Gas markets where the offshore segment is considered to be a bit more attractive with a score of 47 compared to 38 for the onshore segment. The nuclear power generation market is deemed the least attractive market with a score of 27. The score is an indication of how to prioritize these markets and in which key markets a target company should operate in.

Expanding further into the Marine segment will be a natural step for Alfa Laval as the segment already has developed heavily after the acquisition of Aalborg Industries. Increasing the fuel efficiency is important as better products can reduce fuel cost. Therefore value adding products are highly attractive to actor on this market. In addition the Biofuels segment is a strong future segment as it is considered more environmental friendly and will continue to increase its position in many areas due to the wide range of biobased products. Although it currently is the smallest market in this peer group it is the least mature market, thus it has a bright future and greatest potential of growth in the long-run. An investment in the Biofuels market would imply a higher degree of risk compared to the Marine market due to its early stage in the life cycle, but it does compensate it with a potential higher return.

The next step for the case company is to identify companies operating within these segments to learn even more about how each specific company would fit with current operations and strategy. When a few companies are identified the owners can be approached and further analysis can be done.

7.3 Suggested further research

This thesis summarises many what many researchers in different areas have studied about M&A. It is tested on only one case company and therefore it will be interesting to test the applicability on additional companies as well. It would be interesting to further investigate how to continue after the result of the model are presented, and develop better tools or model to identify the key acquisition targets within an attractive market segment.

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9 Appendix

9.1 Appendix 1 – Discussion materials with divisions within Alfa Laval

- How is the this division structured
    - What end user segments are served
        - Which ones are most profitable and what characterise these segments?
        - To what extent are Alfa Laval able to satisfy customer needs today? Is there any area which has shown a great demand and could be interesting apart from present areas?
    - What technologies are used and what products are offered?
    - What kind of pumps are end-users to this division using today, if any?
- Does Alfa Laval have any strategic alliances today within pumps or any kind of joint ventures?
- What is key criteria for customers when choosing a supplier (e.g. Alfa Laval)
- What knowledge does Alfa Laval lack that prevents Alfa Laval from developing pumps? Can it be made in-house or what know-how needs to be developed or bought?
- Basic market analysis issues
    - Attractiveness of this market
    - Entry barriers
        - Are there many companies competing for clients?
        - Are there many clients?
        - Is it a price sensitive market?
    - What customer need are identified
    - Way-to-market (How customers are buying and what are key success factors)
        - What is a typical order value for pumps?
    - Major suppliers and supplier power
    - Substitutes to pumps
    - How is the geographic breakdown of the market structured
- Requirements for pumps (standards, approvals etc.)
    - Different types of pump design and application
    - What sorts of pump are most common (Special purposed pumps, engineered pumps, standard pumps)?
- Future potential of the market
    - What will be future success factors and how will client needs evolve
    - Which segments will grow and which segment will be most profitable

        - Are there new end user segment Alfa Laval should try to sell products to
- Potential synergies with Alfa Laval's current businesses
    - What are Alfa Laval's key capabilities and how can they add value
- Potential acquisition candidates
    - What are key factors to examine when identifying an acquisition target?

9.2 Appendix 2 – Market data by end-user segment and application

All countries combined Complete Pump Market $ million,current prices, 2010 exchange rates, 63 countries included 90% of world GDP and 85% of the world pump market

