

Universiteit Twente  
Section International Management

**Exploring the Thai Industry for Potential possibilities for the Pipe & Tube market**

**Bachelor assignment for Bedrijfskunde  
At Van Leeuwen Pipe & Tube (Thailand) Ltd.**

Bachelor Assignment

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## **Preface**

It has been my quiet wish to do my internship in an Asiatic country preferably in SE Asia. Almost, but still not definitely, having accepted another chance, I just in time received this invitation at Van Leeuwen Pipe & Tube in Bangkok. Seeing the great opportunity, I immediately accepted the offer. Knowing my strength but not being aware of my weakness, I was delighted to be in charge of this project.

Honestly spoken, I discovered that this project was even far more complex than I ever could have imagined, and did not even realise the fact that this assignment could lay beyond my relatively inexperienced capability.

I still judge my assignment a great opportunity and I do admit having learned a lot about running a business, thanks to the many chats with Jude and Joep and my other colleagues. I as well learned the complications involved managing a company and yet further becoming acquainted with unfamiliar people in extracting the required and valuable information necessary.

I feel happy being able to have completed this most important job in the set period of six month. I hope that my input will lead to further expansion of Van Leeuwen Thailand, where I have been accepted from the first day onwards as a member of its staff.

In Thai you say Sawat dee khrab! And that is what I am doing here.

I thank you all, in particular Joep and Jude.

Pedro Bernardo Meyer

## Summary

This research has been conducted within the framework of the bachelor assignment to conclude my bachelor Bedrijfswetenschappen at the University of Twente. The objective of this research is to gain information about potential sectors that Van Leeuwen Pipe & Tube (Thailand) Ltd. could apply by penetrating these new industrial sectors and widen their customer base in the near future. The focus of this research is exclusively undertaken in relation to the use and application of tubes & pipes, but not including the accompanying fittings and valves that would make the research too complex.

### Problem Definition and Formulation

The management at Van Leeuwen Pipe & Tube Thailand (VLT) do recognize the presence of a strategically marketing problem, because Management is too much involved in the day to day running of the Company, without being able to identify and develop a long-term strategy in order to secure their continuity and sustainability for the years to come. To investigate this topic VLT decided to hire a Student Trainee for analysing the market outside the existing customer base and to examine the possibilities for exploration and further to ascertain the adequate strategy to attack the market area as mentioned. To be completed in a feasible Business Plan for application by VLT's Management.

The problem to be investigated is formulated in the Principal Question:

*"To what extent should Van Leeuwen Pipe & Tube Thailand (VLT) strategically improve their market sustainability for the next 3 – 5 years by establishing their presence throughout Thailand?"*

Examination of the internal infrastructure and a wide-ranging research into new markets in Thailand for VLT's pipes and tubes products is carried out. In line with the objective of Management, significant results are uncovered with realistically possible opportunities for the increase of sales volume.

### The outcome

Diversification into at least 4 new industrial sectors makes further growth very much a reality. Most attractive are the sectors of bio fuel, paper and pulp, cane and sugar, and power plants, while very likely in eight others too. Moreover diversifying the range of products shall even further contribute to added sales growth.

Another appealing option is entering the market for Distribution in Thailand, not only making the Company more sustainable, but also opening the prospect for the application of advanced internal efficiency programmes to improve and streamline work procedures increasing revenue.

Successively to come closer to the different aspects of the Problem Identification, the main question is divided into six sub questions, to investigate all aspects of influence from different points of view. These sub questions are formulated in Chapter 1

### Conclusion

Tubes and Pipes of good quality are standardized and available from various suppliers. The Van Leeuwen trade of these products depends on good service, active sales acquisition and keeping stock of the right quantity, at the right dimension and quality. In fact it is matter of price and service that counts the success in this industrial market.

It is encouraging that quite a number of new market possibilities are within reach. A competent Business Developer will certainly be successful. Besides a technical sales engineer is recommended for the implementation of an innovative 3-D sales-service approach.

## **Abbreviations**

- VLT: Van Leeuwen Pipe & Tube (Thailand) Ltd.
- ISO: International Organization for Standardization
- PO: Purchase Order
- ISIT: Iron and Steel Institute of Thailand
- CAGR: Compound Annual Growth Rate
- ISSB: Iron and Steel Statistics Bureau
- OCTG: Oil Country Tubular Goods
- BOI: Board of Investment
- BoT: Bank of Thailand
- FTI: Federation of Thai Industries
- IEAT: Industrial Estate Authority of Thailand
- LED: Light Emitting Diodes
- LCD: Liquid Crystal Display
- KBD: Thousand Barrels per Day
- FX: Foreign Exchange
- UNESCAP: United Nations Economic and Social Commission for Asia and the Pacific
- Tcf: Trillion cubic Feet
- PTTEP: Petroleum Authority of Thailand Exploration and Production
- PPC: Phoenix Pulp and Paper Plc
- SCG: Siam Cement Group
- GDP: Gross Domestic Product
- GM: General Manager
- TCC: Thai Chamber of Commerce
- TQM: Total Quality Management
- PVC: Polyvinyl chloride

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## 1. Introduction

This thesis comprises all facets and results obtained from the Macro, Meso and Microanalysis, that was initiated and based on internal and external investigations, to wrapping up my assignment of this market research on behalf of Van Leeuwen Pipes and Tubes Thailand.

To answer the main research question effectively, I will apply the funnel approach, through a sequencing method, starting broad with 'Macro' and progressively narrowing down via 'Meso' into the Micro' scope.

Analyzing those three branches of economics, by applying the theories and types of examination will finally put the final conclusive picture into place.

In this chapter the reader will be introduced to the company, Van Leeuwen Pipe & Tube (Thailand) Ltd. (VLT), while in the second part the problem identification and formulation with the main research question and its seven sub questions will be analyzed and described.

### 1.1 Van Leeuwen Pipe & Tube (Thailand)

#### 1.1.1 History

Mr P. van Leeuwen founded the Van Leeuwen Pipe and Tube Group in 1924. The foreign expansion started with the foundation of a subsidiary in the Belgium Vilvoorde (1947). After 1950 Van Leeuwen expanded its European network by setting up other European locations in France, England and Germany. In the 70's and 80's the company spread its wings to North America, Asia and Australia. This was later followed by expansion into the Middle East and, recently, China and Central Europe.

In the period of 75 years, the company has developed specialist knowledge and expertise in sourcing, purchasing, logistics, inventory management, distribution, transport and the application of pipes, valves and fittings. Today, these skills make it possible to respond innovatively and effectively to the continually changing market demands and in this way to carry on enhancing the company's leading position internationally, regionally and locally. This is expressed by the company's anniversary slogan: 'Global innovation, local presence. Excellence in pipe and tube.'

In 1989 Van Leeuwen Pipe & Tube Group opened their office in Bangkok, Thailand. Over the years, Van Leeuwen has evolved quickly into a leading distributor, providing top quality materials and services to the petrochemical, refineries, oil and gas, offshore and power industries.

(Source: [www.vanleeuwen.com](http://www.vanleeuwen.com))

#### 1.1.2 Main Market

The main markets so far attended by VL Thailand consist of the Petrochemical industry (90% of its sales), which is booming. In the year 2002 the turnover was 100 million Baht (€4.4 mi) while the turnover of 2007 has grown to 750 mi Baht (€15.3 mi). (Interview Joep de Vries and Jude Chee)

Although the Company is the major supplier of new projects in the tube sector, it is realistic to counter the possibility that this situation may not go on forever. For this reason it is necessary to investigate new market opportunities covering the next 3-5 years in order to maintain continuing growth sustainability.

Today's business activity is for 90% concentrated in the petrochemical industrial estate area of Rayong Province (East Thailand). However it is Management's intention to enlarge geographically, primarily over the whole of Thailand, but in the future perhaps also in bordering countries like Laos, Cambodia and Burma, if those countries politically are becoming more stable. (Interview Joep de Vries)

With a warehouse spanning over 6,000 sq metres, Van Leeuwen holds a huge variety of stock, ranging from 1/2" to 30" in diameter of Pipes, added with Fittings and Flanges. With a strong global presence and network, Van Leeuwen is capable of supplying steel qualities of different grades: Carbon, Stainless, Duplex, Alloys and Special Alloys.

### **1.1.3 Performance (2007)**

After several debacles in 2006 related to poor performance of execution of projects, which made the Company liable for some major penalties, but 2007 made a major leap forward through projects that were well executed. This turn for the better has not only resulted in a higher profitability on projects, amongst others mainly by the Purac project, but also resulted in greater number of satisfied customers, that together generated an expansion in additional business too. (Interview Joep de Vries)

In the second half of the year 2007 the Company was also successful in booking major new projects as, the 285 million Baht for Siam Cement Group and the 130 million Baht for Rayong Refinery, which projects made the year 2007 a complete commercial success supported by an excellent performance and execution of those projects.

Sales from stock were slow in 2007. Due to the problems with keeping an optimum stock level and assortment, which contributed to significant gaps in the stockpile, hence lost sales, although the non/slow movers significantly were reduced, although still are items in stock which are difficult to sell. Year on Year an improvement has been made in the profit margin from the sales out of storage, meanwhile the stockpile largely has been up dated, by replenishing stock with runners. Management foresees major improvements for 2008. (Interview Joep de Vries and Jude Chee)

### **1.1.4 Strategy for 2008**

The strategy at Van Leeuwen Thailand is to continue this improvement that started recently by carrying on the increase in sales turnover through: more aggressively targeting the project market in which still are significant opportunities left untouched. Besides that VLT should put considerable more attention in acquiring better overall sales results, with reigniting lost off shore markets, and exploring new market segments.

In addition to increasing the sales turnover, management is going to focus with extra attention on overall profitability within the company. Reducing waste and maximizing cost effective procurement in maintaining at all time the "minimum margin" guidelines already initiated in the middle of 2006.

In order to meet these ambitious goals, VLT needs to improve the work-process by applying better controls in the way the business is conducted as project execution and storage-handling, assisted through the introduction of real-time administration in data processing via 'Business One' and the implementation of a certifiable management system called ISO 9000. (Interview Joep de Vries and Jude Chee)

### **1.1.5 Organization**

Effectively VLT has changed their original organization structure at the beginning of 2007 due to the significant growth in Project Sales. Until then every individual sales person was responsible for the total sales trajectory from receiving the inquiry, processing the paperwork till the final payment of the last invoice. The increase in number of orders, the scope and complexity, particularly for project orders had proven to be too much for one person to handle. As a result VLT went through major hick-ups on the execution of orders till the end of 2006. As from 2007 after the PO was issued, a project execution team was established consisting of sales support and expeditors, with additional staffing to control the total order processing and execution. This concept has proven to be beneficial.

**See Annex 11 for VLT organization structure 2008**

Also is arranged to implement written job description and appraisals that will be introduced in the course of 2008, in compliance with the format developed by VL Singapore.



## 1.2 Problem Formulation

The management at VLT do recognize the presence of a strategically marketing problem, because Management is too much involved in the day to day running of the Company, without being able to identify and develop a long-term strategy in order to secure their continuity and sustainability for the years to come. To investigate this topic VLT decided to hire a Student Trainee for analysing the market outside the existing customer base and to examine the possibilities for exploration and further to ascertain the adequate strategy to attack the market area as mentioned. To be completed in a feasible Business Plan for application by VLT's Management.

The problem to be investigated is formulated in the Principal Question:

*"To what extent should Van Leeuwen Pipe & Tube Thailand (VLT) strategically improve their market sustainability for the next 3 – 5 years by establishing their presence throughout Thailand?"*

To investigate this topic I was assigned to analyse the market outside the existing customer base and to investigate the possibilities for further exploration and develop an adequate strategy to explore the market for supplementary sales volume. Concluded in a Business Plan for useful application by VLT's Management.

In order to come closer to the different aspects of the Principal Question, I divided this into seven sub questions, to explore all aspects of influence from different points of view. These research questions have been established by means of the 'funnel approach', briefly described as: looking at changes in the immediate and broader project environment and then tries to build a linkage between both environments. In this case the direct environment is Van Leeuwen Pipe & Tube (Thailand) organization, while the broader environment would be the potential industries in Thailand and the global market trend of steel and pipe production and consumption.

### Sub Questions:

1. How is the Global Steel Market divided in geographic output, consumption, price structure, use of pipes, pipe materials, pipe manufacturing methods, and who are the dominant players? (Macro)
2. Who are competitors in the different areas, to be quantified in size and penetration related to VLT? (Meso)
3. What is Thailand's demographic composition for the use of Pipes? (Meso)
4. Who are potential customers, to be identified in key areas both geographically as industrially? (Meso)
5. Which kinds of distribution channels are available throughout Thailand? (Meso)
6. To which extent is it necessary to adapt the internal infrastructure? (Micro)

In Chapter 2 the applied theories and aspects are explained, by providing examples with the arguments why these were used for my research. In Chapter 3 the research questions are answered in a methodological order, providing insight how these are concluded as a result of the research. After presenting the research questions, in Chapter 4 the outcome of all three Market facets (Macro, Meso and Micro) are arranged. Chapter 5 contains the conclusion of the research in which the main research question is answered. Finally, my recommendations for VLT are presented in Chapter 6, and in Chapter 7 of this thesis my reflections are expressed in relation with this research assignment in Thailand.

## **2. Theoretical Framework**

In order to acquire adequate insight in all three Market facets, a number of theories have been applied to answer the sub-questions. In the Macro facet the PEST analysis has been applied to achieve a better understanding about the "big picture" of the environment in which one operates, specifically related with the opportunities and threats. In continuation in the Meso facet, Porter's 5 Forces framework are applied that made me understanding the market in which VLT is active. Finally, for the Micro facet, the Deming Circle and McGregors theories were contemplated, necessary due to weaknesses found as result of the SWOT and VRIO analyses. For better understanding, these theories are explained as below:

### **2.1 Theories Applied**

The theories used are:

1. PEST
2. Porter's 5 Forces
3. SWOT
4. VRIO Analysis
5. Deming Circle.
6. McGregor's Theory X and Y

#### **2.2.1 PEST**

PEST Analysis has been chosen to better understand the large environment surrounding VLT, that is Thailand. It is a simple, but useful and widely used tool that is helpful to decipher the "big picture" of the Political, Economical, Socio-Cultural, and Technological environment of a country. It is advantageous for a company to identify the functioning of the uncontrollable environment outside the firm. For the following reasons:

- The company ensures that its operations are in line with the influential forces of change that do affect its external environment. And becoming more successful than its competitors;
- This analysis helps applying the right approach by avoiding negative impacts caused by conditions beyond control;
- Also helpful when starting fresh activities in a new unknown country or region. A Pest Analysis shows quickly the realities of the new environment and the way to better adapting to it.

The PEST factors together with external micro-environmental factors can be classified as opportunities and threats in a SWOT analysis. It provides the context for a more detailed planning, taking full advantage of available opportunities present in the external environment.

#### **2.2.2 Porter's 5 forces**

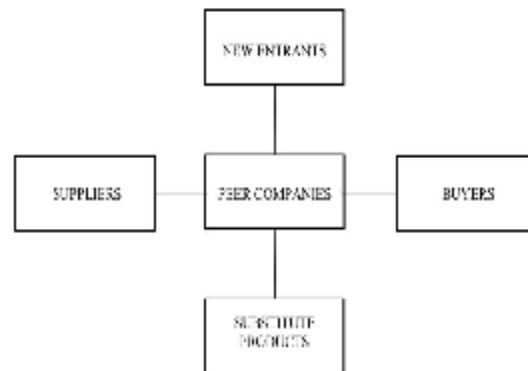
In the Meso facet Porter's 5 forces provides the necessary information about the market in which VLT is involved, called stockist or wholesale market. Investigating competitors, suppliers, and buyers active in the market as a whole, offers a clear picture.

Industrial analysis starts with a review of the structure of the industry in general narrowed into a systematic look at key industry participants. The simplest way to reveal the structure of an industry is to use a model developed by Michael Porter of the Harvard Business School.

This model has proven to be relevant to industries as for the trading and distribution sector. It separates industry participants into five key categories, namely:

- 1. Peer Companies or Competitors**
- 2. New Entrants**
- 3. Substitute Products**
- 4. Buyers**
- 5. Suppliers**

Each of these five groups of participants creates tension in an industry; the magnitude of these tensions will determine the difficulty of sustaining financial health and market performance in that industry.



#### **1. Peer Companies:**

If more than one organization offers a similar product to the same buyer group, the industry becomes substantially more "difficult." For this reason, it is important to understand those peer organizations that might influence your industry segment. While the analysis of peer organizations can yield a significant amount of information for strategic analysis, peers only affect an industry structure to the extent that they provide direct competition for customers, or suppliers.

Peer company analysis is more informational and less strategic, by providing insight into the way a similar organization operates rather than how that organization's activities will affect one's own performance.

#### **2. New Entrants:**

If the number of peer companies increases, then the competition in an industry will have a considerable impact. This will make it expensive or difficult for an organization to perform successfully.

#### **3. Substitutes:**

The presence of substitute products affects organizations as much as the sale of tea affects coffee merchants. Companies face both direct and indirect substitutes.

#### **4. Buyers:**

Surveys help to determine the value buyers in the market. Revealing the demographics of the potential buyers and the best ways to market to them is of great importance.

The results of such a survey must be used carefully.

It is important to understand the needs and desires of each customer grouping, or niche. Sometimes, individual marketing strategies can be developed that address the needs of a particular market niches without adversely affecting other buyers.

#### **5. Suppliers:**

While buyers are responsible for the industry's income, suppliers are responsible for the industry's costs. Many companies are faced with direct competition from peer companies. This is especially problematic where the number of large customers with a major reputation is quite small. Buying at the lowest cost from a supplier or alternative supplier is of great importance. Searching the market for every large project to obtain best quality at lowest price will be an exercise on its own, in assuring success (Porter, 1985).

Each of the major suppliers to an industry must be reviewed to determine whether they are reliable, and offer the best price for the set quality standard in the industry.

The theory of Porter's 5 Forces is applied for sub questions 2, 3, and 5.

- Who are competitors in the different areas, to be quantified in size and penetration related to VLT?

Learning about the competition where they are located how strong and weak these are compared to VLT and ranking VLT in the market segment for the sales of tubes and pipes.

What is Thailand's demographic composition for the use of Pipes?

Which kinds of distribution channels are available throughout Thailand?

Finding out who are potential buyers the pipes and tubes where are these located, qualifying the kind of market potential do they have for VLT and finally understanding the channels to create lasting commercial relationships.

### 2.2.3 SWOT



The Strengths and Weaknesses of the SWOT analysis have been used to understand the internal structure of VLT. By understanding the Strengths and Weaknesses of the company to make it possible to provide particular recommendations for improvement of the internal structure to better adapting VLT's strategy for future transformation. With this part of SWOT analysis sub-question 5 is answered. While the other part, Opportunities and Threats for VLT are described in the Meso facet, since these are external factors, and provide answer to sub-question 4.

A SWOT-analysis is an examination of the internal and external environment it is an important part of the strategic planning process. Environmental factors internal to the firm usually can be classified as strengths (S) or weaknesses (W), and those external to the firm can be classified as opportunities (O) or threats (T). Such an analysis of the strategic environment is referred to as a SWOT analysis.

A SWOT analysis summarises the key issues from the business environment and the strategic capability of an organisation that are most likely to impact on strategy development (Lill, T., Westbrook, R., 1997).

The aim of a SWOT analysis is to pinpoint the internal and external factors that are important for an organization to achieve at the end of the day its objectives. A SWOT analysis entails two main categories:

- Internal factors – The strengths and weaknesses inside the organization;
- External factors – The opportunities and threats, outside the organization.

The internal factors, the strengths or weaknesses, depend upon their impact on the organization's structure and objectives. What might be strength for one firm's objectives can mean a weakness for another objective.

The SWOT theory is applied for sub-question 7

To which extent is it necessary to adapt the internal infrastructure?

Related to Strengths and Weaknesses of VLT to understand and analyze the necessary changes, by boosting the strength and recommending proposals to change weaknesses into strengths.

Partly for sub question 2, 4 and 5 where the Opportunities and Threats are investigated and analyzed.

Who are competitors in the different areas, to be quantified in size and penetration related to VLT?

Understanding the threats and opportunities in relation to the competition.

Who are potential customers, to be identified in key areas both geographically as industrially?

Acknowledging the sales opportunities and the threats that may occur. The aspects are mentioned at the end of every industry sector investigated.

Which kinds of distribution channels are available throughout Thailand?

Reflecting the opportunities for increase of sales and difficulties (threats) by establishing new sales channels.

### 2.2.4 VRIO Analysis

To make the SWOT analysis stronger I used the VRIO analysis throughout the Meso and Micro analysis. This because in businesses that to some extent rely on underlying resources, it is important to evaluate the potential and effectiveness of all of these resources on an ongoing basis, to build a competitive advantage. VRIO analysis can help you do this. From the Strengths and Weaknesses of VLT I compared them with the competition and came up with Recommendations (Chapter 6) so that they can strengthen their current position.

Many elements can contribute to market position. Each organization has its own specific set of resources - processes, people, physical assets, location and more. The way that the company conducts business and uses these resources can be a major reason for its success.

Given that almost anything a firm possesses can be considered a resource or capability how should be attempted to narrow down the ones that explain why firm's performance differs. In order to lead to a sustainable competitive advantage in the future a resource or capability should be Valuable, Rare, Inimitable (including non-substitutable), and Organized.<sup>1</sup> This is called VRIO framework and is part of the internal analysis.

- **Valuable.** A resource is valuable if it helps the organization meet an external threat or exploit an opportunity. While it may not help the firm outperform its competitors, it can still be labelled strength. One good way to think about valuable resources is to ask how they help the company.

Common competitive foundations (a.k.a. the generic building blocks) for firms are efficiency, quality, customer responsiveness, and innovation. If a resource helps bring about any one of these four things then it is valuable.

- **Rare.** A resource is rare simply if it is not widely possessed by other competitors. Of the criteria this is probably the easiest to judge.

- **Inimitable.** A resource is inimitable and none substitutable if it is difficult for another firm to acquire it or a substitute something else in its place. This is probably the toughest criteria to examine because given enough time and money almost ANY resource can be imitated.

- **Organized.** A resource is organized if the firm is able to actually use it. Generally, organization is frequently neglected by strategy because it often deals with the inner workings of firm management. The good news is, rarely are firms are not organized to exploit their valuable resources optimally. However, if the analysis does turn up a valuable, rare, and inimitable resource that the firm is not taking advantage of, and then this should probably be your number one recommendation!

Investigating these areas it will be feasible to know the strengths and weaknesses of VLT. The applied questionnaires and details are expressed in Annexes 12 and 13.