End-user segment	Application	Range	Clients	Contract	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	CAGR '01-'10	CAGR '05-10	CAGR '10-16E
Oil & Gas-Onshore	*Main oil line & transfer pumps*	ENG	C	A	1104,6	925,3	798,8	919,3	1070,5	1269,1	1154,3	1352,1	1301,8	1270,4	1415,3	1477,0	1705,7	1776,3	1912,1	2084,2	1,57%	3,5%	8,6%
	Metering/dosing	SPE	C	C	91,8	78,3	69,4	81,1	95,9	114,6	111,3	130,9	125,7	122,7	136,6	143,1	165,1	171,9	185,1	201,8	3,28%	5,1%	8,6%
	Fire pumps	ENG	C	A	414,9	349,0	302,1	349,7	407,5	483,8	443,4	519,7	500,3	488,5	543,5	568,0	655,9	683,2	735,2	801,3	1,83%	3,7%	8,6%
	Injection pumps	ENG	C	A	211,4	176,6	153,2	177,1	205,6	245,9	222,2	260,0	250,2	244,6	272,1	284,1	327,8	341,4	367,8	400,7	1,63%	3,5%	8,6%
	Gas scrubbing	SPE	C	B	91,8	78,3	69,4	81,1	95,9	114,6	111,3	130,9	125,7	122,7	136,6	143,1	165,1	171,9	185,1	201,8	3,28%	5,1%	8,6%
	Water/Wastewater Treatment				167,6	141,2	122,9	141,8	164,9	195,9	177,3	207,8	200,3	196,1	217,4	227,5	262,7	273,4	294,3	321,0	1,76%	3,5%	8,6%
	Total				2082,1	1748,7	1515,8	1750,1	2040,3	2423,9	2219,8	2601,4	2504,0	2445,0	2721,5	2842,8	3282,3	3418,1	3679,6	4010,8	1,80%	3,7%	8,6%
Oil & Gas-Offshore	*Main oil line & transfer*	ENG	C	A	173,7	139,2	127,8	149,0	176,8	226,9	302,5	345,4	312,9	311,3	376,7	377,2	396,3	425,7	473,1	531,1	6,70%	12,0%	9,3%
	Metering/dosing	SPE	C	C	42,8	35,4	32,9	39,1	44,6	57,7	75,4	86,4	78,4	78,4	94,1	93,9	99,2	107,0	118,9	132,9	6,96%	11,9%	9,2%
	Fire pumps - offshore	ENG	C	A	215,7	173,6	159,0	187,6	222,4	284,0	378,1	432,3	391,6	389,7	471,3	471,4	495,8	532,3	591,3	664,0	6,79%	11,9%	9,3%
	Injection pumps	ENG	C	A	88,6	70,5	64,5	75,9	89,7	114,4	151,4	172,9	156,6	156,5	188,3	188,8	198,7	212,8	236,3	266,0	6,53%	11,8%	9,2%
	Sea water lift pumps	ENG	C	A	215,7	173,6	159,0	187,6	222,4	284,0	378,1	432,3	391,6	389,7	471,3	471,4	495,8	532,3	591,3	664,0	6,79%	11,9%	9,3%
	Gas scrubbing	SPE	C	B	26,8	20,7	19,2	22,9	26,9	35,1	45,4	52,1	47,2	47,3	56,5	57,2	59,7	64,0	71,1	79,9	6,52%	11,9%	9,1%
	Water/Wastewater Treatment				103,5	83,5	76,4	89,3	106,9	136,4	181,1	207,2	187,4	187,0	225,1	225,8	237,3	255,2	283,3	318,1	6,79%	11,8%	9,3%
	Total				866,8	696,5	638,8	751,4	889,7	1138,5	1512,0	1728,6	1565,7	1559,9	1883,3	1885,7	1982,8	2129,3	2365,3	2656,0	6,75%	11,9%	9,3%