### 2.2.5 Deming Circle

The Deming Circle strengthens several aspects of the weaknesses found during the SWOT analysis. Deming's Circle is an important theory for implementation by Management. It obliges Managers to think twice before assuming actions. It is important to be aware about possible (side)-effects that may be the result of the implementation. For example it is necessary in case of a re-organization. At VLT this method was not employed, but even the more recommended, rather being a solution to a problem, this theory is applied for sub-question 6.

To which extent is it necessary to adapt the internal infrastructure?

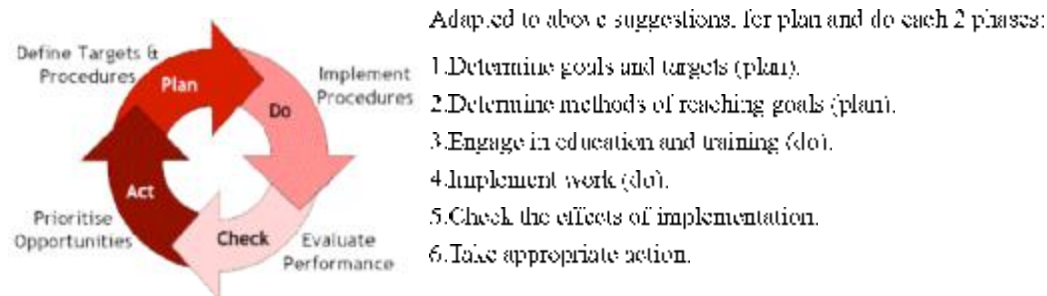
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<sup>1</sup> VRIO analysis is at the core of the resource based view of the firm. Wernerfelt, B. (1984). "A resource-based view of the firm." *Strategic Management Journal*, 5, pp. 171-180. Barney, J.B. (1991). "Firm resources and sustained competitive advantage." *Journal of Management*, 19, pp. 99-120.

It was observed that internal management is too loose, no strict working rules were applied, everyone acted to its own liking, results were not checked nor evaluated while targets were not set. Lacking the implementation of procedures.

Known as plan-do-check-act cycle (PDCA-cycle), this PDCA-cycle was created to help the "Total Quality Management" idea. The cycle can be used by organizations, which are going through a changing process, whereby the changes come from different areas of the company. This cycle has been designed to make sure that organizations keep innovating and do not stay stuck half way through the changing process (Jarvinen, J. *et al*).

In this respect the Deming Circle theory will be helpful and shows what is meant: Changes in the business environment, or within the company force the manager to constantly custom the operation to the new requirements. The well-known Deming-circle (Plan-Do-Check-Act) is a useful framework for achieving continuous change in the business operation.<sup>7</sup>



### Explanation

**PLAN** – Plan ahead for any change. Analyze the current situation and potential impacts of the change before doing anything. This is the important process of "prediction" and postulating a theory. Think ahead about what to measure, to determine if you are achieving your purpose and plan to include measurements as part of the execution. Do not leave thinking about what to measure until a later stage. Develop an implementation plan, and discuss it with all actors involved.

**DO** – First try the change on a small scale under controlled circumstances by experiment or prototype.

**STUDY**- Analyze the results of your experiment. What do the data tell you about the effectiveness of the test?

**ACT** - Take action to streamline the process that produced the desired results. Fine-tune the process to make it 'error-proof' and limit special source variation.

(Dessler, G., Farrow D.L., 1990)

### 2.2.6 McGregor's Theory X and Theory Y

Uncovering the internal friction in communication and responsibilities the X – Y theory of McGregor was applied, that also relates to sub-question 7 and is explained in Chapter 6 under Recommendations. And also applied in Chapter 4 under Human Resources

The McGregor theories are related to human motivation. It describes two different attitudes towards workforce motivation. Similar as for the need of the application of the Deming Circle, McGregors theory was applied because other human weaknesses were found during the SWOT analysis at VLT. This theory is more appropriate to better explain this particular problem and provides adequate recommendations. The McGregor theory too contributes to complete the answer to sub-question 6.

<sup>7</sup> <http://www.jvdtconsulting.com/continuous-improvement.htm>

A Theory X type manager thinks in the event of failure that everybody else must be blamed except himself. These managers are of the opinion that employees only work in a company for the money earned. They blame other people first, without thinking whether the problem could have been originated by something else, for example, a wrong strategy, the work environment or lack of training. This kind of managers causes diseconomies of scale in any type of enterprise.

On the other hand a Theory Y manager believes that his staff is interested to performing in the best way possible during their work and do have sufficient creativity to function even better. Theory Y Managers respect that satisfaction of doing a good job is the best motivation for the staff and are continuing doing good work. A Theory Y manager will eliminate barriers that could hinder their staff from reaching optimal functioning (McGregor, 1960).

### 3. Methodology

#### 3.1 Purpose of the Research

A Research Purposes can be classified in different ways. A widely used method identifies these purposes broadly as: exploratory, descriptive, and explanatory (Yin, 2003).

- Exploratory studies are valuable means of finding out what is happening, to seek new insights, to ask questions, and to assess phenomena in a new light. (Saunders and Thornhill, 2000),
- Descriptive research aims at portraying an accurate profile of persons, events or situations. This may be an extension of a piece of exploratory research (Saunders and Thornhill, 2000).
- Explanatory studies establish causal relationships between variables. The emphasis here is on studying a situation or a problem in order to explain the relationships between variables (Saunders & Thornhill, 2000). Explanatory studies attempt to identify factors, which motivate a behaviour and to evaluate their relationships and interaction (Chisnall, 1997).

The purpose of this thesis is rather exploratory since it is the task to investigate how the market for pipes and tubes in Thailand is structured, by “enquire questions” in different industrial sectors. The study is mainly descriptive due to the fact that the purpose and the research questions are applied to describe and concentrate into strategic marketing and business development. Furthermore, the study aims to portray the structure of VLT and the demography of Thailand for the sales of pipes and tubes.

However the study is also but partly explanatory since the findings will be summarised and explained in the study by answering the research question and drawing conclusions.

#### 3.2 Research Approach

There are two kinds of research approaches: qualitative and quantitative. A qualitative approach tries to find what accounts for certain kinds of behaviour. It looks for deeper understanding of factors. The findings of a qualitative research approach cannot produce statistical evidence based on probability sampling, but also is meant to provide unique insights to inspire and offering guidance (Chisnall, 1997). This approach is appropriate when methodical information is needed. The purpose of a qualitative approach is to obtain an in depth understanding of the research problem (Yin, 2003). Contrary a quantitative approach measures how much and how many.

The purpose of this study is to provide a better understanding whether for VLT's potential industries are present and approachable, and if so whether VLT has to change their current strategy in being able to compete in these sectors. These results cannot be measured in a quantitative way by knowing how much and how many. Therefore a qualitative approach is applied because this is more suitable.

#### 3.3 Research Strategy

In this research strategy it will be indicated how the different research questions shall be exactly examined. Based on the foregoing, my research approach is qualitative. There do exist various research strategies to collect data. Those, in total five, research strategies in the social sciences are: experiments, surveys, archival analysis, histories, and case studies.

The strategy of this research is structured as follow: **Section 4.1** of chapter 4 is dedicated to the economic Macro branch viewing the global market trend for steel and pipe with its production and consumption. Followed by the current situation in the Thai industry. Sub questions 1 and 2 are investigated and answered. The second section (**4.2**) analyses in more detail the market for pipe and tube concerning stockists / traders. Continued with the Meso branch in which the potential in Thai industries is examined. The third part (**4.3**) is the Micro section that identifies



problems within the organization of VLT. The last part of this chapter provides the conclusion and recommendations based on the found results in the three economic branches of macro, meso and microanalysis.

The division is made to better understand the research for each sub question, which concludes with its specific answer. The way each sub-question was answered is further explained below with the applied methodology to extract the correct and adequate information.

### 3.3.1 Macro Analysis

The Macro analysis is related to the global market tendency of steel and pipe production and consumption, and the current situation of the Thai industry. The Meso views at the Thai industry, concerning trade, sales potential and competitors, while the Micro investigates the environment of VLT.

#### *1. How is the Global Steel Market divided in geographic output, consumption, price structure, use of pipes, pipe materials, pipe manufacturing methods, and who are the dominant players? (Macro)*

The Macro analysis is dedicated to obtain knowledge about the Global and Thai steel and piping markets helps to understand and compare the situation within a local market in terms of demand, supply, and price-trends. It turned out that VLT has little knowledge and contacts about the global steel and pipe market. Without having this knowledge available, all the information had to be obtained from extended research through websites, internet bulletins and blogs, magazines, and personal contacts with associations as: the Iron and Steel Institute of Thailand (ISIT) that carried out research on the global market for steel and pipes. As matter of fact, I subscribed VLT as member of this association in order being able to attend their seminars. Interviewing knowledgeable people for this sub question seemed harder than anticipated, these large institutes have no easy contact points, when calling on them they always referred me to their websites.

Nevertheless thanks to relentless and continuous research at every possible institute involved, I was able to obtain a clear picture about the Global and Thai steel market, by gathering, analyzing and interpreting numbers of graphs and publications. See annex 1.

### 3.3.2 Meso Analysis

**Section 4.2** Gives an analysis of the market for pipe and tube stockists/traders in Thailand and in the second part the newly potential industries are investigated. Various theories have been applied to describe specific aspects.

#### *2. Who are competitors in the different areas, to be quantified in size and penetration related to VLT? (Meso)*

The first step of the Meso analysis is to investigate the various competitors, by applying Porters 5 Forces framework, to learn who are active in the Thai pipe trading market. Gaining this information is important for VLT and for me, enabling me to judge the market ranking of VLT compared with its competitors and to consider in which way a more advantageous position VLT could obtain. This question is answered through interviews with several members of the current staff in VLT (See Annex 13 for questions). The accountant manager, Khun Amp maintained some contact with competitors and consequently had access to their yearly results. Also I had the opportunity to talk to the owner of one of VLT's competitors (Khun Surachai Tantinikorn, from Ur Mena) as we played badminton together, through which occasion I attained even more relevant information about the other competitors in the same field.

#### *3. What is Thailand's demographic composition for the use of Pipes? (Meso)*

This part of the Meso analysis answers an important part of the Principal Question as it offers VLT the knowledge whom and where Thailand's pipe using industries are situated, and how best these can be targeted through diversification and/or distribution. Becoming acquainted with the relevant industries gives a clear insight about their need, use and kind of pipes. Further valuable information was acquired through interviews at institutes, associations and ministries, such as:

- Rangsit Hiangrat: Director of Cane and Sugar Industry Policy Bureau

- Dr. Nattapon Nattasomboon: Deputy Director-General of Office of Industrial Economics
- Lawan Sirisom: General Administration Office at the Office of the Board of Investment
- Supaporn Aunyawong: Director at Department of Industrial Works
- Kattiya Wisaratana: Senior Industrial Analyst at Office of Industrial Economics
- Khun Ladawan: Industrial Technical Officer at Office of Industrial Economics

Above institutes were interviewed because those are in one form or another related with the industries to be investigated. They provided me with the most reliable information. Amongst others particular details about location, activity, number of companies involved in the particular sector, size, as well about the current status and future trends. In order to obtain the highest validity I applied questionnaires as indicated in Annex 12. The obtained information have been crosschecked with data obtained from other sources, see Annex ... References and Interviews.

4. *Who are potential customers, to be identified in key areas both geographically as industrially?*  
(Meso)

Through the Meso analysis this sub question too answers an important part of the Principal Question in how to gaining sustainable growth by widening and spreading their customer base. Necessary for sales stabilization in the event one market may turn bad causing loss of revenue compensation can be acquired through other industries. Having a large customer base is a necessity by never letting off by looking for new potential industries. (related with sub question 3) Through interviews with institutes, associations, ministries, and companies I gained valuable information on new potential clients for VLT.

Executives and Managers who have been interviewed for this question are listed below: (See Annex 12 for interview questionnaires):

- FTI (Federation of Thai Industries): Wilailak Sirikum: Khun Wirilak gave me potential information about industries as Paper and Pulp, Cane and Sugar and Bio fuels.
- Ministry of Energy: Sitticahi Opatvachirakul: Khun Sitticahi provided ample information about the bio fuel and the natural gas industry.
- International Affairs Bureau (BoI): Khun Saranlak, the information obtained was related to the investments in Thailand by national and international companies, for example indicating the kind of industries, the region and amount of investment.
- Rangsit Hiangrat: Director of Cane and Sugar Industry Policy Bureau. Khun Rangsit provided me with more than enough information about future investments in the bio fuel and cane and sugar industries.

Many more executives and officials have been interviewed to acquire information on potential customers in different industries, however above institutes were of special interest to me due to their immediate relationship with companies in the respective industries. I am convinced that the information obtained through those interviews is reliable.

As stated in sub question 3 these people do have reliable information on the current status of their industrial sector. Exactly knowing the details of how many companies are active, and whether they are investing, how much they will invest and at which location. From BoI I received abundant valuable information on companies' investment, which immediately was welcomed and studied by the management of VLT, resulting in direct action to contact those new potential customers.

5. *Which kinds of distribution channels are available throughout Thailand? (Meso)*

At the start of my research VLT's management, brought two questions forward: Focus on

1. Distribution, or
2. Diversification.

Before taking any action to make a choice, I first investigated both possibilities, it turned out that Diversification would generate more reliable information than could be obtained for Distribution. I learned from my interview at the Thai Chamber of Commerce with Khun Dusit, Co-Director of the Thai-Chamber of Commerce, that it was not likely to get many details in English about distribution channels, specifically about smaller retailers called papa-mama retail shops. Nevertheless I did some research on Distribution because I am of the opinion that sales through such a network will provide greater sustainability. Also as retailers are often quite well informed about local new investment developments.

In this section is applied Porter's 5 forces analysis (Porter, 1980), which includes; rivalry, buyer power, supplier power, threat of substitutes, and barriers to entry, in order to better understand the market in which VLT operates. The Porter theory creates a framework to figure out in more detail VLT's environment compared to its competitors and other market aspects, as suppliers and its buyers. Brainstorming with my supervisors at VLT made it possible to extract all relevant factors that are of interest for this research. The factors were ranked to their influence from: most to least. Possible dynamics of the forces were examined as well, since the Five Forces model is often qualified being too static. Static is not the case in VLT's situation where the environment for pipe & tube stockists/traders changes rapidly. Examining how each force affects the company by identifying its strength and direction does provide insight in the strength' influence, position and ability with the objective to secure sustained profitability in that industry (Mind Tools, 2006). Besides Porter's 5 Forces, the SWOT analysis was applied to look at the Opportunities and Threats of the investigated industries. Because it is important to know the factors that do affect industries' potential, providing VLT with the knowledge to take the best measures in advance before approaching new markets.

### 3.3.3 Micro Analysis

In section 4.3 the environment related with VLT's organizations is investigated to provide solutions once necessary. Detailed information was obtained from confidential discussion with VLT's staff. The sub question that relates to this section is:

6. *To which extent is it necessary to adapt the internal infrastructure? (Micro)*

This question concentrates on the activities within the organisation and is called the micro phase. As VLT aims to broaden its customer base, some changes within the company will be necessary. As "often companies must change their emphasis from one form to another as their needs, capabilities, and environments change" (Merchant, K.A. & Van der Stede, A. (2007), p.226). Over the last few years VLT has experienced rapid growth with little or no changes undertaken in their organisational structure. In the event Management of VLT is focussing on different industries, and widening their customer base, the organizational structure and work procedures need to be adapted as well. Through internal interviews, with Joep de Vries, Jude Chee and the Expeditor manager, Khun Dachchai, and the aid of theories I came to conclusion that carefully applied changes, not only in the four departments but also in management are required to cope with future growth. The proposed changes are presented in Chapter 6 under Recommendations.

The theories applied for this section are, the SWOT analysis, PDCA-Cycle and McGregor's motivation theory. A SWOT analysis was started in my first few weeks at the office in Thailand. The SWOT theory is a great contributor in an internal analysis, because it provides clear understanding about strengths and weaknesses within the organization. Determining these strengths and weaknesses show the lapses that need change or improvement for which recommendations can be developed. For further cultivation it also is important to know the strengths.

The PDCA-cycle is a recommended for all levels of management at VLT to be used for every decision taken. It shows the importance to think first before planning, doing, checking, and finally acting.

During a Management and Organisation subject I attended in my first year at University, the motivation theory of McGregor was presented. The aspects of this motivation theory were clearly visible at VLT. The sales manager fitted the picture of a Theory X manager. For this reason I applied this theory to show management of VLT what was wrong, how it should be addressed, and be solved to have him better positioned in performing companies' objectives in the future.

With the help of several surveys and interviews I was able to collect the relevant data and compare those with the theory. Relevant data collected is for example the growth opportunities in different kind of industries in Thailand, and how VLT's current strategy and structure have to be adapted to allow them to compete in various other sectors, and so forth.

## 4. Results

### 4.1 Macro Analysis

In this chapter I report about my investigation into the Global and Thai tube and pipe market. Expecting to find detailed information at Van Leeuwen Company, it turned into a disappointment once discovered that these details were not available or ever collected. Even at the HQ in The Netherlands where I enquired my personal contact it was said that VL had not participated in a research project although they were mentioned in its references being a contributor to this report survey. All global data acquired in this Macro analysis have been collected through extensive and in depth investigation of recent publications. An enormous effort has been made because no one is willing or interested to submit confidential figures. Nevertheless a reliable and valuable overview is the result as is presented underneath.

The Macro analysis is an important factor in determining the growth aspects, influences and market structure that are of importance for future development and market approach to be applied. Without a global overview it is impossible to reveal local market developments and prospects. The more because today's market structure is becoming global, and all players do have their influences. The knowledge of trends is a necessity without it offers no viable strategy.

In this chapter sub-question 1 will be answered, once insight is obtained in the Global steel market (4.1.1). This chapter further includes three more separate paragraphs; in 4.1.2 the focus lies on the Global steel market for tubes and pipes, to be continued, in 4.1.3 with the market in general in Thailand while finally in 4.1.4. the characteristics for steel pipes and tubes in Thailand are explained.

#### 4.1.1 Global Steel Market

The steel market consists of the production of crude steel, blast furnace (pig) iron and direct reduced iron. The applied market values are calculated using global annual average steel and iron prices. Market shares reflect revenues earned in this market during the last year for which financial data was available for all data listed.

Steel can make different kind of products, such as cold rolled steel, hot rolled steel, pipes, plates, valves, flanges. The steel market is therefore broad. Most of these markets are expanding because of greater demand, while the supply of steel must catch up expressed by higher production expectations for the coming years.

#### *Sub Question 1:*

***How is the Global Steel Market divided in geographic output, consumption, price structure, use of pipes, pipe materials, pipe manufacturing methods, and who are the dominant players?***

It is expected that the global steel market will top 1.5 billion metric tons by next year, 2009, an expanding annual rate of 8 percent between 2001-2010.

The worldwide steel industry delivered unprecedented results in recent times and is projected to continue its growth trajectory in the future, albeit at a slower rate. The global steel industry will presumably witness marked differences in consumption rates in different areas of the globe. There are two basic sectors for the requirement of steel; one is the mass market and the other the high-end market. Developing countries mostly obtains demand from mass products, which would be directed by the expansion of steel production and merchandising volumes. The high-end market including the automobile industry requires better performance and product quality from the steel industry. In addition, increasing industry stabilization and continual high cost of raw materials is expected to bring about stability in steel prices.

China has emerged as a leading player in the global steel market in a very short span, thus exerting significant impact on the supply and transportation dynamics of the steel industry.

Through a very fast growing economy and continuous domestic infrastructure developments in the Chinese steel market is impelling the global steel demand. Construction, the greatest end-user for steel, is expected to experience strong growth. "Following protective measures enforced by United States and other nations, the global steel industry is likely to resurface from the volatile conditions witnessed in the recent past." (Rusmet.com) The burst in demand is aiding in rapid industry consolidations and capacity expansions mostly in Asian countries. China is the largest steel market and largest producer and exporter of steel in the world. Demand is projected to reach 595 million metric tons by the year 2010 in China, at a very high CAGR (Compound Annual Growth Rate) of approx. 16%, as stated by Global Industry Analysts, Inc. The USA is the subsequent largest market and the steel consumption is over 133 million metric tons in the year 2007. Growth is expected to continue over the coming years, though according to the Global Industry Analysts Inc.'s report, titled 'Steel: A Global Strategic Business Report' its growth level is expected to slow.

Steel consumption increases when economies are growing, as governments invest in infrastructure and transport, and build new factories and houses. Economic recession meets with a dip in steel production as such investments falter.

For example: The steel consumption trend over the past three decades can be seen to be in line with cyclical economic trends, with alternating periods of prosperity and recession. According to the International Iron and Steel Institutes (IISI), global crude steel output totalled 107 million tons in February 2008, an increase of 5.3 percent compared to the same period of a year earlier.

Global steel prices increased rapidly in the recent years, this directly affected profit margins of end-use industries, such as construction and automobile. Construction industry, with a consumption of about 621 million metric tons of total global steel consumption in 2007, is projected to represent the largest end-use segment of steel in the coming years. The industry is also the fastest expanding end-use segment with a projected CAGR of nearly 11 percent during the 2001-2010 periods.

Global mergers and acquisitions are expected to grip the industry for the better in the coming years. This is supported by the fact that top ten global steel producers (incl. Mittal and Arcelor) account for less than a third of the total global steel market, indicating a fragmented industry.

Sources: Ferrous metals and Global Industry Analysts, March, 2008 (Rusmet.com)

#### **Global review:**

World Steel Outlook (See annex 1). Meps forecasts for world steel production in 2008 at 1420 million tonnes. This equates to a 5.7 percent increase on predicted outturn of 1343.5 million tonnes in 2007. Over the past twelve months while demand continued to be firm, with output rising by approximately 7.5 percent.

Changing Dynamics of the Global Steel Market: (See annex 1.1). The global steel industry is at the crossroads. China ranked first in terms of steel demand. Excess demand in China finally led to a worldwide boom in the steel industry. Several changes are visible in steel business such as consolidation of business with the consequent resurgence of an oligopoly (dominated by a few large suppliers) market structure from a near-competitive steel market.

Global Steel Prices set for double digit percentage hikes in 2008: (See annex: 1.2).

World Steel in Figures 2007, (see Annex 1.2), US mills appear to have problems with their delivery lead times which stretch out to two month. Customers need to refill stocks, as there is very little imported steel at present, although this could change later this year. Inventories at the service centres have declined but business is not so robust. However, profit margins are said to be stable. Mill transaction prices have rose since January 2008, this because of volatile input costs and transport charges and higher energy. The major steelmakers have all announced further, substantial hikes for second quarter -2008- supplies.