Oil Refining	*Refinery process*	ENG	C	A	634,6	685,8	662,6	584,1	738,0	891,5	1136,1	1215,0	1069,7	1146,0	1225,9	1241,5	1303,4	1380,8	1485,4	1605,8	6,79%	9,2%	5,8%
	Water circulating	STD	C	B	106,4	115,5	111,2	98,1	123,0	149,8	189,6	204,1	179,5	192,0	202,7	206,3	217,8	232,0	248,5	268,3	6,78%	9,3%	5,7%
	Special purpose	SPE	A	C	138,0	149,6	143,7	127,6	159,9	192,8	245,7	263,4	233,0	248,6	263,8	267,7	284,5	299,7	322,6	348,8	6,76%	9,2%	5,8%
	Water/Wastewater Treatment				180,4	195,0	188,8	166,5	208,3	253,5	323,2	345,3	304,7	326,0	345,3	352,9	371,4	393,1	422,5	457,6	6,80%	9,4%	5,8%
	Total				1059,4	1145,9	1106,3	976,3	1229,2	1487,6	1894,6	2027,8	1786,9	1912,6	2037,7	2068,4	2177,1	2305,6	2479,0	2680,5	6,78%	9,2%	5,8%
Basic Chemicals	*Chemical process*	SPE	B	A	1161,0	1096,2	971,2	1037,9	1187,2	1339,4	1546,6	1730,1	1593,1	1740,3	1897,1	1883,9	1963,6	2076,4	2254,7	2461,2	4,6%	7,9%	5,9%
	Metering/dosing	SPE	B	C	184,6	174,6	154,2	165,7	190,0	212,6	245,9	277,1	255,9	279,2	301,3	300,2	311,6	330,1	358,0	391,3	4,7%	8,0%	5,8%
	Special purpose	SPE	A	C	357,6	337,8	299,0	320,0	365,0	421,6	476,0	532,3	492,2	536,5	581,8	578,2	605,6	641,3	694,1	758,0	4,6%	8,0%	5,9%
	Water/Wastewater Treatment				84,7	80,1	70,9	75,7	87,0	96,1	112,1	124,1	116,9	125,2	135,5	137,2	144,7	153,1	164,1	179,3	4,4%	7,6%	6,2%
	Total				1787,9	1688,7	1495,3	1599,3	1829,2	2069,7	2380,6	2663,6	2458,1	2681,2	2915,7	2899,5	3025,5	3200,9	3470,9	3789,8	4,6%	7,9%	5,9%
Other Chemicals	*Chemical process*	SPE	B	B	237,7	227,9	212,0	233,0	267,2	305,1	376,6	443,1	386,6	406,6	447,0	449,3	477,0	514,3	559,3	614,9	6,15%	8,8%	7,1%
	Metering/dosing	SPE	B	C	104,4	99,1	93,1	101,6	116,6	132,9	163,2	192,7	169,3	179,3	196,0	198,1	208,5	226,0	245,3	269,8	6,19%	9,0%	7,0%
	Special purpose	SPE	A	C	307,9	292,9	273,8	299,2	345,1	392,7	483,1	570,2	496,6	521,4	574,4	577,8	612,1	660,2	720,5	792,6	6,03%	8,6%	7,2%
	Water/Wastewater Treatment				31,5	29,7	27,1	31,0	35,2	41,0	49,8	57,5	51,8	54,8	59,6	60,1	64,0	69,5	74,2	81,6	6,35%	9,3%	6,9%
	Total				681,5	649,6	606,0	664,8	764,1	871,7	1072,7	1263,5	1104,3	1162,1	1277,0	1285,3	1361,6	1470,0	1599,3	1758,9	6,11%	8,7%	7,2%
Biofuels	*Total*				0,0	19,4	23,7	30,8	42,6	48,6	72,2	99,5	104,6	136,5	120,0	134,7	159,7	194,4	212,1	234,5	27,6%	26,2%	9,4%