**Short Range Outlook for the Global Steel Market:** (See annex 1.3) The International Iron and Steel Institute (IISI) forecasts 2008 will still be another strong year for the steel industry with apparent steel use rising from 1,202 million metric tons (mmt) in 2007 to 1,282 mmt in 2008, an increase of 6.7%. New projections for 2009 suggest a global growth rate of 6.3%. The underlying assumption behind this forecast is that although some weakening in the US and EU economies is expected, demand for steel will remain healthy thanks in part to the emerging markets which will maintain their own dynamism.”

#### **Steel Use and Applications:**

Steel is being used as an essential material for reinforcement of existing installations and new infrastructure. Primary application sectors for these products include nuclear, construction, shipbuilding, automotive, oil and natural gas, steam generation, and metal processing industries. Steel products such as steel pipes & tubes, beams, rods etc., are used for a number of applications, including in the oil & gas industry, petrochemical industry, construction industry, energy, transportation, automotive industry, and others.

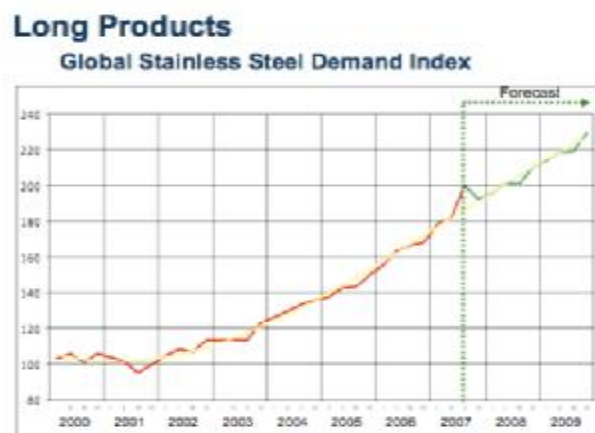
With the development of infrastructure, the market for steel and other metals has also increased. Steel is the most sought after metal and is used for a number of purposes. An all-important segment of this market is the Steel Pipes & Tubes sector.

#### **4.1.2 Global Pipe and Tube**

The tube market is a large section in the steel market that is one of the fastest growing segments because of big petrochemical projects that are in the pipeline. The focus is on seamless and welded pipes. A listing of the major pipe producers is provided at the end. The markets most attractive and expanding for pipes are currently, petrochemical, water supply, and similar.

The global seamless pipes market is expected to remain balanced for the next couple of years with supply meeting demand. However, supply is likely to exceed total demand by 2009, as a result of excessive production from China. By some estimates, the current rate of oversupply exceeds 30 million MT per year (ISSB). The expected result from greater industry concentration will be better control of the overall supply in the Chinese market, which in the past two years has been plagued with oversupply.

Source: ABN-Amro HK, Eye on the Elements Flash, 20 March 2008



Seamless pipes & tubes market in the oil & gas sector is expected to rise by more than 3.6 million tons by 2009 as compared to the year 2006. Demand for steel tubes on a global scale is fuelled by new and replacement of the construction and maintenance of oil and gas pipelines. On the other hand, the market for continuous welded pipes & tubes is projected to account for more than 12.1 million tons by the year 2009.

The steel pipe and tube market faces continuous pricing pressures. With excess capacity and increased production, pipe manufacturers slash prices in order to improve their individual positions in the market. Any fluctuation in price of steel, leads to an increase or decrease in prices of steel pipes and tubes. However, with the use of new technologies, manufacturers are able to lower production costs of steel pipes and tubes, thereby lowering the end-price of steel pipes and tubes.

The difference between a tube and a pipe and how these are made is explained below. Steel pipes and tubes are generally available in low alloy steel, high alloy or stainless steels and carbon steel. The latter contains none of the following elements: chromium, nickel, molybdenum and vanadium. Carbon steel pipes can reach a temperature of 475°C, but should be kept at around 425°C for not stressing the pipes or tubes. Low alloying steel contains, as the name states, low percentage of alloying elements, which can resist stresses at higher temperatures at around 550°C. Stainless or high alloy steel tubes and pipes are used to endure corrosion or oxidation remarkably in a higher temperature range.

#### **Geographically:**

The USA is the world's largest steel pipes and tubes market and is projected to use over 40 million tons by 2009. "There is high growth potential for segments such as oil country tubular goods (OCTG) and structural tubes. Electric resistance welded pipes market is projected to cross 41 million tons by 2009, growing at a compounded annual rate of over 3.4% during the ten-year analysis period.

Asia-Pacific and Latin America are among the fastest growing steel pipes and tubes markets owing to high economic growth with increased activity in sectors such as oil, power, refineries and construction. Asia-Pacific steel pipes and tubes market is projected to register a CAGR of over 3% over the same ten-year analysis period."

Source: Azobuild.com

#### **The dominant global manufacturers:**

In order to provide an impression of the dominant production players in the global steel pipes & tubes market, reference is made to the following listing:

Arcelor-Mittal, Corus Group, Dofasco, Europipe, IPSCO, JFE Steel Corporation, Kobe Steel, MacSteel, Melewar Industrial Group Berhad, Nippon Steel Corporation, Northwest Pipe Company, Oregon Steel Mills, Sandvik Steel, Sumitomo Metal Industries Limited, Techint Group, Tenaris, Ternium S.A., The Timken Company, Tubacex S.A., United States Steel Corporation, Vallourec & Mannesmann Tubes, Volzhsky Pipe Plant, and Wheatland Tube Company.

(<http://www.azobuild.com/news.asp?newsID=3967>)

Source: Global Industry Analysts, Inc. (USA) report, dated June 2007

#### **Recapitulation:**

##### **The answer to the sub-question 1:**

*How is the Global Steel Market divided in geographic output, consumption, price structure, use of pipes, pipe materials, pipe manufacturing methods, and who are the dominant players?*

As is revealed the steel market is a highly important. Without steel no single construction project can be materialized. The steel applications are numerous amongst those the piping industry is a major segment. Soon the largest supplier will be China followed by the U.S and E.E.U. While the largest market for steel pipe is the U.S., consumption is increasing year on year, the prices are on the increase, although due to over production in China there also is a downward pressure. While different methods of pipe manufacturing do exist the major use is in seamless and welded pipes. There are 24 major world market players; the impression is that in the coming years through further mergers and acquisitions this number will be reduced,

**Note:** In line with the assignment of my research, in continuation exclusively is concentrated on the market for pipes and tubes in Thailand.

#### **4.1.3 Thailand's Industry**

Before entering into detail of the use and applications of pipes and tubes in Thailand, I first provide a general overview about the historical industrial development over the last 30 years.



Thailand's government agrees on Economical Development plans for a period of 5 to 6 years. At present, the tenth economic plan (2007-2012) is in progress with the goal to emphasize happiness, environmental quality (green), and self-sufficiency. In annex 2 every single Thai Economical Development Plan is explained.

#### **Thailand's Economy:**

Thailand is export-dependent, exports of goods and services accounting for over 70% of GDP in 2007. Thailand's recovery from the 1997-98 Asian financial crises really relied on external demand from foreign markets. From 2001-2006, the Thai governments economic policy combined domestic stimulus programs with promotion of open markets to attract foreign investment. Thailand's real GDP growth strengthened sharply from 2.2% in 2001 to 7.1% in 2003 and 6.3% in 2004. In 2005-2007, economic growth stagnated, averaging 4.5% to 5.0% real GDP growth, due to national political instability, violence in the South bordering Malaysia and the 2004 tsunami. In 2007 Thailand relied heavily on strong export growth (at an 18.6% annual rate), especially in petrochemicals, the automobile and electronics sectors. (Interview Ministry of Economics)

Before the '97 Asian crisis, Thailand was led by years of manufacturing economic growth, averaging 9.4% up to 1996. The plentiful and inexpensive labour, Thailand's natural resources, open to foreign direct investment policies, and encouragement of the private sector were the success factors for the economic success in the years up to 1997. The economy is essentially a free-enterprise system.

As the Thai economy is a free-enterprise organism it welcomes foreign investment, investors who are willing to invest in Thailand and are able to meet certain requirements can apply for special investment incentives through the Board of Investment (BOI). To attract more foreign investment, the government has adapted its investment regulations. (see BoI website).

Around 40% of the labour force is employed in agriculture (data based on Bank of Thailand). Rice is Thailand's most important crop; and is the largest export country in the worlds rice market. Other agricultural products produced in large amounts include fish and fishery products, tapioca, rubber, corn, and sugar. Exports of processed foods such as canned tuna, canned pineapples, and frozen shrimp are on the rise.

Thailand has a diversified manufacturing sector and is the largest contributor to the countries growth. Industries who are experiencing a rapid rise in production include computers and electronics, furniture, wood products, canned food, toys, plastic products, gems, and jewellery. High-technology products such as integrated circuits and parts, hard disc drives, electrical appliances, vehicles, and vehicle parts are now leading Thailand's strong growth in exports.

State-owned manufacturing firms produced tobacco, playing cards, liquor, marble, jute, sugar, paper, textiles, leather goods, glass, batteries, and pharmaceutical products.

Machinery and parts, vehicles, electronic integrated circuits, chemicals, crude oil and fuels, and iron and steel are among Thailand's principal imports. The moderation in import levels (7.0% increase in 2006 versus 26.0% in 2005) reflects the low confidence of both consumers and investors. As the world price of crude-oil and fuel is increasing, the Thai government is then reacting by promoting the production of bio-fuels using crops, such as sugar, cassava, palm oil, etc., as the raw material. The production of ethanol and biodiesel in Thailand is expected to be a growing sector within coming years (Interview with BOI).

Bangkok and its surrounding provinces are the most booming part of Thailand, and the unproductive Northeast is the poorest. The current government is trying to trigger regional economic growth with programs such as the Eastern Seaboard project and an alternate deep-sea port on Thailand's southern peninsula.

Although the economy has demonstrated moderate positive growth since 1999, future performance depends on continued reform of the financial sector, corporate debt restructuring, attracting foreign investment, and improving domestic investment and consumption to balance past reliance on exports. Telecommunications, transportation

networks, and electricity generation showed increasing strain during the period of sustained economic growth and may pose a future challenge. Thailand's growing shortage of engineers and skilled technical personnel may limit its future technological creativity and productivity.

In order to encourage investment, the Board of Investment provided incentives, such as guarantees against nationalization and price controls, tax exemptions of up to 8 years, and tariff surcharges of up to 50 percent to protect against competing imports. The basic objectives of the board were to promote labour-intensive industries, exports, and regional decentralization of industry.

Sources: U.S. Library of Congress <http://countrystudies.us/thailand/66.htm> <http://www.unep.fr/pc/ind-estates/casestudies/LaemChabang.htm>

#### **Industrial Development:**

The Ministry of Industry is responsible for the promotion and development of industries and small and medium enterprises, investment promotion, development of entrepreneurs, to be more competitive in the world market with sustainable development for the better quality of life of Thai people, and other official duties.

The Industrial Estate Authority of Thailand (IEAT) is a state enterprise attached to the Ministry of Industry. It is chartered to implement the government's industrial development policy. The objective of its establishment is to ensure not only industrial development but also the orderly planned industrialization of the industries concerned and the country as a whole. It has been more than three decades since 1972 that the Industrial Estate Authority of Thailand has functioned as a guiding light in Thailand's systematic and orderly industrialization. Industrial Estate are, by design, a self-contained community; new, fully structured and serviced towns adjacent to new fully infrastructures industrial parks, supported by all the amenities required to grow their businesses in an orderly way, to be mutual benefit of themselves and the nation and its people.

The Industrial Estate Authority of Thailand is organized to provides a one-stop service for Thailand and Foreign industrial organizations from start to completion, including all types of assistance regarding permits, advice on investment and set-up process, incentives as well as privileges, promoted zones, loan sourcing and even the design of the factory itself.

One of the industrial estates covered by IEAT is the Laem Chabang Industrial Estate situated about 130 km south-east of Bangkok. It is connected to Bangkok and the other provinces by a main regional highway and a railway. In addition there is a deep-sea port, owned by the Port Authority of Thailand that was constructed as a part of the overall development plan.

Laem Chabang IE is surrounded by hills on three sides with the Gulf of Thailand making up the fourth side (essentially south/south-west). There are two oil refineries to the north of the industrial estate; the area is not merely an industrial centre. Agriculture remains an important part of the local economy while tourism is extremely important further down the coast in Pattaya.

Laem Chabang IE is divided into a General Industrial Zone, with 45 tenant companies, and an Export Processing Zone, with 51 companies. The companies are in general concerned with light manufacturing - electronics, automotive parts, electrical appliances, metals and plastics. Source: Ministry of Industry

#### **4.1.4 Market for Steel Pipes and Tubes in Thailand**

The SE Asian specifically the Thai market is further divined through the import of foreign pipes. Thailand does not have its own high quality steel production mills. The locally produced pipes do not meet international standards. (Interview K. Phoobet).

Although this assignment concerns a market research for stockist or traders of tubes and pipes, it is important to understand what kind of products are involved and how these differ from one and another. The trading segment can be seen as an extension of the mills that sells these products. The mills directly deal with only large orders. The traders deal with minor projects –lower quantities and more specialized applications - and do create a volume of

interest for the mills. Traders also have higher flexibility in the market and can switch from one supplier to another depending on availability, need, delivery speed and price. Stockists generally have their own warehouses to maintain stock of the most current types and sizes.

As the company's name, Van Leeuwen Pipe & Tube states, their activity is trading pipes and tubes. What are the differences between these two terms? There is virtually no difference. Pipe can be described by its nominal bore size, which is an estimated value and it only indicates the inner diameter. Generally pipes are appropriately specified by their outer diameter and its wall thickness. The word "Tube" is usually used to specify smaller diameter pipes. There is no well-defined motive to distinguish the differences between a tube and a pipe.

#### **Piping Materials:**

It is feasible that pipes and tubes can be made of different types of materials, which can range from concrete to carbon steel and plastic to steel alloys. All these different pipe and tube materials, suit different functions and environments. Each material has its limitations that may make it improper for a given utilization. Van Leeuwen Pipe & Tube (Thailand) trades all different kinds of pipes and tubes such as carbon steel, duplex, super alloys, welded, hot and cold rolled, etc. Consequently, I focus on this type of material that also belongs to the most common materials used in the piping industry. In annex 15 the different manufacturing methods of pipes and tubes are explained.

#### **Macro Conclusion**

The worldwide steel industry generated unprecedented results in recent times and is projected to continue growth in the future, albeit at a slower rate. The global steel industry will presumably witness marked differences in consumption rates in different areas of the globe. There are two basic markets for steel:

1. The mass market, and
2. The high-end market.

Developing countries mostly obtain demand from mass products, which would be guided by the expansion of steel production and merchandising volumes. The high-end market including the automobile industry requires better performance and product quality from the steel industry.

China has emerged as a leading player in the global steel market, thus wielding significant impact on the supply and consumption dynamics of the steel industry. And the global seamless pipes market is expected to remain balanced for the next couple of years with supply meeting demand. However, supply is likely to exceed total demand by 2009, as a result of excessive production from China.

Concerning Thailand the economy has demonstrated moderate positive growth since 1999, future performance depends on continued reform of the financial sector, corporate debt restructuring, attracting foreign investment, and improving domestic investment and consumption to balance past reliance on exports. Thailand's growing shortage of engineers and skilled technical personnel may limit its future technological creativity and productivity.

In order to encourage investment, the Thai Board of Investment provides incentives, such as guarantees against nationalization and price controls, tax exemptions of up to 8 years, and tariff surcharges of up to 50 percent to protect against competing imports. The basic objectives of the board are to promote labour-intensive industries, exports, and regional decentralization of industry.

## 4.2 Meso Analysis

In this MESO analysis, the industrial sector of Thailand is studied, through its activities, its resources, produced goods, industrial output, future development and expansion.

A MESO study is the economic assessment of the industrial development in a country at the level of each industrial sector. It focuses on connection between micro (Company) and macro (Global market) through evaluation at the middle (MESO) level. This evaluation facilitates the best choices to be made regarding available economic and industrial market expansion. Thus, studies the dimension in the planning of the activities and the allocation of factors and goods at all levels of the country as: State, Ministries, industrial groups, production units, regions and provinces. Once the industrial and economic situation is assessed, a cross section of industrial expansion is obtained and can be applied in the national marketing strategy for a Company (micro) learning whom and what is of interest for doing business in that country.

The data collected are obtained from interviews with executives in the various institutes related with the industrial production process (input) and market volume (output). The data are then analysed in detail of all industrial activities and targets listed as well as general economic and demographic statistics for volume and output, annual production, added value, number of workers employed, etc. All consequently compared with national economic records. The information was gathered at Ministries, Board of Investment, Chambers of Commerce, Industrial Associations and specific industrial sectors themselves. As a result it became possible to obtain an insight about the potential and expansion drive of the Thai industry, providing me an objective look about future market expansion, opportunities and threats.

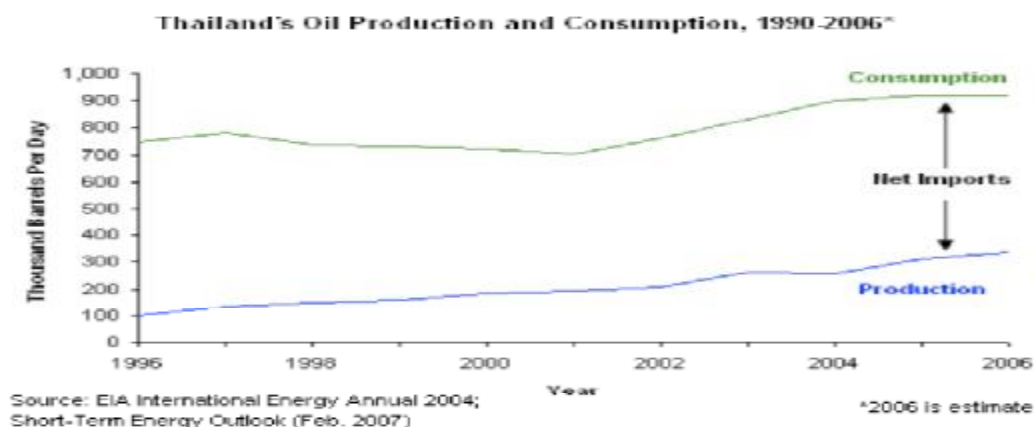
### 4.2.1 Industrial Analysis

The Thai government has designated 2008-2009 as “Thailand Investment Year 2008- 2009” in order to restore investor’s confidence and to promoting investment in targeted industries, further to stimulate the entrepreneurs’ development in enhancing Thailand’s overall competitiveness. As I have been informed during my interview with BoI (Board of Investment).

The government wishes to strengthen sectors that are already competitive. Their plan is to stimulate with incentives as tax reductions for industries, that include the automotive and parts, hard disk drive, electronic and electrical parts sectors. (Interview BoI)

Subsequently to existing competitive sectors, the government also wants to promote new sectors, such as biotechnology, biodegradable materials, LED, LCD panels, and so on.

As in the new (10th) economic development plan of Thailand is stated, the country plans to become self-sufficient in the coming years. The government therefore is heavily promoting investment in the alternative energy sector, which include ethanol, bio-fuels, biogas, solar and wind energy. Source: ([http://thailand.prd.go.th/view\\_inside.php?id=1457](http://thailand.prd.go.th/view_inside.php?id=1457))



The Thai government considers self-sufficiency being very important as the price of crude oil is increasing by the day, while Thailand is a net-importer of crude oil even though being an oil producer itself. (Source: Energy Information Administration, [www.eia.doe.gov](http://www.eia.doe.gov))

#### 4.2.1.1 Analysis of the Thai Market

Before researching VLT's potential industries in the Thai market, it is imperative to know the kind of industrial market VLT belongs. The simplest way to reveal the structure of an industrial market is to use a model developed by Michael Porter of the Harvard Business School. Called Porter's 5 Forces framework (Porter, 1998). This model has proven to be as relevant to industries as it is for the trading and distribution sector. As explained in Chapter 2 of this thesis, Porter's model separates industry participants into five key categories, namely:

- **Competing or Peer Companies**
  - Companies offering the same level of product or service and therefore do compete for resources, customers and projects, in short: the competitors.
- **New Entrants & Barriers**
  - New organizations that might become peer companies in the future.
- **Substitute Products**
  - Products and services that are substitute, and or are alternatives to the customer.
- **Buyers**
  - Organizations must market to, and compete for, "customers."
- **Suppliers**
  - Manufacturers who provide their products and services to an industry, as well as to other distributor suppliers of similar or even the same materials but under different conditions.

#### 1. Competing companies

##### ***Sub Question 2:***

##### ***Who are competitors in the different areas, to be quantified in size and penetration related to VLT?***

The trade of piping and tubing sector in Thailand can be described as a monopolistic competition market. This exists when there is a large number of pipe and tube traders and are perceived by its customers as being different from the competitor but they are actually similar. The perception of difference from the customer can be based on prices, quality, image or some other feature such as granting a service package. Each trader in this competitive market has some saying in the selling prices of their products; these price differences can be seen in the quotations to the customers. There can be few or many competitors in a monopolistic industry, but usually there are many and it is somewhat difficult to enter or leave such an industry. In Thailand are a number of pipe and tube merchants, although not many large ones. The following six companies are found being VLT's competitors:

- Roj Paiboom
- S.A. Petrotech
- Petchem
- Delta Metal
- Ur Mena
- Petrochem

For more information about VLT's competitors is referred to Annex 3.

Usually it is not easy to obtain information about competitors because they are not inclined to provide any kind of information about their business, as where and to whom they do sell their pipes. However I was able to acquire some information by interviewing Jude Chee, Managing Director of Ur Mena, and Surachai Tantinikorn, who I met at a private occasion.

Nonetheless in relevance to the market sector served it is apparent that Roj Paiboom, S.A. Petrotech and Petchem are the major competitors for VLT, specifically concerning the amount of revenue and similarity in products. They buy from equal large suppliers and deal with identical customers in the same petrochemical industry. In fact VLT has to compete with three major competitors by product similarity and same area penetration.

## **2. Entry Barriers**

Investigating the market of Pipe and Tube traders and stockists in Thailand it became clear there are not many entry barriers, since the only need to start such a company is capital and knowledge about the field of dealings. The more important it is, to create barriers for employees to avoid them to start their own business or move to competitors. (Interview: Joep de Vries and Jude Chee). For more specifications on Entry Barriers, see Annex 4.

### **Recapitulation:**

#### **The answer to the sub-question 2:**

Who are competitors in the different areas, to be quantified in size and penetration related to VLT?

The logic requires knowing the position of the principal in the market served. As shown there are seven pipe-trading companies active in Thailand. Three are major competitors named, Roj Paiboom, S.A. Petrotech, Petchem. Those three operate in the same field as VLT. Compared to turnover those three are larger than VLT in fact VLT is right in the middle of the pack.

## **3. Buyers**

### ***Sub Question 3:***

#### ***What is Thailand's demographic composition for the use of Pipes?***

Surveys help to determine the value buyers in the market. Revealing the demographics of the potential buyers and the best ways to market to them is of great importance. The results of such a survey must be used carefully. It is important to understand the needs and desires of each customer grouping, or niche. Sometimes, individual marketing strategies can be developed that address the needs of particular market niches without adversely affecting other buyers.

Buyers can influence an industry through their ability to force down prices, bargaining for higher quality or more services, and play-out competitors against each other. These buyers can be powerful if some of the following does exist:

- Buyer is nation wide an important and major client for the products required.
- Alternative suppliers are plentiful because the product is quite common.
- Changing of supplier is inexpensive.
- The buyer is mindful of quality, costs and service differentiation.

Purchasing power can be seen as strong in the steel piping industry. At the moment there are many small and large projects from numerous different companies - both foreign and Thai- in progress in various industries, because Thailand is experiencing a noticeable industrial growth. VLT is only concentrating in the downstream of the petrochemical industry; their clients enquire quotations at other suppliers as well, since this is not costly and or time consuming. These projects involve large amounts of material and money therefore the buyer can be precise with their continuous and specific demand of different types of tubing. These kinds of buyers are always searching for the lowest price, fastest delivery and best service. It is an advantage that VLT is one of the few under its competitors in this industrial sector that also is known as a service-orientated company. Acknowledged because for their 2-D after sales service. (Interview Joep de Vries and Jude Chee)

**Recapitulation:**

**The answer to sub question 3:**

What is Thailand's demographic composition for the use of Pipes?

At the moment there are many small and large projects in progress from numerous different companies in various sectors of industry, both of foreign and Thai origin, because Thailand is experiencing a noticeable industrial growth. VLT differs from its competitors by applying a 2-D after sales service. But basically it is a matter of price and quality followed by reliable service.

**4. Substitutes**

In steel piping industry there are many different types of pipes, as mentioned in the section "Piping Materials" and "Manufacturing Methods". Different materials and manufacturing methods can be seen as substitutes for the mills who manufacture pipes and tubes. VL is a trader of all sorts of pipes and tubes. In the event a customer wants a specific type of tubing VL will contact different mills that produces them for a quotation in search of the best price. So, virtually there is a variety of substitutes in this industry, however VLT as a trader is covering the market quite well, due to shorter delivery times, once in stock, and a better project after-sales service back-up.

**5. Suppliers**

While buyers are responsible for the industry's income, suppliers are responsible for the industry's costs. Many companies are faced with direct competition from peer companies. This is especially problematic where the number of large customers with a major reputation is quite small. Buying at the lowest price from a supplier or alternative supplier is of great importance. Searching the market for every large project to obtain the best quality at the lowest price will be an exercise on its own, in assuring success.

Each of the major suppliers to an industry must be appraised to determine whether they are reliable, and offer really the best price in the agreed period for the set quality standard in the industry.

A major threat from suppliers for traders is an increase in their prices of pipes. All efficient and economically operated mills are comparable qua production costs, however local differences in labour costs versus transport cost could make a distinction in pricing. In general price differences in tubes is mainly caused by the world increase or decrease in steel prices.

Reliability in fulfilling the sales/purchase agreement in accordance to its set conditions is a must, since any delay or deviation in quality could harm the trading Company and consequently its clients. (Interview Jude Chee and Sirilak, Expeditor).

**Conclusion about the Thai Market**

Four companies in Thailand, VLT being the 4th company of the pack, dominate the market for pipes. It can be said that the market is quite saturated only remote chances do exist for new entrants. Buyers can be seen as a threat as they can easily move to another trader, though the greatest threat might come from the Supplier by increasing prices, taking more time in production and delivery of pipes as agreed upon, etc.

This does not mean that VLT won't have opportunities to grow, there is plenty of room for expansion as is shown in the reports from the four industries investigated (see below), Where the petrochemical industry apparently is not expanding at same rate as in the past, new markets have to be explored to ensure further growth. For example the Bio fuel industry is a new expanding segment that is close to the current market know-how. Importantly the business structure should undergo some alterations. See below.

In Annex 9 and Annex 10 I have graphically listed the investment information (source: BoI) for the different industrial regions and sectors as well how these geographically are spread over the different industrial zones in Thailand.

Application of the theory of Porters 5 Forces shows that it is fair to conclude that VLT is qua size in turnover in the middle of the peer pack. However there is still sufficient room for improvement and it is obtainable for VLT to climb in the peer ranking. In order to undertake the necessary expansion this may require some changes in the existing infrastructure of the Company. Under the Micro Analysis section of this report these will be explained in detail.

Moreover there are constraints that hamper growth for VLT at this moment of time, the most important limitation in the existing business environment is that only one market sector is served that consist of the Petrochemical downstream segment, while other possibilities still are not exploited at all. In the event important changes do happen, the sustainability will be in danger.

Through various interviews with VLT staff members and my conversation with the General Director of Ur Mena, a competitor, I do believe that in the event the indicated 'success'-factors are met, considerable improvement can be reached in contrast to the competition. For example VLT should move their 2-dimensional approach of today, towards a 3-dimensional one, in order to stay ahead of the competition, which in some cases VLT's 2-D approach meanwhile has copied. See Micro Analysis, Sales Department. Diversification into other industrial markets, and handling pipes made from other alloys is a key requirement for further expansion. This will be discussed below.

#### **4.2.1.2 Diversification**

##### ***Sub Question 4:***

***Who are potential customers, to be identified in key areas both geographically as industrially?***

##### **Industrial sectors relevant for the use of pipes:**

As fundamental part of my extensive market research in Thailand, I personally interviewed quite a number of authorities in the various Ministries, Institutes, Chambers of Commerce, Industrial Associations, and even Managers in production plants, in order to obtain an in depth insight in the structure and marketing possibilities for the selling of tubes and pipes. As a result it turns out to be apparent that the following industries in alphabetic order would be of interest for the piping industry:

- Automotive and parts
- Biochemical
- Bio fuels (Ethanol, Biodiesel)
- Cane and Sugar
- Construction
- Furniture
- Mining
- Power plants (nuclear, biomass)
- Paper and Pulp
- Pharmaceutical
- Rubber
- Vegetable oils (Palm oil)

Since the period of time available for this research is restricted to 6 months, only four industries of these have been selected for further investigation. I have chosen the ones that in my opinion are encountering the fastest growth opportunity within the coming years.

During the investigation it became clear that several of the above mentioned industries are not of very much interest at all for acquiring new business by VLT, because some already are too established and will have little expansion or



are not open for further investment in the near future. During my interviews at the Board of Investment (BoI) I also learned that the mining industry is amongst the category of little interest, due to lack of further expansion and consequently the absence of new investment.

The industries, which I have selected for further investigation in more detail, are:

- Automotive-parts
- Biofuels
  - o Cane and Sugar
- Natural Gas
  - o Electricity or Steam power Energy Plants
- Paper and Pulp

I have selected these industries because of their major potential for the application of tubes and pipes. In short Automotive-parts do use pipes in large quantities, but of low quality and for that reason is not of interest for VLT at today's conditions. Bio Fuels is an expanding new industry and lies qua applications very close to the petrochemical industry in which VLT is for 90% sales active. Existing sales knowledge and experience are easily applicable. This is also the case with Cane and Sugar industry that is in the development for ethanol production. Virgin possibilities, thus with VLT's know how, it is very attractive to explore and acquiring long lasting entry. Similar is the situation at Natural Gas, where the transformation into the use of alternatives as biomass, etc. for energy generation is in their infant stage and VLT could become a helpful contributor within the sales process. Last but not least the Paper and Pulp industry use interesting quantities of pipes and are very much expanding, becoming involved, will certainly generate additional turnover.

Further in respect to these industries, below I write about each one a brief resume including information such as its location in Thailand, important facts and figures from past years, and my obtained vision regarding the future expansion of these sectors in relation to the attractiveness for VLT's new business opportunities. Essentially for each of these industries the opportunities and market possibilities are extracted from the information and data gathered during my interviews. This information is the foundation for my approach plan for VLT in targeting these industries.

#### **Investigated industries**

##### **Automotive parts**

Thailand is laying the groundwork to become the "Detroit of Asia" by the year 2010. All the components and (spare) parts for the auto, motor and motorcycle industries and after sale auto market are made by a multitude of factories established various zones of Thailand, even though mainly located in the surrounding provinces of Bangkok and Rayong. The Auto Industry in Thailand is the number one manufacturing industry in value, which is followed by the production of Hard Disk Drives. The Thai government's policy of initially promotion the Auto Industry is creating even more favourable conditions in which the economies of scale and efficiencies of the Thai Automotive and parts industry are expanding through Thailand's advantages in this area. ([http://www.business-in-asia.com/automotive\\_main.html](http://www.business-in-asia.com/automotive_main.html))

There are in total 20 car-assembling factories in Thailand at the moment, amounting the employment in this sector to over 20,000 workers. During my interview, I learned that within a few years the number of car assembling factories would even further increase. For the motive of Thailand's "Eco-green" - policy BoI approved 6 new projects for the construction of "Eco car" plants that will develop smaller cars, with lower fuel consumption and are more environmental friendly.

The total number of auto-parts manufacturers in Thailand is 1,656. From which 15 are large-size manufacturers, 738 medium-size and 903 small-sized ones. The total employment in this sector is well above 100,000 employees.

Their sources of raw materials are for 70% bought domestically and 30% comes from abroad. The auto-parts manufacturers mostly are concentrated in the provinces of Pathumthani, Bangkok, Samutprakarn, Chonburi and Rayong. Because the big car assemblers as Honda Automobile in Ayutthaya, Thai Rung Union Car in Samutsakorn, Auto Alliance (Ford and Mazda), BMW and GM in Rayong are all located around Bangkok and Rayong and several other car plants in Samutprakarn, the parts manufactures are clustered around or inside those areas. (Interview BoI)

The Thai government, in accordance with Porter's (1990, 2001), proposed incorporating industrial cluster policy into regional and national economic development, which is strengthening these two complementary sectors. Clusters lead to increased levels of growth, employment and productivity (Porter 1990, 2001; Steiner 1998; Feldman 2000).

#### **Opportunities and threats:**

In continuation of the already previous applied SWOT theory whereas in the internal analysis the Strengths and Weaknesses were analysed, I here look at the other two factors, the Opportunities and Threats, because those factors are related to external influences.

In my interview with Tenneco – one of the larger automotive exhaust-pipe manufacturers - it became clear that the majority of this industry sector buys their pipes from local mills, given that most of the cars are built to Thai standards. Which implicates the acceptance of the inferior quality of locally produced pipes. However this eventually may change, as many cars in the future will be designated for export and those will have to meet the higher EU and US quality standards. Consequently the quality of the applied pipes will have to meet these higher requirements as well.

#### **Sales - Opportunities for Van Leeuwen are in the following sectors:**

Pipes and tubes in the automotive market are used for:

- Exhausts' systems
- Breaking systems
- Transmission units
- Chassis and Axel units
- Air-conditioning systems

However at this moment of time there is no possible market for their pipes in these sectors, as long the inferior quality of pipes are accepted to be the norm. However in the future requirements may turn in VLT's favour. It is just a matter of carefully watching future development in this industrial sector.

Although this can be seen as a future opportunity for VLT, there is also a certain threat, the local mills probably will strengthen their quality standards, to keep on selling in this booming market. So, at the end of the day it will depend on the pricing and nature of marketing methodology. But, the basic question remains, is VLT interested and does it take the option to sell pipes in a mass production market?

Source: TAPMA

#### **Bio-fuels**

On a recent Keynote (28 April 08), Prime Minister of Thailand Samak Sundaravej commented, "sustainable development of the region also requires that we devote attention to our energy resources. Taking into account that countries in the region have diverse capacities and expertise on energy, enhanced energy cooperation would bring us closer to the goal of energy security." (Source: 64th session UNESCAP, <http://www.eppo.go.th/admin/cab/sp-2008-04-28-1.html>)

In 2007 primary energy consumption was 1,605 KBD (thousand barrels per day, which is a crude oil equivalent), this is an increase of 3.8% from 2006. The total final energy cost was USD 43.7 billion (an increase of 11.8% from 2006) and energy import was USD 25.6 billion (a decrease of 5.4% from 2006). The Import/Consumption ratio was of 63%. (Note: FX (Forex) = 34 Thai Baht per USD) (Interview Dr. Nattapon)

Development and promotion of Bio-fuel has become one of the top priorities of the Thai government, aiming to reduce oil consumption in the transport sector. Contrary the decreasing supply of fossil fuels, the demand for energy is continuously rising. Researchers around the world have been looking for alternative sources of energy to replace fossil fuels, and one of the solutions is bio fuel.

A second type of oil - bio-oil - refers to derived from plants or animals, which are generally edible. A variety of oil sorts can be extracted from several kinds of plants and do have various applications, such as paint, cosmetics, soap, plastic, as well as fuel and lubrication oil.

Bio fuels can be directly extracted from oil-yielding plants, such as soybean, peanut, coconut, oil palm, sesame, castor, and sunflower seed. They can also be obtained from plants that yield starch and sugar, such as cassava, sugarcane, corn ear, sweet sorghum, dried sugarcane stem, molasses, and rice straw, in which case starch and sugar are degraded and processed to yield ethanol. If ethanol is distilled to 99.5% purity, it can be blended with fossil fuels for use in engines.

Oil extracted from plants both directly and indirectly - through the process of generating ethanol from plants that yield starch and sugar - can be used as an alternative of fossil fuels. These are renewable and environmentally friendly.

Bio fuels are basically generated into:

- Gasohol
- Biodiesel

During my meeting with the Director of the Cane and Sugar Board Khun Rangsit, I was informed that at this moment of time there are 11 ethanol plants in operation with a combined production output of 1.575 million L/day. By the end of this year (2008) 9 more plants will be in operation, adding another 1.19 million L/day to the market. Further there are an additional 27 new-registered projects at the BoI; to bring total to 47 ethanol plants with a daily projected production of 11.025 million L/day. The amount of Gasohol used and the amount targeted for 2011 in Thailand can be seen in Annex 8.

Most Ethanol plants are located near Sugar mills in the Northeast (40%) and in the Central-north (30%) of Thailand, in order to reduce transport costs of sugarcane, although not all ethanol plants are situated next to these sugar mills.

Ethanol currently is produced from molasses a by-product of sugarcane. One ton of sugarcane produces 40 kg of Molasses and 1 ton of molasses provides 245 litre of ethanol. Khun Rangsit affirmed that plans are made for the construction of additional 50 new ethanol plants for the coming future, as the Thai government wants Thailand to become self-sufficient.

The Sugar industry also intends to produce ethanol by using sugar, which is not the case yet, as they make use of the by-product of sugar cane, named molasses. Presently there is a world surplus of sugar that also could be applied for the production of ethanol.

The forecast for the near future is that there will be an increase in the production of Sugarcane as more land has been cultivated to grow more sugarcane, and this increase of sugarcane will be used for the production of more ethanol, as Khun Rangsit told me. (Annex 5 describes the production process of Ethanol in more detail, and in Annex 6 the production process of Bio-diesel is explained).

Seen from this information and the figures mentioned, consequently Ethanol and Bio-diesel in general are upcoming growth industries in which likewise as in the petrochemical industry an equivalent of tubes and pipes are used.

#### **Opportunities and Threats:**

In my interviews with Khun Nattapon, Khun Rangsit and the BoI it became obvious that the bio fuel industry in Thailand will experience a significant growth in the coming years as new production plants are lined up to be built.

All these plants need an arsenal of pipes and fittings for processing and storage. The benefits bio fuels are a qualified contributor for growth opportunities in this industry in Thailand in general. See Annex 8 for a brief description of the Industrial situation in Thailand concerning Ethanol and Biodiesel.

#### **Opportunities for VLT:**

Participating in the process to make Thailand self-sufficient in energy is a good opportunity for VLT. Since this is the unquestionable direction Thailand is going to develop, a tremendous growth market for the use of pipes and tubes is assured. So, entering this new market of alternative energy industries in an early stage is a great opportunity for Van Leeuwen to increase their tubes and pipes turnover, huge expansion possibilities are offered in this industry.

### **Natural Gas**

At the Ministry of Energy I met with Khun Sittichai of the Energy Policy and Planning Office.

According to the information provided by Oil & Gas Journal, Thailand holds 14.8 trillion cubic feet (Tcf) of proven natural gas reserves as of January 2007. Almost all of the country's natural gas fields are located offshore in the Gulf of Thailand. Natural gas production has risen steadily in recent years, although not enough to keep up with the growth in domestic consumption.

Petroleum Authority of Thailand Exploration and Production (PTTEP) has a stake in many of Thailand's natural gas producing fields, including Bongkot, the country's largest field. Foreign companies, however, supply the bulk of Thailand's natural gas output. Chevron is the largest foreign operator, accounting for 70 percent of the country's natural gas production from 22 offshore fields. PTT has a leading position in mid- and downstream natural gas activities, including much of Thailand's domestic transmission and distribution infrastructure.

#### **Opportunities and Threats:**

Although large-scale projects aren't of interest for VLT, I understood smaller projects also would come on stream. At least it is worth the try to become a pipe supplier for these projects. A matter of carefully watching further development and maintaining a good personal relationship with Khun Sittichai, and his colleagues at the office of Energy Policy and Planning.

### **Electricity or Steam Power Energy Plants**

For this industrial sector I have been informed that the majority of power plants in Thailand use materials such as biomass, biogas, wastewater or wind for generating electricity. Last year alone there was an approved investment of 26.2 billion baht (€518 million) from 17 different companies. From the 17 companies investing in 2007, 9 are planning to expand with a total value of 9,915 million Baht (€196.5 million) and 8 are starting-up with a total value of 16,236 million Baht (€321.5 million). These new plants are going to be located in BoI's Zone 3, among the following provinces: Mukdahan, Sakon Nakhon (Wind power), Prachin Buri (Steam powered), Chanthaburi, Songkhla (Biomass) and Surat Thani (Biogas). Important incentives have been put in place for those companies that include: import duties exemption on machinery, 8 years corporate income tax exemption, double deduction for the period of 10 years for the cost of transportation, electricity and water and a few more.

### **Opportunities and threats:**

This energy sector has certainly a great potential for VLT's expansion, because of the sizeable quality orientated investments that are planned and that is quite in line with nowadays possibilities already in place. It is more an urgent matter for personal follow-up, than making changes in the internal structure.

### **Paper and Pulp**

At the Office of the Paper and Pulp industry I met with Khun Ladawan (Industrial Technical Officer) and was informed about the latest developments in this industrial sector.

The paper and pulp sector is of special importance to Thailand's economic development. Pulp industry is the in between industry flanked by the agricultural sector by using eucalyptus as raw material. Pulp is used as raw material for the manufacturing of paper. Paper is used as raw material for publishing and packaging industry, which is an important industry to the national economic development and substitute foreign import as well.

The rate of growth of the industry is an indicator of social progress and expansion of the national economy. The market for paper in Thailand peaked before the 1997 Asian Crisis. Demand for paper in Thailand has yet to reach the same level it reached back then. At present the consumption per capita of paper products in Thailand averages approximately 20 kilograms per year (Bangkok Post), which is relatively low compared to countries such as Hong Kong and Singapore both consuming an average of 100 kg per capita per year, and over 200 kg in Japan. This relatively low rate of consumption in Thailand means that the industry has a great potential to expand in the coming future. The Growth rate of pulp and paper industry is one of the key indicators for the national social and economic growth. The Growth rate of pulp and paper industry is higher than the national GDP growth, about 0.5 – 1.

Albeit there is growth potential, nevertheless the industry faces a number of problems, not only in the need to modernize, particularly the replacement of printing technology with computer and digital systems, but also building more capacity in state and private enterprises enabling them to adapt to the changes and to compete successfully with other countries in the region that meanwhile have advanced rapidly.

In accordance the information given by Khun Ladawan, "Phoenix Pulp and Paper Plc (PPPC), wholly owned by Siam Cement Group (SCG), is Thailand's top pulp producer has nearly completed construction of its 7.3-billion-baht paper mill. It is studying an investment of six to eight billion baht (€119 - 160 million) to raise pulp capacity by 100,000 tones to serve rising demand and to cash in on expanding exports. The need for the investment by PPPC is required to meet the ongoing increase in national demand of paper, which is noticeably growing y-o-y. Due to this increase more pulp is needed to meet the requirement of paper, and by building a pulp plant they intend to meet the necessity of paper for the coming several years.

Around 70% of PPPC's paper capacity is for local demand with the rest for export. Printing paper prices are currently around \$850-900 per tone, driven up by high oil prices. PPPC itself says its energy cost has raised five-fold due to the sharp increase in oil and coal prices.

PPPC expects domestic demand for printing paper to rise by double digits this year from about 600,000 tones in 2007. The market is still only at half of the peak seen before the 1997 financial crisis.

By the beginning of 2009, the plant would step up production to a maximum of 200,000 tones per year. The facility will acquire pulp from the PPPC plant that has operated for more than three decades and is now running at full capacity of 240,000 tones a year. About one-quarter or 50,000 tones of PPPC's pulp output is currently exported to more than 30 countries including China, Hong Kong and India. PPPC's short-fibre pulp made of eucalyptus is now trading at almost \$800 per ton, up from \$720 at the beginning of this year. The price is still on an upward trend.

### **Opportunities and Threats:**

It is obvious that the Paper and Pulp industry in Thailand is rapidly expanding. I do assume that in general, or at least locally, new opportunities for the sale of tubes and pipes by VLT are realistically in the cards.

However due to the lack of available time, a more in depth investigation about these possibilities was not doable to locating these opportunities in more detail. But, certainly new pipe business could be developed in this area as well.

The threat may lie in the fact that VLT hitherto has not yet created a sound reputation in this market, but this should not withhold VLT from trying and undertaking further exploration. The feeling and impression gathered convinced me that sufficient market potential does exist in this sector.

### **Recapitulation:**

#### **The answer to sub question 4:**

Who are potential customers, to be identified in key areas both geographically as industrially?

From the four investigated industries at least three offer immediate opportunities for incremental sales volume, these are the Bio fuel, Cane and Sugar, and Power Plant. At a later stage the automotive industry could become of interest depending on upgrading of quality standards. The most attractive industry with immediate potential and close to VLT's existing sales knowledge and experience is the bio fuel industry. Those industries are all located within the existing served geographical area of Thailand. For more details is referred to annex 10.