Coal/Oil Power Gen	*Boiler feed-100% duty*	ENG	C	A	115,4	115,1	116,9	136,2	157,1	177,4	198,1	244,5	250,7	273,7	283,7	290,8	302,8	323,3	358,0	403,6	11,4%	11,7%	6,7%
	Boiler feed-50% duty	ENG	C	A	30,7	30,0	31,0	34,3	40,5	45,2	51,4	62,8	67,0	70,6	72,5	74,5	78,5	84,1	92,4	104,6	11,3%	11,8%	6,8%
	Cooling water	ENG	C	A	115,4	115,1	116,9	136,2	157,1	177,4	198,1	244,5	250,7	273,7	283,7	290,8	302,8	323,3	358,0	403,6	11,4%	11,7%	6,7%
	Booster	ENG	C	A	28,4	27,7	28,5	32,0	37,8	42,3	48,1	59,1	62,5	65,8	66,9	70,1	73,9	79,1	87,1	97,8	11,4%	11,7%	6,8%
	Condensate recovery	ENG	C	B	39,2	38,6	39,3	45,8	52,7	59,2	66,3	81,3	86,0	92,3	95,1	98,7	102,8	110,7	122,5	137,3	11,5%	11,9%	6,8%
	Lube oil system	ENG	C	B	32,5	32,2	32,9	37,5	43,3	49,0	55,0	67,7	71,6	75,4	77,9	81,6	85,7	92,2	101,5	114,2	11,2%	11,7%	7,2%
	Boiler circulation	ENG	C	B	28,4	27,7	28,5	32,0	37,8	42,3	48,1	59,1	62,5	65,8	66,9	70,1	73,9	79,1	87,1	97,8	11,4%	11,7%	6,8%
	Ash/fgd pumps	ENG	C	A	62,1	61,4	61,9	71,5	81,8	93,3	105,5	126,8	133,2	143,9	149,0	154,9	160,4	171,6	188,5	213,7	11,2%	12,0%	6,8%
	Water/Wastewater Treatment				104,9	104,5	105,3	123,2	141,4	160,6	179,1	221,3	227,2	245,4	257,2	265,8	274,3	293,8	325,9	367,8	11,3%	11,7%	7,0%
	Total				557,0	552,3	561,2	648,7	749,5	846,7	949,7	1167,1	1211,4	1306,6	1352,9	1397,3	1455,1	1557,2	1721,0	1940,4	11,4%	11,8%	6,8%
Gas/Cogen Power Gen	*Gas-boiler feed*	ENG	C	A	121,8	118,6	106,1	116,5	124,7	145,8	179,5	217,3	214,6	233,6	249,6	261,0	274,7	289,3	327,8	375,8	7,50%	13,4%	8,2%
	Gas-circulation	STD	C	A	95,8	93,0	83,9	91,2	99,3	115,1	143,0	173,7	171,5	183,5	196,7	207,9	219,3	231,5	261,3	298,0	7,49%	13,1%	8,4%
	Gas-consensate recovery				49,3	48,5	43,3	48,0	51,4	59,3	72,4	87,7	88,7	96,7	101,9	107,8	115,7	122,8	137,7	156,1	7,77%	13,5%	8,3%
	Gas-cooling water	ENG	C	A	44,9	42,9	39,3	42,9	46,1	53,6	65,6	78,9	79,0	86,3	90,9	96,8	105,2	111,0	124,7	142,1	7,53%	13,4%	8,7%
	Water/Wastewater Treatment				174,3	168,8	152,0	164,0	179,5	208,6	255,9	312,5	306,0	331,2	355,8	370,7	390,2	410,7	468,0	534,2	7,39%	13,0%	8,3%
	Total				486,1	471,8	424,6	462,6	501,0	582,4	716,4	870,1	859,8	931,3	994,9	1044,2	1105,1	1165,3	1319,5	1506,2	7,49%	13,2%	8,3%
Hydro Power Gen	*Total*	STD	C	B	163,2	164,6	156,5	176,6	202,5	228,2	279,7	350,6	344,8	378,4	388,6	398,7	417,1	444,9	490,6	547,2	9,79%	13,3%	6,3%

Nuclear Power Gen	*Nuclear-primary coolant*	ENG	C	A	131,7	123,8	121,8	136,4	148,3	167,7	177,1	207,6	176,6	211,3	236,8	241,8	239,4	273,2	309,2	364,1	5,39%	7,3%	9,5%
	Nuclear-cooling water	ENG	C	A	46,6	43,9	43,4	48,5	52,5	59,7	63,0	73,6	62,5	74,9	83,6	85,7	84,8	97,1	109,5	128,8	5,41%	7,4%	9,5%
	Nuclear-reactor boiler feed	ENG	C	A	76,5	71,9	70,8	79,3	86,1	97,4	102,8	120,4	102,8	122,8	137,4	140,3	139,0	158,7	179,5	211,6	5,40%	7,4%	9,5%
	Nuclear-safeguard & associated	SPE	C	A	67,9	64,1	63,0	70,6	76,5	86,5	91,5	107,1	91,3	109,2	122,2	124,9	123,9	141,5	159,6	188,0	5,42%	7,4%	9,5%
	Water/Wastewater Treatment				63,9	59,9	58,9	65,8	71,6	81,0	85,6	100,3	85,3	102,5	114,4	117,0	116,0	132,4	149,5	176,1	5,39%	7,4%	9,4%
	Total				386,6	363,6	357,9	400,6	435,0	492,3	520,0	609,0	518,5	620,7	694,4	709,7	703,1	802,9	907,3	1068,6	5,40%	7,4%	9,5%
Pulp & Paper	*Metering/dosing*	SPE	C	C	26,5	26,3	25,9	28,0	33,1	38,0	43,2	47,2	45,1	49,6	53,8	54,3	58,3	62,5	66,9	73,5	7,21%	8,4%	6,8%
	Liquor	STD	C	B	272,7	263,4	259,3	280,4	333,4	380,1	436,6	484,2	440,9	496,6	538,7	543,8	571,5	610,2	661,2	722,3	6,89%	8,3%	6,4%
	Pulp & paper stock	ENG	C	A	146,6	141,7	139,6	150,7	180,7	203,9	234,4	260,1	234,8	265,9	289,3	291,3	308,6	329,7	357,7	390,2	6,84%	8,0%	6,6%
	Special purpose	SPE	C	C	106,9	103,0	101,6	110,1	129,5	147,8	169,5	187,6	171,7	193,2	208,7	210,5	222,4	238,3	257,0	279,4	6,80%	8,3%	6,3%
	Water/Wastewater Treatment				114,3	110,0	109,1	117,4	139,6	158,9	180,9	201,4	183,4	207,4	222,9	227,1	239,5	257,9	278,6	304,0	6,84%	8,2%	6,6%
	Total				667,0	644,4	635,5	686,6	816,3	928,7	1064,6	1180,5	1075,9	1212,7	1313,4	1327,0	1400,3	1498,6	1621,4	1769,4	8,2%	8,2%	6,5%
Mineral Mining	*Drainage*	STD	B	C	122,0	122,2	113,4	124,5	141,1	159,3	188,9	240,4	231,1	259,7	232,2	233,4	245,3	261,5	282,0	307,5	8,76%	13,0%	2,9%
	Gravel/dredge	STD	B	B	49,7	48,9	44,8	50,5	56,7	63,0	74,8	94,6	92,2	104,5	93,2	94,7	99,9	106,9	114,1	123,7	8,61%	13,0%	2,9%
	Slurry	STD	B	B	75,7	75,7	70,5	78,0	87,0	98,5	116,2	146,8	142,1	161,6	143,1	145,5	152,8	163,9	175,8	191,4	8,79%	13,2%	2,9%
	Jetting	STD	B	C	71,7	72,4	66,5	74,4	82,8	94,0	110,9	138,6	134,5	153,5	135,7	137,6	143,8	154,8	166,8	182,2	8,83%	13,1%	2,9%
	Water/Wastewater Treatment				292,3	293,5	273,3	298,9	335,9	383,2	452,9	573,5	553,7	620,8	552,4	562,9	591,0	631,2	682,7	743,7	8,73%	13,1%	3,1%
	Total				611,4	612,7	568,5	626,3	703,5	798,0	943,7	1193,9	1153,6	1300,1	1156,6	1174,1	1232,8	1318,3	1421,4	1548,5	8,74%	13,1%	3,0%
Metal Manfacture	*Descaling/mill scale/flushing*	STD	C	B	198,1	206,6	233,8	243,0	273,2	312,1	372,0	446,2	402,6	448,5	490,1	501,2	526,8	563,8	618,2	684,8	9,50%	10,4%	7,3%
	Circulating water	STD	C	B	65,4	67,9	75,4	79,5	89,2	101,5	120,5	145,1	131,8	146,1	159,2	161,6	168,6	181,5	198,2	218,9	9,34%	10,4%	7,0%
	Special purpose	SPE	C	C	65,5	68,1	76,1	80,2	90,1	102,6	121,8	146,9	133,2	147,8	161,1	163,6	170,9	183,9	201,0	222,1	9,46%	10,4%	7,0%