#### **4.2.1.3 Distribution**

### **Sub Question 5:**

#### ***Which kinds of distribution channels are available throughout Thailand?***

Again further research and information about the potentials in this market sector is required in order to judge whether enough growth potential does exist. I tried to investigate these possibilities by contacting the Thai Chamber of Commerce (TCC). Despite an amiable meeting the major problem encountered is that all information is in Thai language. I understood through an interpreter that certainly potential is present, but not being able to communicate with other specialist due to the language barrier, I have decided to leave this opening for somebody native to investigate.

Nevertheless I obtained a strong impression that business for the sales of pipes through this kind of trade channel is quite possible. Through the TCC additional information definitely can be obtained. Such as names and location, these data are supposed to be reliable. A book containing those retail and outlet details was given to me during my visit. For further treatment it has been given to the GM.

Distribution will provide the bottom in VLT's business because of the repeat trade that is generated and is easy to manage owing to the routine processes, infrastructure, and pricing mechanisms that merely are required.

Selling through distribution partners as a so called "channelled trade", whereas a channel of trade is defined as to be an established market mechanism for distributing in selling products that follow a route of well-understood arrangements of merchandising, settlement and delivery policies.

VL Thailand's aim for distribution comes down to more research for feasible supply channels in different areas of Thailand this can include papa-mama shops, opening locally additional warehouses, and via alternative outlets and retail facilities, etc.

### **Recapitulation:**

#### **The answer to sub question 5:**

Which kinds of distribution channels are available throughout Thailand?

Distribution as channel of outlet is an attractive possibility and certainly feasible, as discovered from one of the major competitors Roj Paiboom, who additionally applies it and whose turnover is the largest pipe trader and supplier in the Thai market.

This channelled trade will increase VLT's sustainability and improve efficiency. Distribution to wholesalers and retailers has to be cultivated and channels do exist in accordance to the information obtained from the Thai Chamber of Commerce. It is a viable option applicable throughout Thailand and even will provide local knowledge about larger projects.

### **Meso Conclusion**

Although not all industrial sectors have been investigated the conclusion is justified to state that ample market expansion is obtainable in the Thai industry, complying with the wish of the Management of VLT for further growth.

From the twelve industrial sectors selected, most probably at least ten are relevant for market expansion, although I only could investigate four due to the limitation of time available.

Apart from the Mining sector, which doesn't encounter much growth anymore, the other six industries certainly also do have potential perspective. And, it is advisable to continue further investigation through personal approach by the Business Developer, once appointed.

Because of their great potential specifically the following sectors are of immediate interest, these are:

- Biofuels
- Cane and Sugar
- Power Plants

Furthermore market volume increase through Distribution is another feasible option not to be neglected. Observation at the competition showed an apparent success.

### 4.3 Micro Analysis

This is a micro, company-based, analysis that leads to a Business Plan containing suggestions and recommendations for implementation and execution by the Company's Management. It includes the obtainable improvements necessary for improved profitability, productivity, turnover and competitiveness as a result of restructured core business processes and functions, within the organization. Reorganization at the micro or company level is directly correlated to a company's strategy and business-goals. It does provide a focussed vision for all improvements and initiatives. The general purpose is to fill the existing knowledge gap and the precise reason is expanding the sales-turnover.

#### ***Sub Question 6:***

***To which extent is it necessary to adapt the internal infrastructure?***

To answer this sub question, the following questions have to be dealt with first before getting an idea to which extent VLT's infrastructure has to change.

- What are the general and specific factors that have fuelled restructuring?
- What is the general outline of restructuring?
- What are the proposals for restructuring?
- What are the effects of restructuring on profitability, productivity, expansion, employment and sustainability?

The basic data for this research have been compiled from my internal interview survey and is concluded with the gathered external meso market research results, both in detail described in my internal and external analyses as initially explained in Chapter 3.

Restructuring includes several corporate improvement programs such as expansion, downsizing or right sizing, total quality management (TQM), re-engineering and outsourcing. It seeks substantial improvements in performance goals, which may include improved product quality, enhanced sales activity, higher profitability and productivity, lower production costs through better efficiency, reduction in overhead expenses through routine or repeating sales, as well as greater flexibility, speed, accuracy and customer satisfaction. These goals are often pursued simultaneously. In many cases, restructuring takes a social-economic approach to business improvements, covering both the technical aspects of processes and products technology and reviewing the principles for a marketing-approach, procedures, systems and controls. As well examining aspects within the organization as, staffing, company policy, jobs, career paths, social accomplishment and incentives.

#### **4.3.1 Internal Analysis**

This analysis is based on the VRIO technique which contains suggestions and recommendations for implementation and execution by the Company's Management. Analyzing how through restructuring of the core business' processes and functions, improvements can be reached related with profitability, productivity, turnover, competitiveness and increase in sustainability.

### **SWOT analysis**

In advance I compiled my questionnaires to be used for the interviews with the majority of staff members. See annex 13. Under the meso section for my external analysis the gathered data is based on previous prepared questionnaires see annex 12. And at the end of each investigated industrial sector the opportunities and threats are evaluated.

- Strengths: attributes of the organization that are helpful to achieving the objective.
- Weaknesses: attributes of the organization that are harmful to achieving the objective.
- Opportunities: external conditions which are helpful to achieving the objective.
- Threats: external conditions which are harmful to achieving the objective.



Consecutively to obtain an impartial insight in the Strength and Weakness of Van Leeuwen Thailand (VLT), I applied my specifically composed questionnaires for conducting my interviews with 15 staff members. In compiling the results I found great similarity in the answers provided. For this reason the most relevant information was selected and is used in this Strength and Weakness analysis. For more details, see the end of annex 13.

#### **Strength and Weakness analysis:**

##### **Strengths**

- Direct communication does exist throughout the staff, resulting in good and frequent performance control, as result of the flat hierarchy: Through my participative approach I was able to observe staff members communicating with one and another about occurring problems and noticed the measures that were taken to solve these.
- Service orientated: VLT is not only delivering pipes and tubes to their customers, but they also provide them additional services as well, which amongst others include stock and delivery management.
- Staff flexibility: The Thai staff at VLT are open to any kind of task they encounter at the office, even if it does not have to do with their everyday job.
- Clients do trust VLT because of being an international company: Many foreign companies are investing in Thailand (Interview BOI) whom prefer to deal with a foreign company, rather than with Thai companies as they are seen as “not so trustworthy” (Interviews with VLT staff). A good example is the locally based Dutch company Purac.
- Stock purchase directly from mills => lowest cost in the market: VLT directly buys the pipes and tubes from large mills, mostly in South Korea, whereas some other competitors buy their pipes from other stockists resulting in higher prices.

##### **Weaknesses**

- Little prepared for further sustainable growth, which has to be improved in order to reach VL Thailand's goal to achieving the annual turnover mark of 1,5 billion Baht (€30 million):
- Hierarchical structure is perceived as too flat: The communication within the company is in my opinion too informal, making it easy for everyone to communicate with the GM about not even important facts. There also is little control, making it simple for the staff to do it their own way.
- More structural efforts are required for staff training and motivation: I performed an internal questionnaire (see Annex 13) to see if the staff were interested in training's, the majority were in favour.
- The only one driving force is ‘the boss’: The staff have little or no idea what the company's objectives are, they only know that the company wants to make more profit year on year, making them think that they work for the boss, to keep him satisfied.
- Lacking clear vision about future development: VLT is at the moment only focused on a day-to-day basis. They are stuck to the attitude of: “We are making good profit now, so why bother to think ahead about what could happen next, when that time arrives we will start thinking on the next step.”
- No customary personal sales calls: The sales department lacks the motivation to call-on more new potential customers, and only focus on the customers they already do have.
- Too little diversification in customer base: At the moment 90% of VLT clients are from the petrochemical industry.
- More detailed task responsibility description and reporting procedures required.
- Lack of standardization in specifications for purchasing and delivery requirements. (ISO 9001)
- Lack of promotion required through participation in exhibitions and similar.

To finalize the SWOT analysis the external factors: Opportunities and Threats are for the completeness and general understanding in a few words compiled as follow:

**Opportunities for VLT:**

Diversification into other industries is ample available and attractive in securing further expansion. Only four industries have been methodically investigated, but the other eight similarly may have attractive growth opportunities. After that Distribution into retail outlets and smaller wholesalers is another realistic expansion with the advantage that overhead expenses more evenly can be spread and better sustainability is guaranteed. However a more active acquisition still is a precondition.

**Threats for VLT:**

Over the years VLT has itself very much limited in its sales approach. 90% of the turnover comes from the petrochemical industry, of which one sales person handles 80%. If this man leaves the Company, VLT will be severely hurt. It is a basic rule to spread risks, which has been neglected by VLT Management. Competition is always present diversification not yet applied is an urgent must.

**4.3.2 Restructuring Proposal**

In general VLT is growing from its infant status into a more professional entity. To achieve an annual turnover of 1,5 billion Baht (€30 million), will require a re-organization of the Company that might lose some of it today's amenities, such as creating a sense of insecurity, disturbing the comfort zone, and the immediate and direct talk to each other, but certainly will improve performance, quicker response to environmental changes, better understanding, and once well introduced increase satisfaction and enthusiasm among employees.

Key point for a successful re-organization is that the alteration for improvement is clear and significant compared with the original situation. A well thought vision is of essential importance, which is comprised from understandable objectives for the short, medium and long-term, in achieving noteworthy improvement of the infrastructure. Before implanting such a new plan, all staff members should be consulted to make all the difference for their co-operation in securing total success of the change. Explaining openly in advance the objectives and the improvements envisioned of the re-organization plan is of the greatest importance, in order to create maximum support and acceptance.

The need for enlargement of the workforce is indisputable if the planned turnover rise is the aim, which on its turn will require a further specified and better-structured hierarchy. Such a structure relates to both responsibility and communications equally internally and externally.

Today's 'boss's main task' is to inspire staff and dealing with large customers. In terms of effective management his task also should be diverted on overall management, as inspiration, guidance, motivation and control. The appointment of an assistant, compliant and capable to assist in these tasks, and taking care of the Company during the boss's absence, is of high priority in order to ensure continuity and long-term sustainability. His/her main task is to know exactly what is going on inside the company.

Appointing department managers with clear-cut responsibilities and tasks will form the next layer in the hierarchy. As result of various interviews with staff members at VLT the following self-governing departments should be construed:

- Sales
- Purchase
- Stock-keeping
- Human Resources

The proposed solutions for the current problems at these departments have been thoroughly discussed with the help and opinions of my colleagues and supervisor at VLT.

#### **4.3.2.1 Sales Department**

The sales department is in charge contacting and dealing with customers in obtaining purchase orders for the company. As well keeping a good relationship with customers to secure first option position for invitation in the event of new projects.

##### **Cons of VLT's Sales Department:**

- Not calling on new customers, just hang on with already known customer base.
- Not informed in advance about new pending projects.
- Spending too much time and money is spent with relatively unimportant customers.
- Department actually is run by one person (See under Human Resource).
- Unnecessary business expenses are made, such as "Dining out with clients."
- Irregularities in attendance at work, high degree of absence at the office.

(Interview with Staff members of other Departments)

##### **Suggestions:**

- In the event of contacting prospects in new industries sales staff begins with calling new customers, to have those informed about VLT's product range and explaining the additional sales-service to assisting with development of their new projects. From BoI, information can be acquired in order to know, which companies are investing in further expansion of existing or new plant(s) with other valuable facts.
- Contrary to what is the case today, GM should control the sales team. Through weekly meetings the GM is able to judge the performance of the sales team and not are wasting their time with relatively unimportant clients.
- GM's systematic control of the sales team will have them thinking twice before undertaking any wrong action, as amongst others accepting orders with low margins, unnecessary spending on dinners and entertainment with clients. Cost consciousness offers the easiest way of making a profit. And above all this measure leads to higher attendance of staff.

##### **Out of the box suggestions for improvement:**

Carrying out an advertisement program, designed by an experienced agency in reaching all Thai prospects that are using steel tubes and pipes (Diversification).

Accentuating that lasting repeat business will be created through 3-D (dimensional) sales approach implementation.

The existing two-dimensional 2-D basically after sales service approach, should be transformed into a three-dimensional 3-D by appointing an application engineer to visit and assisting customers at presales with the best and most efficient project advance and management. Furthermore providing information about most adequate high tech appliance methods in tube welding and so on. As I discovered that at least one and most probably two competitors do have copied VLT's additional 2-D project service approach.

Customers have to become accustomed that this kind of VLT's support, routinely provided with every order placed, in assuring ongoing repeat sales. 'Once a client remains a client'.

Retail sales through "papa - mama" outlets (Distribution) is an entirely other segment of the market, nevertheless one that ensures long lasting continuity and profound sustainability. Once relationships are established: such a market easily can be dealt with through website (intranet) ordering and also by communication via telephone if additional support is required. A well-trained in house sales staff capable in providing adequate support to assuring up to date treatment of clients is of immense importance.

#### **4.3.2.2 Purchase Department**

The Purchasing department has the mission to buy supplies, equipment and materials when required, at the right quantity, quality, and price from the appropriate source.

##### **Cons of VLT's Purchasing Department:**

- Lack of contact with supplier.
- Sales Manager not in charge of this department is the major contact person with the supplier. (See Human Resource)
- Nowadays it is a supplier market, with other words: pricing, delivery time, etc. are at the decision of the manufacturer, because Van Leeuwen Thailand is relatively small in applying any purchase power.
- Deficient of clear communication between this department and sales. Sales is giving the purchasing department misleading information, as for example a customer placed an order for 12m pipes, while sales wrote 6m pipes on the purchase order to the purchasing department.

(Interview with Staff members of other Departments)

##### **Suggestions:**

- The sales manager should not be allowed to maintain contacts with suppliers, because he probably can retain information, which is of importance to the purchasing department. The communication with suppliers should run via the GM or Purchasing Manager in order to show the purchase is not run via one person.
- VL Asia should form a collective group in order to have some more saying power in today's supplier market.
- The GM's task is to secure proper communication between both sales and purchase departments. For the benefit of all.

Reliability and continuity in maintaining suppliers relationship will charm communication once necessary to create the best solutions in cases of emergency. Supplier relationship is equally important as Customer relationship especially in a trade company like Van Leeuwen is this a high priority on the route for survival.

The purchaser has to be familiar with high-level responsibility and be reliable. Regular communication physically, by telephone and in writing will secure long-lasting relationship.

#### **4.3.2.3 Stock-keeping – Warehouse Management**

Managing the facility of storing a range of products involves costs trade-offs between customer service and information systems. A fundamental inventory management question concerns the quantity to order and keep in stock. Inventories serve a variety of functions in service organisations, such as decoupling the stages in the distribution cycle, accommodating a heavy seasonal demand, and maintaining a supply of materials as a hedge against anticipated increases in their cost. (J.A. and M.J Fitzsimmons, Service Management, p. 349, Irvin Mc Graw Hill)

##### **Cons:**

- Short of specialised staff handling stock in monitoring and cost procurement.
- High level of obsolete stock causing a depreciation value in 2007 of 11 million Baht.
- Stock losses in 2007 accounted for 800,000 Baht.

(Interview with Joep de Vries and Jude Chee)

##### **Suggestions:**

- A new warehouse manager has been appointed taking care of the warehouse, however someone specialised in stock organization and application of specialized IT software should be a most ideal solution.

- A certain level of stock for frequently sold merchandize has to be established, maintained and once necessary enlarged if market and sales indicate such requirements. Avoiding unnecessary stocking, by making timely clearances in reporting to sales department for initiating special promotions etc.
- Merchandize in stock and transport expenses should have better control and monitoring. A cost conscious storage operation is adding additional profit to the balance sheet.

Conclusively: Improve stock management and apply Information Technology software to monitor merchandize movements.

#### **4.3.2.4 Human Resource**

More attention and time from Management should be dedicated to Human Resource aspects within the Company.

##### **Problem**

The Company is confronted with a serious problem. The sales manager deals on his own meanwhile controlling 80% of the Company's turnover. Manipulates delivery times between suppliers and customers with the objective to obtain the purchase order (PO) and once problems do occur blaming other departments or staff. Everyone in the staff knows about it, but no corrective measures have been applied. This situation accurately is described with McGregor's Theory X (Theories X and Y), about human motivation. Two different attitudes towards workforce motivation are described. See under theories applied.

##### **From where is this problem originated?**

In general the trouble with independently acting Managers is, partly, the result of insufficient supervision from the General Manager and in this case co-caused by the flat hierarchical structure. Obviously too little authority and boundaries have been implemented and evidently agreed upon. Changing work rules in eliminating this behaviour is essential to secure trouble free future functioning of the organization. (Own observations and daily conversations with staff members)

##### **Suggestions:**

- GM should urgently acquire every detail about any sales activity and none actions. GM should personally visit all customers and suppliers and listen carefully to comments concerning received treatment. Learning whether and to which extent they entrust their relationship with VLT. Furthermore using the occasion by explaining the Company's new future strategy. It is of the highest priority that the GM as final responsible executive becomes acquainted with every important player associated with VLT.
- Dismissal is the easiest way-out, but in the event of a key-position where one employee is in control of 80% of the turnover, a well-prepared plan of action has to be made before undertaking any step in this case.
- Alternatively repairing the relationship, by restructuring work-rules and responsibilities. Which also is a very delicate and complicated matter that also should be well prepared and carefully considered before implementation. Nevertheless, the factor time is of serious fundamental nature.

##### **A lesson for the future**

It should become standard Company policy for all (future) employees to have signed an employment agreement, stipulating task, duties, obligation, remuneration's, bonuses, competition restrictions, confidentiality clause, etc.

#### **4.3.3 The Management**

An across-the-board analysis of the Manager in charge:

- Good but not effective leader.
- Lets everyone do what is wanted, actually authorising facts and deeds that shouldn't be. For example accepting and booking an order without an official Purchase Order.

- Too quick in trusting staff, while more control is necessary.
- If something is wrong, only inquires why? Without making proper correction.
- Expects staff will solve problems themselves without GM's intervention.
- Too lenient, mistakes are made to learn from, but not to be repeated.
- Does not engage in sales and purchase.

(Source: Interview Staff members and personal observations)

#### **Observations:**

The existing hierarchical organization is too flat and should be transformed into a more pyramidal structure. There ought to be one boss the General Manager (GM) respected by everyone. Suggested is the appointment of an assistant manager compliant and capable to assist in various management tasks (such as discussing with the GM about future strategies and so forth), while taking care of the Company during absence of the GM.

For the desired expansion, actually a strong effective Manager is required, who continually stays on top of every single important item. Final decisions are simply GM's responsibility. Known by every staff member and they just are allowed to make important decision with GM's consent or on his own if in compliance with the Company's spirit, culture and rules.

The GM tells staff about his satisfaction or dissatisfaction and listens to everyone by encouraging them for a feedback in making suggestions for operational improvement and as a result introduces the necessary changes. This is called decentralisation, which spreads the responsibilities to the lower level managers / staff. Decentralisation have advantages, such that managers can focus on what is most important, empowerment increases motivation and therefore output per staff member will increase, empowerment also enables departments to react faster to changes in the environment because they have a greater understanding of it and therefore enable them to make more effective decisions than senior managers.

Work has to be performed in conformity with the pre-set strict and principal Company rules any deviation should be discussed in advance in the weekly staff meetings, or immediately on request.

Weekly Staff Meetings have to be introduced; these are the place to frequently communicate and listen, and to keep a finger on everyone's wrist. So any grumble or dissatisfaction within the staff can be noticed and dealt with through this channel of customary meetings. As already desired by existing staff.

#### **GM's major duty:**

Stimulating and motivating staff while providing sensible instructions followed by the control on correct execution. Occasional work performance inspections, corrections and compliments should inspire the staff to function better, running smoother and thus more efficient. Don't trust anybody, only your own eyes, unless time and again the staff member has proven his integrity, loyalty and on-going interest in the Company. The rule should be: 'Don't believe it, unless it is proven'.

The GM has to be aware that actions undertaken by him or other managers do create the results as envisioned. To manage any process it is important to follow Deming's PDCA-cycle before acting, for example reform implementation, work-procedures, instruction, etc. In a structured sequence:

1. Determine goals and targets (plan)
2. Determine methods of reaching goals (plan).
3. Engage in education and training (do).
4. Implement work (do).
5. Check the effects of implementation.
6. Take appropriate action.

This PDCA-cycle can be implemented in many different ways. Using this cycle in the best possible way it is important before starting the cycle an outline is compiled about what to expect and to ascertain from this process. The PDCA -cycle aims to optimize the changing process. The cycle is an ongoing learning process for the company, where the quantity of quality data is of great importance.

#### **4.3.4 Hierarchical structure proposal**

Before employing new staff at VLT it is seriously recommended to put a more pyramidal hierarchical structure in place. Creating Departments headed by a Manager, and implementing general Company rules with for each employee a task description.

As already mentioned: Improving internal interaction through frequent and regular (weekly) communication meetings, which very much is wanted by staff-members, in accordance to my internal analysis and interviews. Setting guidelines for responsibilities between Departments and follow-up procedures. In fact for each Department implementing the work procedures in writing in line with the Deming Circle logistics.

See Annex 11 for current organisational structure and my proposal structure.

#### **4.3.5 VLT's short term Expansion**

As described above, two lines for further expansion are presented:

- Diversification into other industries
- Distribution to wholesalers and retailers

##### **4.3.5.1 Diversification**

I have personally visited associations and organisations that are related to the below mentioned industries using pipes and are in expansion. The scope of my research didn't permit to go into too much detail, however from the five visited at least four are quite of interest for short-term additional business expansion.

The Automotive Industry is yet not very much quality orientated and because of that not of immediate interest. However four industries most probably do have attractive new market potential. These are:

Bio-fuels

⊖ Cane and Sugar

Electricity or Steam Energy Power Plants

- Paper and Pulp

Four of these do fall within VLT's existing product sales category. Natural Gas projects could be too large for VLT to handle at this stage, however I have been told that minor projects within this industry are also under development.

The Bio fuel industry stays on the eve of a booming industrial development, in my opinion quick action in entering this market sector is a condition for securing maximum benefit of this new expansion.

Not taken in account is an alternative form of diversification of the existing sales programme, by trading pipes and tubes made of different alloys, as I discovered that one of the peer companies is quite successfully in this market sector.