	Water/Wastewater Treatment				330,8	346,7	388,3	402,6	452,6	517,3	617,2	740,9	666,8	742,6	813,5	830,0	867,7	927,4	1018,3	1127,5	9,40%	10,4%	7,2%
	Total				659,8	689,3	773,6	805,3	905,1	1033,5	1231,5	1479,1	1334,4	1485,0	1623,9	1656,4	1734,0	1856,6	2035,7	2253,3	9,43%	10,4%	7,2%
Food	*Hygienic*	SPE	B	C	285,6	259,8	251,1	259,3	310,8	337,8	387,6	440,7	389,7	438,3	493,9	498,3	530,7	572,5	627,2	692,7	6,8%	7,1%	7,9%
	Water/Wastewater Treatment				431,8	389,0	376,9	389,2	466,7	509,0	582,9	659,7	583,4	655,5	740,2	747,0	795,5	857,8	941,1	1041,8	6,7%	7,0%	8,0%
	Total				717,4	648,8	628,0	648,5	777,5	846,8	970,5	1100,4	973,1	1093,8	1234,1	1245,3	1326,2	1430,3	1568,3	1734,5	6,7%	7,1%	8,0%
Drink	*Hygienic*	SPE	B	C	232,4	227,7	217,0	221,9	247,0	273,9	321,9	366,2	327,4	355,7	390,9	393,7	415,5	447,3	487,5	535,8	5,7%	7,6%	7,1%
	Water/Wastewater Treatment				155,4	151,7	144,9	148,4	164,8	182,0	214,3	243,7	220,3	237,9	260,9	260,4	275,4	295,8	322,3	354,1	5,8%	7,6%	6,9%
	Total				387,8	379,4	361,9	370,3	411,8	455,9	536,2	609,9	547,7	593,6	651,8	654,1	690,9	743,1	809,8	889,9	5,8%	7,6%	7,0%
Pharmaceuticals	*Hygienic*	SPE	B	C	184,7	186,2	176,0	183,7	198,4	227,7	261,1	284,6	248,9	280,2	316,2	311,2	327,8	347,0	381,8	425,3	4,74%	7,1%	7,2%
	Water/Wastewater Treatment				21,0	21,1	20,0	20,4	21,8	25,2	29,4	32,1	28,8	32,6	35,9	36,3	37,3	39,8	43,4	47,7	5,01%	8,4%	6,5%
	Total				329,4	332,8	314,8	327,5	351,7	404,9	463,2	506,5	444,5	500,5	568,3	558,2	583,6	621,8	684,8	760,1	4,76%	7,3%	7,2%
Marine	*Propulsion*	SPE	C	C	12,2	13,4	12,0	13,1	13,5	15,4	18,8	21,1	19,6	22,3	24,3	26,1	27,8	30,1	32,6	35,9	6,6%	10,6%	8,3%
	Bilge	STD	C	C	59,7	64,4	58,5	61,5	64,2	71,6	86,0	100,9	94,6	105,6	117,7	120,6	126,5	134,8	148,9	164,6	6,4%	10,5%	7,7%
	Ballast	STD	C	C	14,5	15,5	14,0	14,5	15,4	17,9	21,0	25,1	23,4	25,9	28,5	30,4	32,0	34,6	37,7	41,3	6,6%	11,0%	8,1%
	Fire fighting	STD	C	B	28,0	30,3	27,6	28,9	30,3	33,6	40,2	47,5	44,8	49,8	55,3	57,6	60,5	64,6	70,5	77,9	6,4%	10,4%	7,7%
	Water/Wastewater Treatment				1,2	1,1	1,1	1,2	1,3	1,6	2,1	2,4	2,4	2,6	2,8	3,1	3,3	3,6	3,8	4,3	11,4%	14,9%	8,7%
	Total				475,4	511,0	467,8	485,4	508,2	570,3	676,7	794,4	750,9	831,0	937,3	956,3	1003,8	1079,0	1182,6	1307,7	6,3%	10,3%	7,8%
Harbours/docks/canal	*Total*	STD	C	C	67,2	73,0	66,1	68,2	70,1	79,1	92,8	110,7	104,7	117,2	127,3	132,9	142,5	151,5	164,3	180,3	6,1%	10,8%	7,4%
Other Industry	*General Industrial Processes*	STD	A	C	652,4	619,0	589,1	604,0	658,1	705,7	806,3	892,1	773,7	832,6	901,8	896,4	942,6	997,4	1086,8	1192,0	2,75%	4,8%	6,2%
	Water/Wastewater Treatment				2524,8	2391,4	2276,7	2336,8	2544,9	2731,2	3114,2	3452,7	2987,2	3209,9	3479,4	3452,5	3637,2	3858,0	4202,3	4609,0	2,70%	4,8%	6,2%
	Total				3177,2	3010,4	2865,8	2940,8	3203,0	3436,9	3920,5	4344,8	3760,9	4042,5	4381,2	4348,9	4579,8	4855,4	5289,1	5801,0	2,71%	4,8%	6,2%

Municipal	*Water Resources/Treatment Total*	STD	C	A	2615,9	2554,7	2275,2	2261,4	2405,8	2484,4	2543,2	2951,7	2893,3	2754,6	2920,3	2906,9	3065,6	3257,7	3536,8	3864,4	0,58%	2,7%	5,8%
	Wastewater Treatment Total	STD	C	A	1722,7	1682,5	1497,9	1488,5	1583,3	1635,7	1673,6	1941,9	1905,5	1813,2	1920,3	1913,4	2017,6	2146,7	2329,2	2544,9	0,57%	2,7%	5,8%
	Total				4338,6	4237,2	3773,1	3749,9	3989,1	4120,1	4216,8	4893,6	4798,8	4567,8	4840,6	4820,3	5083,2	5404,4	5866,0	6409,3	0,57%	2,7%	5,8%
Building Services	*Total*	STD	A	C	1494,8	1533,0	1460,5	1509,8	1640,0	1820,6	2087,7	2310,5	1995,3	2134,5	2292,6	2264,5	2378,4	2530,3	2757,3	3022,5	4,04%	5,4%	6,0%
Domestic	*Total*	STD	A	C	2030,0	2063,3	1944,7	1988,1	2149,6	2416,5	2809,2	3071,0	2691,5	2926,9	3206,0	3197,7	3371,8	3574,8	3897,7	4276,8	4,15%	6,4%	6,5%
Construction Dewater	*Total*	STD	A	C	1036,8	1079,4	1032,5	1088,7	1189,0	1329,7	1534,4	1685,2	1488,4	1611,4	1774,1	1780,4	1882,5	2007,0	2192,7	2411,5	5,02%	6,3%	6,9%
TOTAL från delsummor	*All "Totals"*				24063,4	23315,8	21778,9	22756,6	25398,0	28430,6	32165,5	36661,7	33577,8	35551,3	38493,2	38782,4	41079,2	43759,7	47735,7	52557,7	4,43%	7,0%	6,7%
Total från Data sheet	***Total All Applications***				**24087,8**	**23335,4**	**21779,5**	**22751,5**	**25404,2**	**28423,8**	**32137,0**	**36635,7**	**33516,0**	**35493,4**	**38508,2**	**38757,9**	**41040,0**	**43700,1**	**47720,9**	**52543,9**	4,40%	6,9%	6,8%
Wastewater breakdown																							
All Industry	*Subtotal: Industrial Water/Wastewater*				4263,9	4122,6	3969,7	4137,1	4607,3	5107,6	5953,4	6847,5	6156,3	6662,4	6731,3	7185,6	7650,8	8119,4	8600,6	9031,1	5,08%	7,7%	5,2%
Industry & Municipal	*Water/Wastewater Treatment Total*				8602,5	8359,8	7742,8	7887,0	8596,4	9227,7	10170,2	11741,1	10955,1	11230,2	11571,9	12005,9	12734,0	13523,8	14466,6	15439,4	3,01%	5,5%	5,4%