##### **4.3.5.1 Distribution**

Distribution to wholesalers and retailers is one more attractive option for market expansion. The greatest advantage of this sector is the repeat sales that once well treated and co-ordinated runs almost automatically. It assures a basic turnover to cover a great part or almost of the general expenses. Besides local knowledge about larger new pipe

projects can accurately obtained by providing a small commission to the informer. Even further down the road for more volume sales, additional kind of tubes could be considered, made of polyethylene and PVC for water irrigation, since I learned during my business interviews that this too is an expanding market.

This model as also the diversification by direct acquisition for customers in new industries requires a complete new business concept that step-by-step has to be developed. For which the appointment of a Business Developer is necessary, since under the existing staff members no one is found with sufficient qualification for this job.

### **Micro Conclusion**

Ample room does exist for VLT's expansion in the Thai market, for both approaches Diversification and Distribution. At this stage there is no need to penetrate into neighbouring countries, which can be postponed until later. Attractive opportunities with little threat are in the bio fuel industry where existing sales knowledge and experience will contribute.

Based on the SWOT theory and the internal analysis the Company's structure requires a careful renovation, preferably executed before new employees are appointed. Old habits are learnt quickly and wear out slowly, better to remove those first.

VLT started as a small Company and has grown rapidly without adapting itself to its current size. If further growth is required, avoiding more complications than the current ones, a comprehensive alteration of the organizational structure is the first step to be undertaken. For improved leadership the application of Deming's PDCA-cycle theory at all levels will secure better performance and enhanced oversight.

### **Recapitulation:**

#### **The answer to sub question 6:**

To which extent is it necessary to adapt the internal infrastructure?

VLT's rapid expansion of the past has caused the usual growth discrepancies in its infrastructure; too little attention has been paid to this aspect. Even at the existing size of activity and turnover change is necessary. Further extension into other markets does require a serious overhaul of the infrastructure.



## 5. Final Conclusion

At all sections of the investigation conclusions are given, for the short reader these are in this chapter recapitulated in a more condensed manner, not avoiding repetitions for the reader of the whole investigation. The three main components of the market research have provided the following results:

In general the Global and Thai market for steel and pipes at the Macro level it is still growing, which besides the USA and EU also is the case in Asia, especially China is growing even faster to become world's largest producer and consumer of products from the steel market. Thailand compared with China; the growth is more modest, with an annual 4% GDP increase, as the results from the Meso analysis do indicate. Looked from another angle, even stronger growth is observed at the Thai trading level where VLT and major competitors increased their turnover between 10 and 20% over the last few years. Indicating specifically the petrochemical is booming, however for how long? As yet no indication of an end to this trend is observed, but other industrial sectors are developing with good future prospects. As the Micro part of this investigation learns, VLT essentially has to restructure itself in turn to cope with further expansion in the market. VLT has grown rapidly in the past years, without paying attention to its internal infrastructure.

Below for each economic branch the details are presented:

### Macro

The worldwide steel industry delivered unprecedented results in recent times and is projected to continue growth in the future, albeit at a slower rate. The global steel industry will presumably witness marked differences in consumption rates in different areas of the globe. There are two basic markets for steel:

1. The mass market, and
2. The high-end market.

Steel is still the most sought after metal and is used for a number of purposes a substantial and important segment of this market is the Steel Pipes & Tubes sector. Developing countries mostly obtains demand from mass products, which would be directed by the expansion of steel production and merchandising volumes. The high-end market including the automobile industry requires better performance and product quality from the steel industry. While China has emerged as a leading player in the global steel market, thus wielding significant impact on the supply and consumption dynamics of the steel industry. Amongst others the global pipe market is expected to remain balanced for the next couple of years with supply meeting demand. The danger is that supply is likely to exceed total demand by 2009, as a result of excessive production from China. For Thailand the economy has demonstrated moderate positive growth since 1999, future performance depends on continued reform of the financial sector, corporate debt restructuring, attracting foreign investment, and improving domestic investment and consumption to balance past reliance on exports. Thailand's growing shortage of engineers and skilled technical personnel may limit its future technological creativity and productivity. In order to encourage investment, the Thai Board of Investment provides incentives, such as guarantees against nationalization and price controls, tax exemptions of up to 8 years, and tariff surcharges of up to 50 percent to protect against competing imports. The basic objectives of the board are to promote labour-intensive industries, exports, and regional decentralization of industry.

### Meso

Purchasing power can be seen as strong in the Thai steel piping industry. Six major competitors are active. There are numerous small and large projects from many different companies - both foreign and Thai- in progress in various industries, because Thailand is experiencing a noticeable industrial growth. VLT is just active in the downstream of the petrochemical industry. These projects involve large amounts of material and money. Buyers search for the lowest price, fastest delivery and best service. In this respect it is an advantage that VLT is one of the few under its competitors to be known for being best service-orientated.

Application of the theory of Porters 5 Forces shows that it is fair to conclude that VLT is qua size in turnover in the middle of the peer pack. However there is still sufficient room for improvement in the Thai market that is obtainable for VLT improving their peer ranking in the process. Undertaking this expansion some changes in the existing infrastructure may be required. That is explained in this thesis.

VLT's limitation at this moment of time is the existing business environment in which only one market sector is served the Petrochemical downstream segment while sufficient other possibilities are not exploited at all. In the event important economical or organizational changes do happen, the sustainability will be in danger.

As result of my internal and external interviews with VLT staff, a competitor, and industrial insiders, I do believe that considerable improvement can be reached compared with the competition. VLT known in the market for good after sales service should move their 2-D approach towards 3-D, by appointing an sales engineer who consults clients in early stages of the project process. In all Diversification into other industrial markets, handling pipes made from other alloys. And entering the Distribution market is key for further expansion. The retail sales through "papa - mama" outlets is an entirely other segment of the market, nevertheless one that ensures long lasting continuity and profound sustainability. Once relationships are established: such a market easily can be dealt with through website (intranet) ordering and also by communication via telephone if additional support is required. A well-trained in house sales staff capable in providing adequate support to assuring up to date treatment of clients is in this case of immense importance.

From the twelve industrial sectors selected, most probably at least ten are relevant for market expansion, although I only could investigate four due to the limitation of time available. The following sectors are of immediate interest, these as Bio fuels, Cane and Sugar, and Power Plants

#### **Micro**

More than enough room does exist for VLT's expansion in the Thai market, for both approaches Diversification and Distribution. At this stage there is no need to penetrate into neighbouring countries. Attractive opportunities with little threat are in the bio fuel industry in which existing sales knowledge and experience do contribute. The SWOT and the internal VRIO analysis indicate that the internal infrastructure has to undergo a careful overhaul, preferably carried out before new employees are appointed. VLT started 18 years ago as a small Company that has grown rapidly without adjusting itself to its current size. Further growth requires comprehensive alterations of the infrastructure and is the first step to be undertaken. To improve leadership the application of Deming's PDCA-cycle theory at all levels will secure better performance and enhanced supervision. The hierarchical organization structure is too flat and should be more pyramidal. An assistant Manager qualified and capable to assist in various management tasks can manage the Company during absence of the GM. Stronger and more effective Management is required, with better control on performance and procurement. Additionally direct personal sales acquisition 'knocking on unfamiliar doors', and strategically planned sales-promotion is another precondition. Appointment of Business Developer and Sales Engineer is essential.

Besides Diversification it is recommended to develop the sales through channels of Distribution the profit margin may be less, but it certainly will lay the bottom in the enterprise's overhead expenses by covering a great part if not all of the day-to-day overhead expenses. A Thai native with good connections and business experience active in direct sales acquisition will be able to develop this market. I do remember from my meeting at the Thai Chamber of Commerce that ample possibilities are present, however all information presented to me was in Thai language and script. With an inventive approach and the right people in the right place the existing turnover can surely be multiplied in volume, leading to better profitability, greater sustainability, higher productivity, continuing expansion and quality employment.

VLT compared with its peers is quite efficient only 30+ employees create almost the same turnover as one of its peer with up to 100 employees. Profitability could not be compared, due to lack of financial information.

I presume with the presentation of this thesis the Principal and the seven sub questions put forward in this assignment are sufficiently answered. Nevertheless I remain available for to reply to any questions put forward and for providing additional information, if required.

### **Overall conclusion**

After careful investigation of the Global and Thai market for steel and pipes at the Macro level it is discovered that the market is still growing, which besides the USA also is the case in Asia, especially China is growing even faster to become world's largest producer and consumer for this segment. Although compared growth in Thailand is more modest, it still growth annually with 4% of GDP, which is reflected in the Meso analysis. Even clearer growth is noticed at the Thai trading level where VLT and some of its competitors increased their turnover between 10 and 20% over the last few years. As the Micro part of this investigation shows VLT needs to restructure itself in order to cope with further expansion in the market.

### **The answer to the Principal Question:**

*"To what extent should Van Leeuwen Pipe & Tube Thailand (VLT) strategically improve their market sustainability for the next 3 – 5 years by establishing their presence throughout Thailand?"*

It is encouraging that sufficiently and abundant new market possibilities are available that are within reach, once the organizational structure has been adapted as suggested. At this moment of time there is no need to expand into neighbouring countries. For its further extension active personal acquisition is a necessity. VLT is right in the middle of its peer pack and with their knowledge and good service providing reputation, must be well positioned to expand into other diversified markets and improve their Thai peer ranking.

Strategically sustainability will further improve by appointing a competent Business Developer. Moreover a technical sales engineer is recommended for the implementation of an innovative 3-D sales approach. And Next to Diversification it is suggested to enter the market for Distribution imposing even added long-lasting sustainability.

## 6. Recommendations

To maximize advantage of the results described in this thesis, it is suggested to make use of these and transform into deeds for which reason are put together within the outline of this Chapter as recommendation. These recommendations are based on my personal objective observations, excluded of any emotionality, subjectivity or third party's influences.

To take full advantage from the pioneering work undertaken and continuing to optimize its exploitation the acquired commercial leads need a follow-up, that were established on behalf of VLT as function of my interviews and investigations. Otherwise attractive opportunities for VLT may go lost.

It further is suggested to adapt the hierarchical structure and implement work rules with job descriptions. Because from interviews with staff members it became clear there were frequent complaints about the fact that everyone acts to his own liking. Also internal communication is found inadequate and needs improvement while better streamlining the work process through weekly staff meetings will contribute positively. For this reason is suggested to make this standard procedure in avoiding frequent made errors and subsequently improving on individual performance.

For enhanced supervision and leadership the Deming circle process: plan-do-check-act circle (PDCA-cycle), is recommended to become standard procedure for all managers, avoiding wasted time caused by vague instructions. Too often staff does not know who, why and how to perform their tasks.

For the desired increase of sales volume, the sales approach should change from passive into active, supported by targeted external sales promotions, necessary to enter unknown market segments. For example a Business Developer (BD) in charge could continue on the results of my investigations and follow-up on the leads created.

Further sales expansion lies in the application of channelled marketing through Distribution, which successfully could further be explored because sufficient positive indicators were obtained from my interviews at the Thai Chamber of Commerce. As a matter of fact VLT's largest peer company successfully applies this sales approach.

An improved and innovative sales approach could be created in transforming today's 2D after sales-service into 3D pre- and after-sales service by appointing a sales engineer to assist clients at an early stage with their project-development and execution in obtaining a better chance to acquire the Purchase Order (PO).

At the purchase side of the enterprise is suggested to combine the purchase power of the different Van Leeuwen entities in Asia in acquiring extra influence for better purchase conditions. As is discovered that almost all traders do purchase under the same conditions from often the same suppliers, whilst likely scale of economics could force better conditions.

For the storage of merchandize the warehouse management could be fine-tuned through sophisticated IT-systems, to create up-to-date monitoring of stock, avoiding squander on obsolete supplies. Because in 2007 the profit made, went lost due to write-down of obsolete merchandize that had to be sold against fire sale prices.

## 7. Reflections

Once studied the obtained information, an idea was acquired about the industrial sector of Thailand, that the possibilities shaped for the expansion of VLT and the changes that are required for its successful execution.

Personally I have the feeling that I have achieved an important contribution for VLT. When I came to the office of VLT, I felt like a newbie, someone with just theoretical knowledge. I honestly had no clue about business and its implications. Now having completed my assignment I feel more like a business professional, knowing the theory and being able to implement these in a practical manner in order to extract the maximum benefit out of both.

I also learnt that observing a Company from the outside is totally different as doing it from the inside. Although my assignment was concentrated on market research, which went quite well after finding the right people to communicate with, I became surprised with the internal infrastructure. I conducted several lengthy discussions with VLT's Management, but discovered that change of attitude was hard to come by.

Having a Company with 35 employees where 80% of the turnover is in the hands of one manager was quite appalling for me. Later on when writing my ethic paper I discovered that Managers do manage by figures, that is to say by the scored results, as long these improve year over year the manager is qualified being good. But Managing and Leading are two different aspects. Managers run departments but above them should stay a leader and that is not the case at VLT.

Back in Holland, I became informed that Mr. X within a month after my departure from VLT had resigned and went to work for an important competitor of VLT. Resulting in the dismissal of the General Manager. VLT has lost 80% of their turnover and that will not remain without repercussion.

I do realize with my assignment at VLT, that I was in the right place at the right time, obtaining a window of opportunity that tremendously has increased my practical experience and knowledge, not only by investigating the good aspects as usually, but even observing the bad and dangerous issues as well.

Viewing and understanding all these, I sincerely hope that my contribution for Market Diversification and Distribution will be implemented successfully and help my ex-VLT colleagues to overcome the occurred hurdle in time and that the obtainable and necessary improvement soon will be materialized.

I am grateful to Van Leeuwen Buizen having offered me this exceptional opportunity and hope to hear in due course positive news from them.

## References

### Books and Articles

- Ball, D., McCulloch, W., International Business; the challenge of global competition, 9th edition, McGraw-Hill, New York 2006
- Alsem, K. J. (2007), Strategic Marketing: An Applied Perspective (International Edition). McGraw-Hill
- Porter, M. E. (1980), *Competitive Strategy: Techniques for Analyzing Industries and Competitors*. New York: Simon & Schuster
- Porter, M. E. (1985), *Competitive Advantage: Creating and Sustaining Superior Performance*
- Porter, M. E. (1998), 'Clusters and the New Economics of Competition', Harvard Business Review, November-December
- Chisnall, P. M. (1997). Marketing Research. (5 ed.). Berkshire: McGraw-Hill Publishing Company.
- Shadish, W.R., Cook, T.D., Campbell, D.T., Experimental and Quasi-Experimental Designs for Generalized Causal Inference, 2002
- Terry Hill and Roy Westbrook, *SWOT Analysis: It's time for a product recall*, Long Range Planning, Vol. 30, No. pp. 46 to 52, 1997
- Deming, W.E., *Critical evaluations in business and management*, 1950
- Dessler, G., Farrow D.L., *Implementing a Successful Quality Improvement Programme in a Service Company: Winning the Deming Prize*, International Journal of Service Industry Management, Volume 1, Number 2, 1990.
- Yin, R. K. (2003). *Case Study Research Design and Methods*. (3rd ed.). California: Sage Publications
- Saunders, M., Lewis, P., & Thornhill, A. (2000). Research Methods for Business Students (2nd ed.). London: Pearson Education Limited
- Douglas McGregor (1960), The Human Side of Enterprise, McGraw-Hill
- Merchant, K.A. & Van der Stede, A. (2007). *Management Control Systems: Performance Measurement, Evaluation and Incentives*. Prentice Hall, Essex.
- Steiner, M. (1998), 'The discreet charm of clusters: an introduction' in M. Steiner (Ed.), Clusters and Regional Specialisation, London: Pion.
- Feldman, M. (2000) 'Location and Innovation: the new economic geography of innovation, spillovers and agglomeration' in GL Clark, M Feldman and M Gertler (Eds) Oxford Handboek of Economy Geography, Oxford: Oxford University Press.
- Renewable Energy in Thailand: Ethanol and Bio diesel, Edited by: The Department of Alternative Energy Development and Efficiency: Ministry of Energy
- Jutta Jarvinen, Elli PerMCn, Susanna Kaila-Stenberg, Eero Hyvarinen, Seppo Hyytiainen, and Juhani Tornqvist, *PDCA-cycle in Implementing Design for Environment in an R&D Unit of Nokia Telecommunications*

### Internet Websites

- <http://mediaserver.prweb.com/pdfdownload/536555/pr.pdf> (Visited: 02/04/08)
- <http://www.azobuild.com/news.asp?newsID=3967> (Visited: 03/04/08)
- [http://www.steel-grips.com/newsdesk/steel\\_prices/Global\\_steel\\_prices\\_set\\_for\\_double\\_digit\\_percentage\\_hikes\\_this\\_year.html](http://www.steel-grips.com/newsdesk/steel_prices/Global_steel_prices_set_for_double_digit_percentage_hikes_this_year.html) (Visited: 02/04/08)
- [http://www.steelguru.com/news/index/2008/02/29/MzgwNzU%3D/MEPS\\_forecast\\_steep\\_hike\\_in\\_global\\_steel\\_prices\\_in\\_2008.html](http://www.steelguru.com/news/index/2008/02/29/MzgwNzU%3D/MEPS_forecast_steep_hike_in_global_steel_prices_in_2008.html) (Visited: 10/04/08)
- <http://rusmet.com/news.php?id=13176> (Visited: 02/04/08)
- [www.bnet.com](http://www.bnet.com)

- Van Leeuwen website: [www.vanleeuwen.com](http://www.vanleeuwen.com)
- International Iron and Steel Institute: [www.worldsteel.org](http://www.worldsteel.org)
- Background Note: Thailand: <http://www.state.gov/r/pa/ei/bgn/2814.htm>
- Federation of Thai Industries: [www.fti.or.th](http://www.fti.or.th)
- Thai Chamber of Commerce: [www.thaiechamber.com](http://www.thaiechamber.com)
- The Office of Industrial Economics: [www.oie.go.th](http://www.oie.go.th)
- Cane and Sugar Industry Policy Bureau: [www.ocsb.go.th](http://www.ocsb.go.th)
- Energy Policy and Planning Office: [www.eppo.go.th](http://www.eppo.go.th)
- Board of Investment of Thailand: [www.boi.go.th](http://www.boi.go.th)
- Department of Industrial Works: [www.diw.go.th](http://www.diw.go.th)
- The Bank of Thailand: [www.bot.or.th](http://www.bot.or.th)
- Auto Alliance (Thailand): [www.aat.co.th](http://www.aat.co.th)
- Thai Auto Parts Manufacturers Association: [www.tapma.or.th](http://www.tapma.or.th)
- SCG Paper Co., Ltd. a subsidiary company of Siam Cement Group (<http://www.siamcement.com/en/index.php>)
- Advance Agro PCL.: <http://www.doublepaper.com/en/>
- The Publishers and Booksellers Association of Thailand (PUBAT): [www.pubat.or.th](http://www.pubat.or.th)
- Department of Alternative Energy Development and Efficiency (DEDE): [www.dede.go.th](http://www.dede.go.th)
- Electric and Electronics Institute: [www.thaieei.com](http://www.thaieei.com)
- Energy Information Administration: [www.eia.doe.gov](http://www.eia.doe.gov)

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- FTI: Wilailak Sirikum. E-mail: [information@off.fti.or.th](mailto:information@off.fti.or.th) or [wsirikum@hotmail.com](mailto:wsirikum@hotmail.com) Tel: 081-923-5400.
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- Lawan Sirisom: General Administration Office at the Office of the Board of Investment
- Supaporn Aunyawong: Director at Department of Industrial Works
- Kattiya Wisaratana: Senior Industrial Analyst at Office of Industrial Economics
- Khun Ladawan: Industrial Technical Officer at Office of Industrial Economics
- Viruch Kiattiboon: Sales executive at Double A paper
- Surachai Tantinikorn: Managing Director of Ur Mena Limited

#### **Staff Interviews**

- Mr. Joep de Vries (10-03-2008)
- Mr. Dachchai (11-03-2008)
- Jude Chee (12-03-2008)

- Ms. Aor (12-03-2008)
- Ms. Pam (13-03-2008)



## ***Annex 1 World Steel Outlook***

### **Global Market World Steel Outlook:**

#### **ANOTHER RECORD YEAR FOR GLOBAL STEEL PRODUCTION IN 2008**

MEPS forecasts for world steel production in 2008 at 1420 million tonnes. This equates to a 5.7 percent increase on predicted output of 1343.5 million tonnes in 2007. Over the past twelve months while demand continued to be firm, with output rising by approximately 7.5 percent.

Blast furnace iron making in 2008 is forecast to top 1000 million tonnes - 6 percent up on anticipated figure of around 946 million tonnes in 2007. This represents a gain of 8 percent over the 2006 output. A substantial rise is also foreseen for direct reduced iron manufacturing in 2008 after significant improvement in the previous twelve months.

EU-27 steel production in 2007 is now expected to be approximately 210 million tonnes. Our forecast for 2008 is marginally higher at 215 million tonnes. We envisage quite stable demand but the domestic producers should claw back some of the previous year's consumption lost to third country suppliers.

Steel demand in the rest of Europe expanded by almost 2.5 million tonnes in 2007. Strong demand in Turkey was the main driver for this advance.

Crude steel production in the former USSR in 2007 is predicted to be significantly above 124 million tonnes - up by almost 4 percent, year on year. A further substantial improvement is forecast for 2008 - rising to in excess of 130 million tonnes in the region.

NAFTA steel production in 2007 will be near to 133 million tonnes - one percent up on the prior year. Further similar improvement is forecast for 2008 now that third country imports are restricted due to the weakness of the US dollar.

Steel production in South America will be near to 48 million tonnes in 2007 - up 6 percent on the year earlier figure. This improvement is mainly due to rising local demand. Further growth to near 52 million tonnes is expected for 2008. Another substantial improvement is anticipated for same year as new capacity comes on stream and furnace relines are limited.

Production of steel in the Middle East is increasing briskly. Demand is accelerating at a rapid pace. Output in 2007 will be one million tonnes up on the year earlier figure. Gains of more than 2 million tonnes are forecast for 2008.

Steel output in the Asian region will be above 750 million tonnes in 2007 - rising to in excess of 800 million tonnes in the following twelve month period of 2008. Consumption from the construction industries is the main driver for this continued substantial improvement.

Steel manufacturing will be marginally higher in Australia in 2007. Further modest improvement is forecasted for 2008.  
Source: MEPS - World Steel Outlook

### **Annex 1.1**

#### **Changing Dynamics of the Global Steel Market:**

The global steel industry is at the crossroads. China ranked first in terms of steel demand. Excess demand in China finally led to a worldwide boom in the steel industry. Several changes are visible in steel business such as consolidation of business with the consequent resurgence of an oligopoly (dominated by a few large suppliers) market structure from a near-competitive steel market. In this changing market situation, China has emerged as the leader while big prospects also exist in India. Economic reforms and industry-led economic growth of China have led to huge consumption of steel on a constant basis. Unlike China, India's economic growth has been led by the services sector resulting in a low level of steel demand. However, following the initiation of economic reforms, steel demand has picked up in India. Projections are being made for India's future steel demand up to 2019-20. The lessons from the Chinese experience have been utilized to suggest policy measures to be introduced to boost steel demand in India so as to reach the projected levels. It is expected that steel demand in India would pick up and China would meet its own demand through its domestic capacity and would be a net exporter by 2019-20. This could result in radical changes in the steel technology and distribution in the developed world. Stringent environmental norms may pose serious constraints to steel units in the USA and UK to go in for major up gradation, except for the rolling mill projects. Meanwhile, some new trends are visible in steel business. Some steelmakers of the developed world are closing down some mills/units in their countries and setting up plants in the developing world to cope with the changing steel business.

Source: Icfai Journal of Industrial Economics

### **Annex 1.2**

#### **Global Steel Prices set for double digit percentage hikes in 2008:**

[http://www.steel-grips.com/newsdesk/steel\\_prices/Global\\_steel\\_prices\\_set\\_for\\_double\\_digit\\_percentage\\_hikes\\_this\\_year.html](http://www.steel-grips.com/newsdesk/steel_prices/Global_steel_prices_set_for_double_digit_percentage_hikes_this_year.html)

US mills appear to have problems with their delivery lead times which stretch out to two month. Customers need to refill stocks as there is very little imported steel at present, although this could change later this year. Inventories at the service centres have declined but business is not so robust. However, profit margins are said to be stable. Mill transaction prices have rose since January 2008, this because of volatile input costs and transport charges and higher energy. The major steelmakers have all announced further, substantial hikes for second quarter -2008- supplies.

By inclement weather in late January and early February 2008 the supply was badly restricted in China. Since then, domestic prices have had positive developments resulting in good demand and low stock levels.

In Japan, flat product (such as coils and sheets) demand is strong from auto and electrical appliance makers but the distribution sector is weak. Nevertheless, stocks are gradually reducing. At the end of January, Dockside stocks of imported flat products, declined once again, the fourth consecutive month, as overseas suppliers diverted goods to their domestic markets or more lucrative export ones. Because of significant price hikes expected for the second trimester of this year, the buying activity has picked up. Market prices are already moving up as a result.

Posco Steel finally announced it would ramp up South Korean prices for hot and cold rolled coil and also heavy plate destined for non-shipbuilding applications, effective February 1, 2008. On April 1, 2008 Posco once again increased their price as they "agreed to the sharp rise in coking coal contract prices after concerns that floods in Australia could reduce supplies."  
(The Economic Times; *Steel may cost more as Posco revises raw material prices*)

Imports are not-sufficient and so customers are ready to accept these planned price increases in the second trimester. West European mills are also benefiting from a lack of competitive third country imports. Low inventories at distributors need to be replenished. Buyers are accepting that prices must go up as producers try to recover higher input costs.  
Source: MEPS

For more graphical information about World Steel is referred to de PDF file: **World Steel in Figures 2007** from IISI

### Annex 1.3

#### Short Range Outlook for the Global Steel Market:

The International Iron and Steel Institute (IISI) forecasts 2008 will still be another strong year for the steel industry with apparent steel use rising from 1,202 million metric tons (mmt) in 2007 to 1,282 mmt in 2008, an increase of 6.7%. New projections for 2009 suggest a global growth rate of 6.3%. The underlying assumption behind this forecast is that although some weakening in the US and EU economies is expected, demand for steel will remain healthy thanks in part to the emerging markets which will maintain their own dynamism."

The **BRIC** (Brazil, Russia, India and China) countries will again be leading the growth with an expected increase of 11.1% for 2008 and 10.3% for 2009. However, as steel demand growth increases in other emerging countries, the large gap in growth rate - that we have come to expect in recent times - between BRIC countries and the rest of the world (ROW) will narrow.

**China** apparent steel use is expected to grow by 11.5% in 2008 and 10.0% in 2009, accounting for 35% of the world total in 2008. This is expected to reach 36.7% of world total by 2009. For India, forecasts for apparent steel use point to an increase of 8.9% in 2008 and 12.1% in 2009.

Growth in the **Russian** market is forecasted to remain strong with 10.2% for 2008 and 11.2% for 2009, led mainly by the energy and construction sectors. Apparent steel use in Brazil is expected to increase by 10.3% for 2008 and 8.9% for 2009, reflecting strong growth in the automotive, construction and engineering sectors.

In the **EU (27)**, the growth in steel demand is predicted to continue at a more modest pace, following 2007 adjustments in inventory positions, leading to growth of 1.6% in 2008 and 2.3% in 2009.

2007 apparent steel use in the **NAFTA** region showed negative growth of -9.1% due to the slowing economy, inventory liquidation and decreased imports. 2008 will show a more stable position despite the weak uncertain economy leading to a positive growth forecast of 1.9% and 1.0% for 2009.

Source: International Iron and Steel Institute (IISI) dated 14 Apr. 2008

<http://mediaserver.prweb.com/pdfdownload/536555/pr.pdf> (Visited: 02/04/08)

<http://www.azobuild.com/news.asp?newsID=3967> (Visited: 03/04/08)

[http://www.steel-grips.com/newsdesk/steel\\_prices/Global\\_steel\\_prices\\_set\\_for\\_double\\_digit\\_percentage\\_hikes\\_this\\_year.html](http://www.steel-grips.com/newsdesk/steel_prices/Global_steel_prices_set_for_double_digit_percentage_hikes_this_year.html)  
(Visited: 02/04/08)

<http://www.steelguru.com/news/index/2008/02/29/MzgwNzU%3D/>

[MEPS forecast steep hike in global steel prices in 2008.html](#) (Visited: 10/04/08)

<http://rusmet.com/news.php?id=13176> (Visited: 02/04/08)

## ***Annex 2* Thailand's Economical Development Plans**

In the early 1970s, the government started to adopt the export promotion strategies. This type of export-led growth has continued to dominate the industrialization in Thailand up to the present day. Along with export promotion, the policy on dispersing the industrial activities was also emphasized. In 1972, the Industrial Estate Authority of Thailand (IEAT) was established as the state enterprise under the Ministry of Industry to promote the creation of industrial estate in different regions of the country. Nevertheless, in the 1970s, most of industrial estates were still located in provinces near Bangkok, due to the better infrastructure and the proximity to the largest market of the country.

During the 1980s, one important element in Thailand's industrial development was the development of the eastern seaboard as one of the major industrial zones due to the discovery of natural gas in the Gulf of Thailand. A number of petrochemical and steel as well as the light and exporting industry plants were set up in the Mat Taput industrial estate and in the Laem Chabang industrial estate. Nevertheless, Thailand was still essentially an agricultural country in 1980. However industrialization grew rapidly, especially in the end of 1980s. Around 1986, the industrial production had, for the first time, exceeded the agriculture production in its contribution to GDP.

Rapid growth in the manufacturing sectors has been accompanied with the country's double-digit growth during 1988-1990. In general, it was explained in many literatures that not only the internal factors contributed for such a high level of growth, the world economic environment had also been favourable to Thailand's rapid growth. The favourable environments included, for example, the growing market for Thai products and the existence of appropriate technology for labour-intensive industry that accommodate the transfer of production units from foreign countries such as Japan, Taiwan and South Korea to Thailand.

In addition, the sharp revaluation of the Japanese Yen in 1986, which had followed by revaluation of other Newly Industrialized Countries (NICs) currencies, played an important role in stimulating Thailand's exports and FDI. In addition to the revaluation in those mentioned countries, the soaring of domestic land prices and labour costs had encouraged firms from those countries to shift their certain operations abroad. Thailand was one of the countries well placed to benefit from these flows of investment.

During the 1990s, the industrial development policy still was emphasized on the promotion of manufactured exports and the dispersion of industrial activities. The concentration of industrial activities around Bangkok and its vicinities were still the problem in 1990s. The industrial activities in BMAs have accounted for over 75 per cent of the whole valued added produced by the industrial sectors in the country.

In the seventh plan (1992-1996) more developed provinces in each regions i.e., Chang Mai in the North, Khon Kaen and Nakhon Ratchasima in the North East, and Songkla and Surat Thani in the South were specified as centres for regional development. Although many factories have moved to these provinces, the concentration of industrial activities has still been considerably high in the Bangkok Metropolitan Area.

In the eighth development plan (1997-2001), Thai economy plunged into the worst recession of the post war period in 1997. Many argue that the crisis was the cumulative effect of a number of structural weaknesses. Among these structural weaknesses were the loss of competitiveness of Thai products in the world market and the failure of governance institutions in both the private and public sectors to adapt to rapid changes of globalization. In response, the Industrial Restructuring Program (IRP), aimed at improving the long-term capabilities of 13 broad industrial sectors, was initiated in 1998.

In the ninth economic plan (2002-2006) is set to focus on enhancing international competitiveness, science and technology, manpower development, environmental protection, promotion of small and rural industries, co-operation with neighbouring countries in the industrial development and continued industrial restructuring to cope with the changing world economic environment.

At present, the tenth economic plan (2007-2012) is set to emphasize happiness, environmental quality (green), and self-sufficiency. Through market forces, and Government guidance, Thailand is increasingly becoming a more amenity-based and specialized economy. Successful development in Thailand will require higher quality landscapes and better natural resource management, as well as increased clustering of specialized activities to benefit from agglomeration and creation of learning communities. (Doug Webster)

### ***Annex 3 VLT's Competitors***

Information obtained about VLT's competitors can be summarised as follow:

**Roj Paiboon (RP):** Is a quantity wholesaler, which solely concentrates in general on bulk sales. They have a similar product range as Van Leeuwen, although they also trade exclusively approved stainless steel Pipes manufactured by Sumitomo in Japan. RP is an ISO 9001 certified company meaning that their work process is standardised, but does not implicate that they always do sell products of superior quality. In all probability they use the "ISO 9001 certification" as a marketing tool.

In addition to the approved pipes they too trade in non-approved Chinese brands, which are not used in the petrochemical industry because these are not of approved quality brands.

Their sales approach is quite straightforward; the sales promotion is of the 'old school' business model by word of mouth. And, the operational approach is more like a supermarket, for everyone the same price. They don't have any additional customer service in their sales approach, such as project management on which VLT thrives.

The Company has 5 warehouses in the following locations: 1 in Chang Mai (North), 3 in Nakhon Prathom (West of Bangkok) and 1 in Rayong (South East). The Main Office is located in Bangkok.

Their estimated sales turnover is about 2,300 million Baht, roughly three times VLT's 2007 turnover.

Their market position can be qualified as competently introduced in the industry. Good reputation well represented in Thailand, do have experienced sales staff, specialised engineers and is in general capable staffed. For more information view their Website: [www.rojpaiboon.co.th](http://www.rojpaiboon.co.th)

**S.A. Petrotech:** Is primarily dedicated in selling pipes in the Rayong Petrochemical area. They care for their clients, by assisting in their projects, maintain similar sales approach as VLT. They only sell pipes from Romania (Mittal), which are not of top quality. They supply material and spare parts for upstream, downstream, power plants, to industries particularly located in the Eastern Seaboard project of Thailand.

Company location: Warehouse in Rayong, and Office in Bangkok

Sales turnover (estimated) at: 1,852 million Baht, thus about twice the size of VLT.

Market attitude: They are well introduced in only Rayong area, and are like VLT: project orientated. Website: [www.sapetrotech.co.th](http://www.sapetrotech.co.th)

**Petchem:** Does not keep very much in stock. It is more a trading company, they do stock some stainless steel pipes. Similar to RP they also have an ISO 9001 certification. Sell atypical materials (alloy metals) provide actual customised products and services. They do quite a good job because of their European boss, resulting in the fact that they can communicate with foreign suppliers and customers. Sales program and product range is not similar or comparable to Van Leeuwen's program. Although they are already active in some industries, which VLT also could approach, such as: Paper & Pulp and Power & Energy plants.

Company location: Rayong

Sales turnover (estimated) at: 763 million Baht, about the same size as VLT.

Market stance: Well known in alloy metal pipes and other products. "Company's aim is to maximise customer satisfaction with assured quality products and services". Website: [www.petchem.co.th](http://www.petchem.co.th)

**Delta Metal:** Owned by Singaporean SSH Corporation. Operating quite regionally. Maintain little stock, and only buy from Singaporean Companies. Compared with VLT's branch in Singapore they are rather small in size. VLT-Singapore is much superior for example they maintain 3 warehouses. However Delta Metal does have the same range of products bought from the same suppliers as VLT.

Company location: Rayong

Sales turnover (estimated) at: 245 million Baht, about one-quarter – one-third's VLT's.

**Ur Mena:** Actually VLT helped them to grow-up by providing them with orders. Ur Mena basically buys pipes from VLT at discounted prices, done with the intention that VLT could get rid of some over due stock. They recently opened a new warehouse. And are directly buying pipes from Mittal- Romania. Further they also acquire pipes from other traders and above and beyond cheap Chinese pipes. They are too small to deal directly with the mills. No customer service is provided.

Company location: Bangkok

Sales turnover (estimated) at: 237 million Baht, about one-third the size of VLT.

Number of employees directly employed: 51 - 200

Market stance: Not very well introduced, don't maintain relations with approved brand mills and consequently have to purchase their pipes from other traders.

**Petrochem:** They are very small in size. More like a sort King-sized 'papa mama' retail shop. And buy their pipes from other locally established wholesalers.

Company location: Rayong

Sales turnover (estimated) at: 179 million Baht

## ***Annex 4 Barriers***

### **Barrier Specification:**

A high capital necessity is required to set-up a stockist (trade) company in Thailand. The initial capital to be invested in amongst others a warehouse, office facilities, staff and basic materials to be held in stock.

Good Business Contacts in this market is an advantage and actually a must, as without these it is very difficult to locate potential customers. Also having good contacts at the suppliers' side will be of great advantage as with volume buying it becomes easier to negotiate better prices. Specific knowledge of the market is not an immediate must as this can be learned through systematic market exploration.

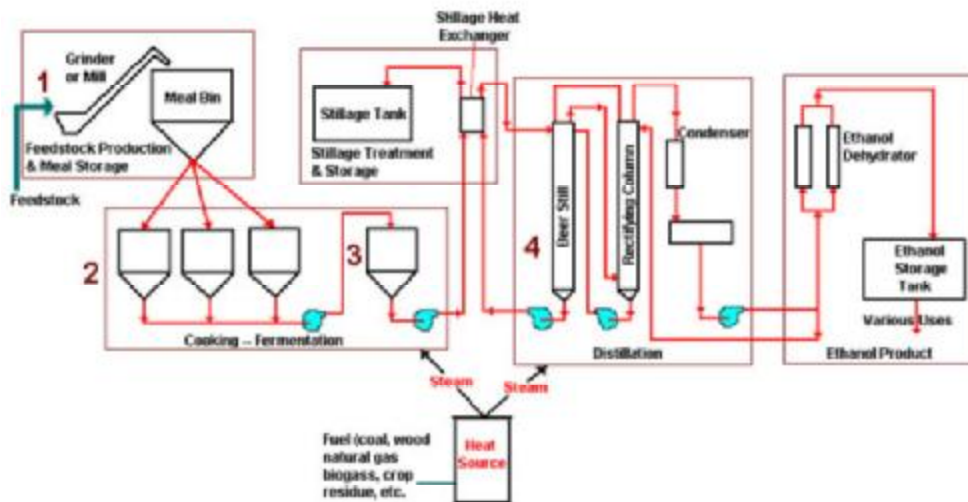
Van Leeuwen encountered little or no difficulty to enter the market in Thailand in 1989, as at that time the marketplace was not saturated. VLT gained rapid reputation with foreign engineering bureau's and companies and became quickly recognised by Thai firms. As VLT's approach is very much service orientated many clients prefer to deal with VLT than with its competitors.

Resuming the barriers for entry is not extremely high; the only need is capital (approximate \$1 million) to start buying and selling pipes. In essence everyone can set up a pipe stockist company, however over time this market sector has become increasingly saturated, and consequently less attractive for new entries.

### **Barriers of entry in order:**

- Initial business capital (for material in stock)
- Warehouse investment and facilities
- Hiring capable staff and paying salaries
- Business contacts in the market
- Supplier relationship
- Good Reputation and Public Relations
- Profound application knowledge
- Project execution abilities for supplementary service management

## Annex 5 Production Process of Ethanol



Production Process of Ethanol

### 1. Feed-stock preparation:

- sugarcane or sorghum must be crushed to extract their simple sugars.
- Starchy and cellulose materials must be physically broken down by milling or grinding to break starch walls so that the material is available to water. Later steps break down the individual cell walls of the starch.
- Cooking

Starches are converted to sugars in two stages, liquefaction and saccharification, by adding water, enzymes, and heat (enzymatic hydrolysis).

### 2. Fermentation:

At this point the starch has been broken down to the simple sugar glucose and is now in a form, which micro-organisms called yeast's can feed on. Yeast's, in metabolising glucose, produce ethanol and carbon dioxide. As with the enzymes, yeast's have an optimum temperature range.

- The mash is transferred to the fermentation tank and cooled to the optimum temperature (around 80 - 90°F). Care has to be taken to assure that no infection (other organisms that compete with the yeast for the glucose) occurs.
- The appropriate proportion of yeast is added.
- The yeast will begin producing alcohol and should turn the mash into a "beer of 8-12 percent alcohol and then become inactive as the alcohol content becomes too high".

The mash is now ready for distillation. Separating the liquid beer from the solids of the mash stillage at this stage will help prevent possible clogging problems during distillation.

### 3. Distillation:

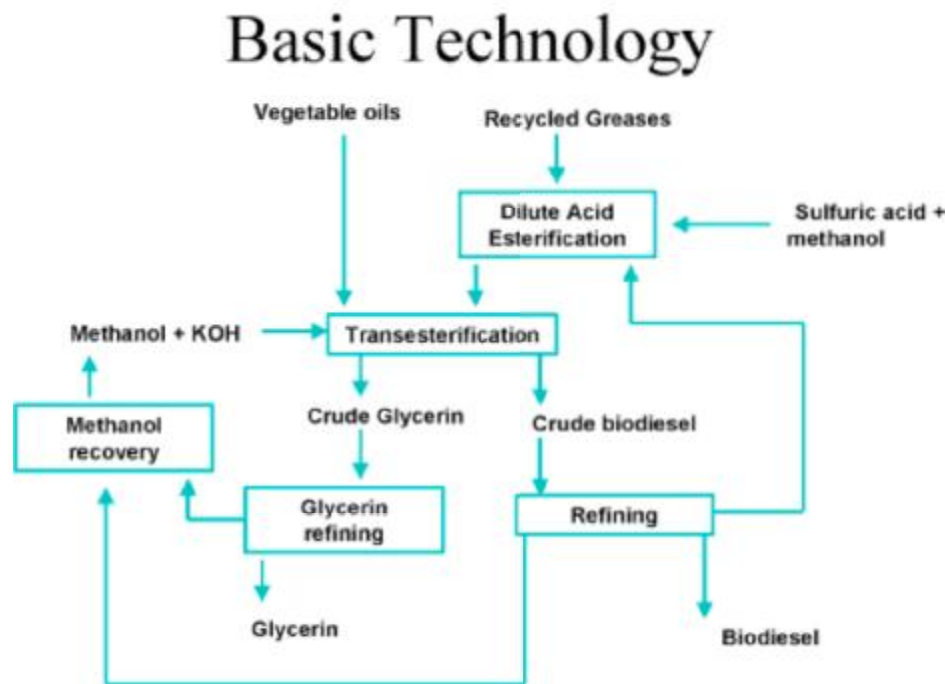
Distillation separates the ethanol from the beer, which is mostly water and ethanol. (in some alcohol plants, distillation takes place in one, very tall column; the process diagrammed above uses two separate columns, a stripper column and a rectifying column).

Ethanol boils at 172°F ( at sea level), while water boils at 212°F. By heating the beer to 172°F, the ethanol can be boiled off and the vapour captured and condensed to produce 192-proof (96 percent) ethanol concentration producible by conventional distillation. 200-proof (anhydrous) alcohol (which is required for blending gasohol) can be obtained through additional dehydration steps. Lower-grade ethanol (170-190 proof) can be used by itself in vehicles modified for alcohol use.

(Information from: [http://dnr.louisiana.gov/sec/execdiv/TECHASMT/alternative\\_fuels/ethanol/fuel\\_alcohol\\_1987/015.htm](http://dnr.louisiana.gov/sec/execdiv/TECHASMT/alternative_fuels/ethanol/fuel_alcohol_1987/015.htm))



## *Annex 6 Production process of Biodiesel*



### **Transesterification**

While adding the base, slight excess is factored in to provide the catalyst for the transesterification.

The calculated quantity of base (usually sodium hydroxide) is added slowly to the alcohol and it is stirred until it dissolves. Sufficient alcohol is added to make up three full equivalents of the triglyceride, and an excess of usually six parts alcohol to one part triglyceride is added to drive the reaction to completion.

The solution of sodium hydroxide in the alcohol is then added to a warm solution of the waste oil, and the mixture is heated (typically 50 °C) for several hours (4 to 8 typically) to allow the transesterification to proceed. A condenser may be used to prevent the evaporative losses of the alcohol. Care must be taken not to create a closed system, which can explode.

### **Final process**

The lower layer of the process is composed primarily of glycerine and other waste products. The top layer, a mixture of biodiesel and alcohol, is decanted. The excess alcohol can be distilled off, or it can be extracted with water. If the latter, the biodiesel should be dried by distillation or with a drying agent.

Source: [http://en.wikipedia.org/wiki/Biodiesel\\_processor](http://en.wikipedia.org/wiki/Biodiesel_processor)

### ***Annex 7 Industrial Situation on Ethanol and Biodiesel***

#### **A Brief description of the Industrial Situation in Thailand on Ethanol and Biodiesel**

	<b>Sugarcane</b>	<b>Sugar</b>	<b>Ethanol Plants</b>	<b>Palm oil</b>	<b>Biodiesel Plants</b>	<b>Soybean</b>
Plantation area (Rai)	6314295			2663252		873300
Production (Ton)	64365482	6694010		6613439		213579
Yield (Kg./Rai)	10194			2483		245
No. of Factory		46	7 (12 under construction)	40 (distillation) 10 (refinery)	6	
Capacity (Ton)		644,431 of sugarcane a day	955,000 L/day	1,750 an hour (distillation) 4,700 a day (refinery)	1,040,000 L/day	
Top 5 provinces as the largest producers	Kanchanaburi, Nakhon Sawan, Nakhon Ratchasima, KhonKaen, Kamphaeng Phet		Khon Kaen, Nakhon Phatom, Supanburi, Chaiyaphum, Kanchanaburi	Krabi, Surat Thani, Chumphon, Satun, Trang	Krabi, Satun Thani, Trang.	Chiang Mai, Phrae, Chaiyaphum, Loei, Mae Hong Son



## ***Annex 8 Industrial Sectors***

**Industrial sectors relevant for the use of pipes in more detail:**

### **Gasohol use in Thailand:**

- 2006: average 3.5 M lt/day
- 2007: average 4.8 M lt/day
- 2008: as of Mar08: 7.42 M lt/day
- The target is a consumption of 12 M lt/day with E20 (20% ethanol, 80% gasoline 95) for which distribution started last January 2008.