9.3 Appendix 3 – Pump type comparable universes

All figures in Millions

Pump category STD												
Company name	**Currency**	**FX (from Oanda)**	**Last year available**		**Turnover '11**	**Turnover EUR**	**EBIT '11**	**EBIT EUR**	**EBITDA '11**	**EBITDA EUR**	**EBITDA margin**	**EBIT margin**
Teikoku	JPY	0,0088		2011	16 256,2	143,1	1 645,2	14,5				10,1%
Garder Denver (Industrial products group)	USD	0,7178		2011	1 256,0	901,6	140,5	100,8	180,6	129,7	14,4%	11,2%
Pentair (Water Group)	USD	0,7178		2011	2 041,3	1 465,2	231,6	166,2	292,0	209,6	14,3%	11,3%
Colfax Corporation	USD	0,7551		2010	542,0	409,3	34,4	26,0	50,5	38,1	9,3%	6,3%
Xylem Sweden	SEK	0,1048		2010	4 534,7	475,2	887,4	93,0				19,6%
Torishima	JPY	0,0088		2011	49 880,0	438,9	3 127,0	27,5	4 089,0	36,0	8,2%	6,3%
Kubota (Water & Environmental systems)	JPY	0,0076		2010	222 949,0	1 694,4	19 723,0	149,9	25 756,0	195,7	11,6%	8,8%
Xylem Inc (Including subs)	USD	0,7178		2011	3 803,0	2 729,8	395,0	283,5	532,0	381,9	14,0%	10,4%
Average											**12,0%**	**10,5%**

Pump category ENG												
Company name	**Currency**	**FX (from Oanda)**	**Last year available**		**Turnover '11**	**Turnover EUR**	**EBIT '11**	**EBIT EUR**	**EBITDA '11**	**EBITDA EUR**	**EBITDA margin**	**EBIT margin**
Ebara Corporation (Fluid and Machinery Systems)	JPY	0,0088		2011	270 180,0	2 377,6	21 597,0	190,1	30 547,0	268,8	11,3%	8,0%
Garder Denver (Engineered products group)	USD	0,7178		2011	1 114,9	800,3	260,3	186,8	280,3	201,2	25,15%	23,3%
Gorman-Rupp	USD	0,7178		2011	359,5	258,0	43,0	30,9	54,5	39,1	15,1%	12,0%
Nikkiso (industrial division)	USD	0,7178		2011	507,5	364,3	33,3	23,9	65,3	46,9	12,9%	6,6%
Robbin & Myers (Fluid Management)	USD	0,7178		2011	607,5	436,1	154,3	110,8	181,1	130,0	29,8%	25,4%
Sulzer	CHF	0,8123		2011	1 747,8	1 419,7	168,2	136,6	210,2	170,7	12,0%	9,6%
Weir	GBP	1,1522		2011	2 292,0	2 640,8	412,7	475,5	450,4	519,0	19,7%	18,0%
Flowserve corporation	USD	0,7551		2010	2 152,7	1 625,5	412,6	311,6			0	19,2%
Roper industries (Industrial Technology)	USD	0,7551		2010	607,6	458,8	162,0	122,3	185,7	140,2	30,6%	26,7%
Average											**19,6%**	**16,5%**

Pump category SPE												
Company name	**Currency**	**FX (from Oanda)**	**Last year available**		**Turnover '11**	**Turnover EUR**	**EBIT '11**	**EBIT EUR**	**EBITDA '11**	**EBITDA EUR**	**EBITDA margin**	**EBIT margin**
Dover (Engineered systems egment)	USD	0,7190		2009	3 100,7	2 229,4	445,2	320,1	520,0	373,9	16,8%	14,4%
Grindex AB	SEK	0,1048		2010	270,0	28,3	72,1	7,6		-		26,7%
Robbin & Myers (Fluid Management)	USD	0,7178		2011	607,5	436,1	154,3	110,8	181,1	130,0	29,8%	25,4%
Graco	USD	0,7178		2011	895,3	642,6	219,5	157,6	252,0	180,9	28,1%	24,5%
IDEX (Fluid & Metering, Health & Science Technolog	USD	0,7178		2011	1 439,2	1 033,0	270,9	194,4	333,3	239,2	23,2%	18,8%
Met-Pro (Fluid handling Technologies)	USD	0,7178		2011	27,5	19,7	5,9	4,3	6,6	4,7	24,0%	21,6%
Spirax Sarco (Watson Marlow divison)	GBP	1,1522		2011	118,4	136,4	32,4	37,3	37,1	42,7	31,3%	27,3%
Average											**24,5%**	**22,0%**