### **Target for 2011:**

- The utilization target for ethanol fuel is: 2.4 M lt/day = gasohol ~24 M lt/day

### **Supportive Measures:**

In order to invigorate investments in this industry a number of stimulating measures and supports are designed, Khun Nattapon, the Director of Cane and Sugar Board let me know the following measures are implemented:

### **Price measure as:**

- Tax mechanism to make gasohol cheaper than gasoline
- Increase of sales margin for distributors.

### **Governmental support as:**

- Creation of ethanol plants and distribution are liberalized
- Support in R&D on increasing ethanol feedstock yields
- Supporting the production, utilization and distribution of E10, E20 & E85.

### **The Benefits of biodiesel:**

- A 1-2% blend of biodiesel with diesel raises lubrication index.
- More efficient combustion, as biodiesel contains around 10% by volume of oxygen.
- Despite the 10% lower heating value of biodiesel to diesel, no significant impact in engine power is felt thanks to a better combustion.
- Air pollution diminishes due to better engine combustion by biodiesel fuel.
- Since it is derived from plants, the use of biodiesel reduces greenhouse gas emission.
- Biodiesel derived from used cooking oil automatically cuts down on the reuse of cooking oil and prevents used cooking oil from being used in animal feed, or discarded via the drain system.
- The creation of an energy market out of surplus agricultural produce implies more rural jobs.
- The use of biodiesel reduces the import of crude oil.
- To make use of domestically produced biodiesel enhances national energy security and stability.

The target for the Thai government is to:

- Reduce diesel consumption by 5% in 2012.
- Use of biodiesel and diesel mixture (March 2008): B2 (2% biodiesel and 98% diesel) = 42.90 M lt/day (Jan. 2007); B5 (5:95) = 7.52 M lt/day (starting July 2008), equal to use of B100 = 1.29 M lt/day.
- Target use of B100 = 3 M lt/day in 2011.
- Production of B100 (as of March 2008): 9 plants with installed capacity of 2.18 M lt/day. Actual production (February 2008): average 1.29 M lt/day

The projected reduction in diesel consumption, combined with the use of ethanol and natural gas for vehicles, could help the country save around 18% on consumption of petroleum-based motor fuels, according to the Ministry of Energy.

The daily consumption of diesel in Thailand amounts to around 55 million litres whereas that of gasoline amounts to only 20 million litres. Roughly 85% of this quantity has to be imported. Clearly, if world oil prices continue their volatile rising trend, all economic sectors in this nation would be harmed.

Ethanol and biodiesel are examples of appropriate conversions of agricultural produce into fuels, serving Thailand as a country to lessen their reliance on imported oil, mitigating the impacts of volatile high oil prices, enhancing Thai energy security - and, above all, solving recurrent problems of agricultural produce surpluses and depressed prices as Khun Nattapon has told me.

In Annex 5 a table shows figures of sugar, sugarcane and palm-oil production with the number of existing bio-fuel plants.

## **Natural Gas**

### **Exploration and Production:**

There are several ongoing projects that will increase Thailand's natural gas supplies in the next few years. The largest of these is PTTEP's Arthit project, which is off the coast of Songkhla, about 350 miles south of Bangkok. The company expects to start production at the main Arthit field during the first quarter of 2008 at a rate of 330 million cubic feet per day (MMcf/d). PTTEP was originally scheduled to bring the field online in April 2007, but the company stated that equipment shortages would delay the start-up. PTTEP also has plans to begin natural gas production from the Arthit North field during the second half of 2008, initially producing at a rate of 120 MMcf/d.

### **Pipelines:**

Whereas Thailand's oil pipeline system is rather limited in scale, the country's natural gas transmission infrastructure is much more advanced. PTT Natural Gas Distribution (PTTNGD) currently has more than 2,300 miles of total natural gas transmission pipelines throughout the country. Thailand has two major natural gas pipelines linking the offshore Erawan field with Rayong, with a combined capacity of 2.65 Bcf/d. PTTNGD completed construction on the country's third major natural gas pipeline in early 2007, which will pump natural gas from the new Arthit project to the east coast town of Pattaya. The line will have an initial capacity to handle 700 MMcf/d, eventually expanding to 1.9 Bcf/d in late 2008, when PTT installs a compressor unit. However, the company expects that the pipeline will only run at 60 percent capacity for 2007 and 2008, and is expected to run at its full 1.9 Bcf/d capacity beginning in 2010. However I also have been informed that in the near future new projects are due in Thailand and Malaysia.

PTT is the exclusive Buyer and Distributor Company of NG in Thailand. The principal customer is EGAT (Electricity Generating Authority of Thailand), engaged in Thailand for 70% of total power use. Anyway, NG is for 99% explored in the gulf of Thailand.

### **Paper and Pulp**

Khun Ladawan further assumed that once the paper mill was in operation, it would require all of the current pulp production and the company would not have pulp left for the export. Therefore, PPC needs to increase their pulp production capacity that is scheduled to become available in 2010.

"We want to maintain our exports. Currently pulp prices are very good and have kept increasing over the past two years," he said.

The company expects to double its annual revenue to eight billion baht (€160 million) when its paper mill is fully operational next year.

This year, it expects revenue to approach five billion baht (€99.6 million), up from four billion last year thanks to the increase in domestic demand and rising pulp prices.

Apart from PPC, SCG also operates two other pulp factories in Ratchaburi and Kanchanaburi with a combined capacity of 240,000 tones per year.

At the moment there are 5 medium to large paper and pulp plants in Thailand, PPC and Advance Agro (Double A) being the two biggest, located in the following areas: PPC in Khon Kaen, Double A in Prachinburi, and the other three in Ratchaburi, Ayutthaya and Kanchanaburi.

While the economy slowed down during 2005, the trend for the pulp and paper materials still is good because of the increasing demand for paper caused by the new information era. Since concern for the environment has had a major impact on the reducing demand of plastic, which caused a shift away from plastic toward paper packaging that boosted the demand for pulp and paper.

The prospect for the coming future is an on going growth of the paper and pulp industry, both nationally and in international markets. The factors that are stimulating this growth are:

1. Government policies that support the production of inexpensive printed materials for the general public to encourage learning, and promoting Thailand as a publishing base, through consideration of tax reductions on more than 100 items at all phases in the production of books and printed materials, from initial processes to end product to increase competitiveness of Thai publishers;
2. The industry cluster strategy as outlined in the National Social and Economic Development Plan (2005-2009) and the goal of making Thailand the regional printing hub by the year 2015;
3. The trading cluster strategy aimed at expanding trading networks for Thai printers;
4. Creation of the Sinsakorn Print and Packaging Industry Estate, which will enable printing houses to reduce production and management costs through cluster networks and complete supply chain services.

### Annex 9 BOI investment results

### Total Investment

	2008	2007
Total investment (no. of projects)	1,220	1,343
<b>Total investment (Mil. Baht)</b>	<b>373,508</b>	<b>744,491</b>
Total Foreign Investment (no. of projects) <sup>1)</sup>	751	836
Total Foreign Investment Value (Mil. Baht)	266,643	505,612
- 100% Foreign (no. of projects)	404	479
- 100% Foreign (Mil. Baht)	124,291	238,904
- Joint-Venture (no. of projects) <sup>2)</sup>	347	357
- Joint-Venture (Mil. Baht)	142,352	267,608
100% Thai (no. of projects)	436	452
100% Thai (Mil. Baht)	91,160	220,369
Other Investment (no. of projects) <sup>3)</sup>	33	54
Other Investment (Mil. Baht)	15,704	18,510

Data from Bol

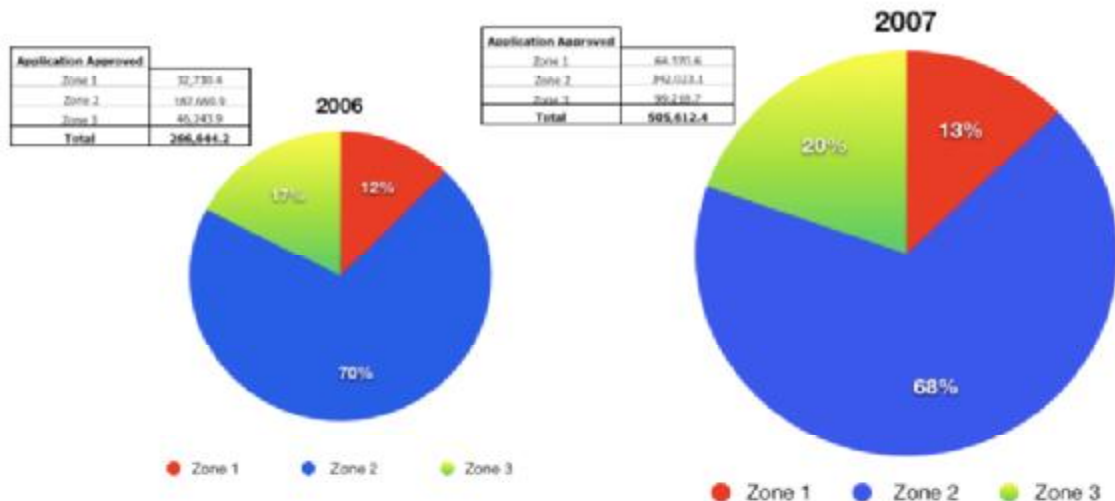
### Foreign Investment Projects Approved by BOI Classified by Sector

Sector	Year	2006		2007	
		No. of Projects	Investment	No. of Projects	Investment
<b>Agricultural Products</b>		<b>39</b>	<b>11,151.8</b>	<b>43</b>	<b>23,414.8</b>
- Food				28	8,272.7
- Bio fuel				4	11,967.7
- Rubber				4	1,269.7
<b>Minerals and Ceramics</b>		<b>21</b>	<b>2,544.3</b>	<b>28</b>	<b>32,378.8</b>
<b>Light Industries/Textiles</b>		<b>75</b>	<b>9,360.7</b>	<b>98</b>	<b>9,442.2</b>
<b>Metal Products and Machinery</b>		<b>232</b>	<b>34,239.3</b>	<b>212</b>	<b>112,919.6</b>
- Auto				80	96,254.8
<b>Electric and Electronic Products</b>		<b>166</b>	<b>57,038.2</b>	<b>175</b>	<b>100,269.6</b>
<b>Chemicals and Paper (Total)</b>		<b>81</b>	<b>100,696.4</b>	<b>114</b>	<b>96,453.3</b>
- Paper				1	7,369.4
- Chemicals (incl. Petrochem. and oil refinery)				113	74,883.2
<b>Services</b>		<b>137</b>	<b>30,772.9</b>	<b>206</b>	<b>121,606.1</b>
<b>Total</b>		<b>751</b>	<b>266,643.6</b>	<b>836</b>	<b>505,612.4</b>

- 5 Ethanol plants: 13.7 billion baht  
 - Goodyear Tires: 778 million baht  
 - Auto Alliance (AT): 26.8 Billion Baht  
 - 72 Auto parts manufacturers  
 - DOUBLE A PAPER CO., LTD.: 22426 Baht  
 - PET. NG separation plant: 28.4 Billion Baht  
 - SUEH POLYETHYLENE CO., LTD.: 29 Billion Baht  
 - Glow Energy Public (Thailand): Inc. Plant: 3.7 Billion Baht  
 - KANTONG REFINERY PUBLIC CO., LTD.: 88.6 Billion Baht

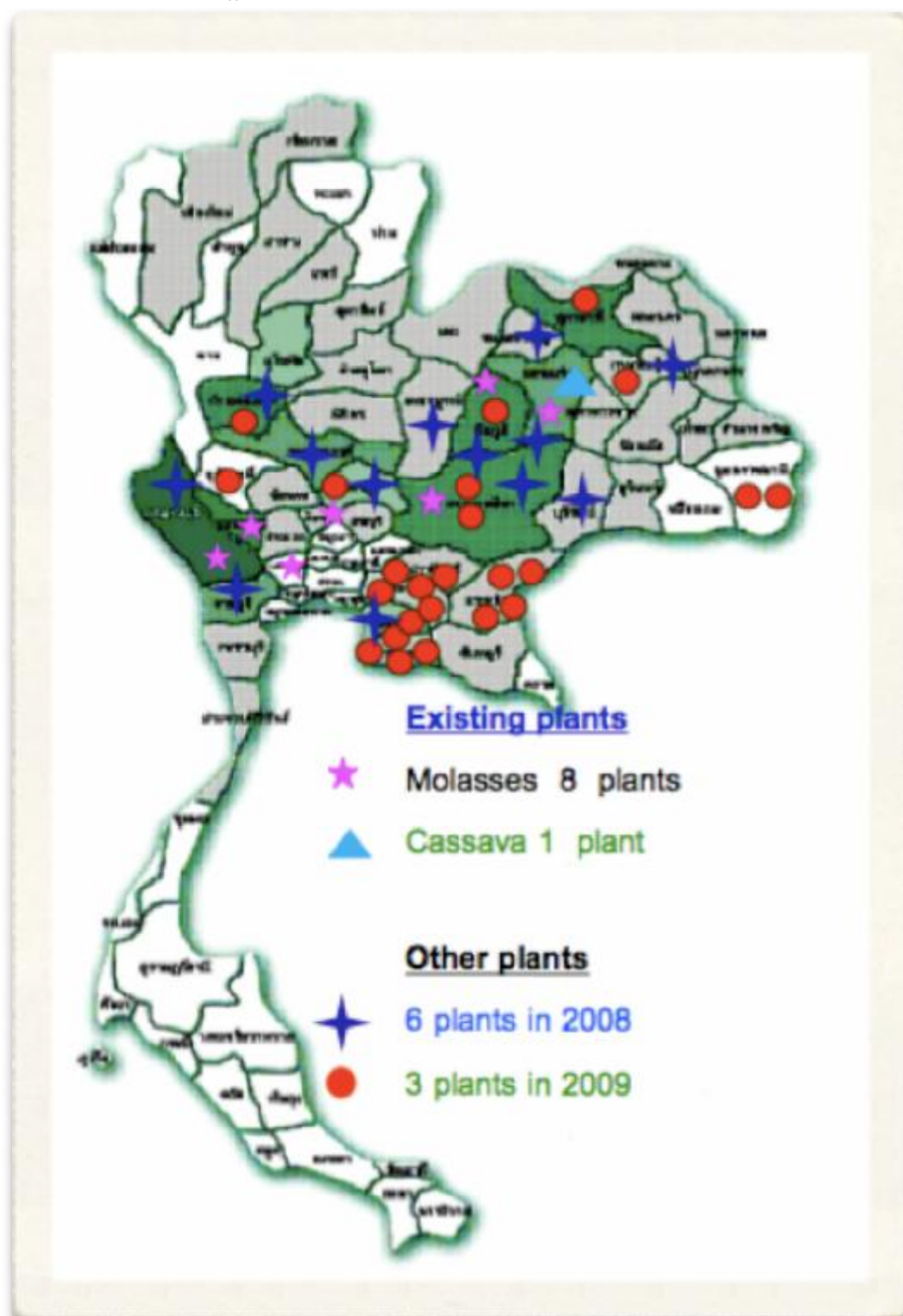
Data from BaE

## Foreign Investment Projects Approved by BOI Classified per Zone (2006 and 2007)



Data from BOI

*Annex 10 Ethanol and Sugar Plants in Thailand*

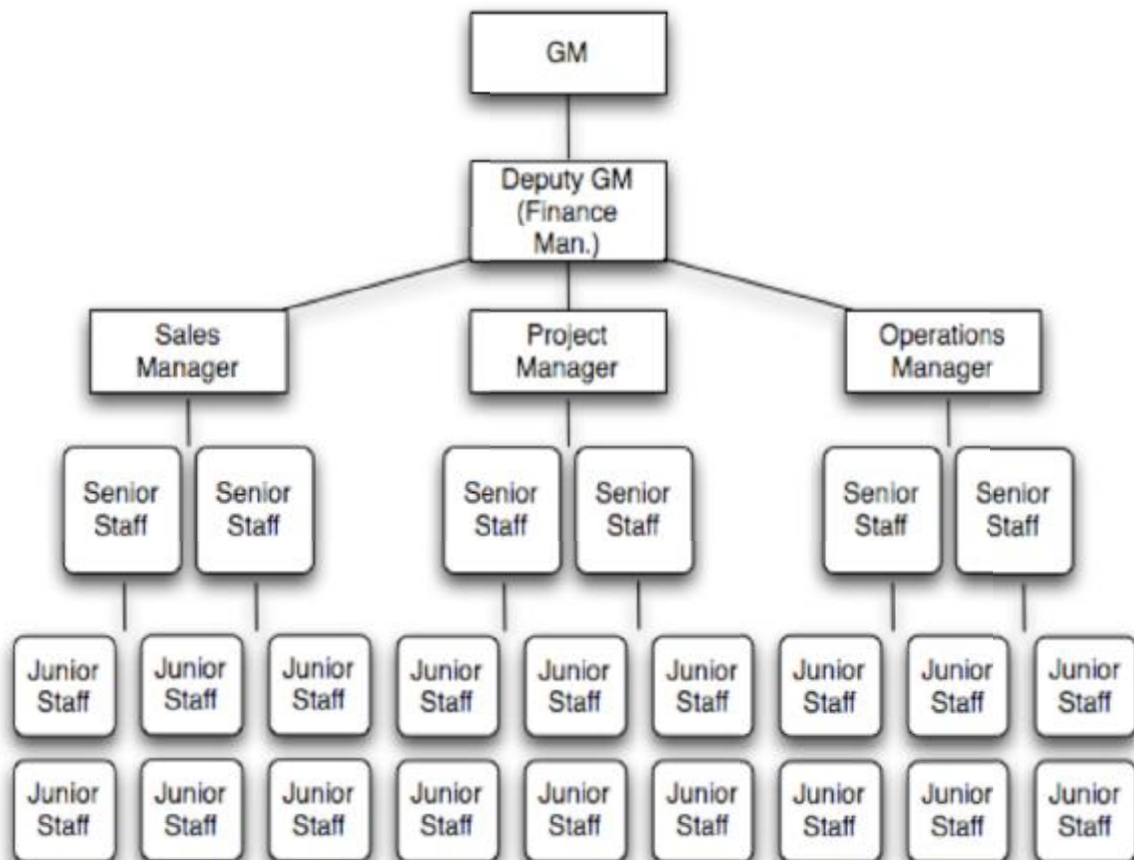


## Annex II VLT structure

Current Structure:



Proposed Structure:



### ***Annex 12 Industry Questionnaire***

1. My first question is concerning the Thai industry how many different industrial geographical zones are developed and where are these located?

2. Which sorts of industries are active in each of these zones?

3.3. The automotive industry in Thailand is growing at a fast pace, in accordance to recent official statements

- Which brands are manufactured locally and which ones do assembling?
- Could you indicate or provide of each production figures from recent years?

4. What is FTI's general opinion about an eventual global recession, in the various industrial sectors?

Will this influence and or do have any effect on further development within the Thai industry in general and or for some in particular?

In the event it does, in which way(s) and where will it affect?

5. Does the FTI opine that the increase in oil price will have any effect on further development? If so:

In which sector(s)

And what may be the influence on export?

What may be the influence in Thailand, in respect to employment/other aspects?

6. Are (foreign) components producers active?

If so, please specify the sectors and the Companies by name?

7. It is interesting to learn FTI's opinion and forecast for the coming years about the Thai industrial development?

Please specify the most active expected sectors:

Please indicate the sectors in which the Thai industry best further could develop:

8. Are specific new industries desired for further equilibration of the Thai industry?

If so, please list the desired sectors and if applicable the requirements?

---

What is requested, is to know from each Industry the following particulars:

1. In which part of Thailand is each specific industry largely concentrated?
2. What is the future and/or already known potential for each specified industry?
3. Is the specific industry surrounded by supportive industries? (Cluster)
4. If so, please specify these industries?
5. What is more or less the total revenue/turnover in Baht, of each industry in particular?
6. How is the proportion of total volume in each specified industry in share (%) of the
7. National GDP?
8. Is it possible to provide an approximate number of each foreign and national investors involved in each of these industries?
9. Could you specify in detail the main players by Company name, etc. in these industries?
10. It would be most helpful if you could submit the name and particulars of available persons to be contacted at these respective companies involved, for eventually, if possible, a personal interview on the subject matter?



### ***Annex 13 Internal Questionnaires***

#### **Staff Interview Questions:**

2. What is your Background?
3. Describe your task:
4. How well is VLT received by its customers?
5. Who and what is the dominant motivating force in VLT?
6. How does Management show it is satisfied with the attained results?
7. What kind of educational programs for staff are in place?
8. Is there a specific performance outreach goal?
9. Is there an explicit outreach strategy?
10. Are roles and responsibilities sufficiently explicit?
11. What is the experience level of the staff? The level of merchandize expertise, committed market know-how, customer knowledge and communications, etc.
12. How is the staff organized? Hierarchical, colloquial, equal footing?
13. How many days between receipt and response for written correspondence.

#### **Marketing:**

1. How visible is the organization? At home? Regionally? Nationally? Internationally?
2. Which kinds of market approaches have been tried?
3. Which of these have been the most effective?
4. Which are the most cost effective?
5. What percentage of earned income is spent on marketing?
6. How does this compare with the peer companies?
7. How strong is the marketing staff?
8. How well are the demographics of the market understood?
9. Have market demographics changed over the last three years?
10. What is the size/characteristics of the potential customer base?
11. How important is visiting clients personally? Why?
12. Has the client approach changed overtime? Why?
13. Has this potential been surveyed?
14. Are the needs known about this market potential?
15. Has a dedicated market advertising campaign been mounted recently?
16. If so: How effective was it?

-----

Leading to Dissatisfaction (Hygiene):	Leading to Satisfaction (Motivators):
* Company policy	* Achievement
* Supervision	* Recognition
* Relationship w/Boss	* Work itself
* Work conditions	* Responsibility
* Salary	* Advancement
* Relationship w/Peers	* Growth

#### **Staff survey:**

Dear staff,

Imagine you are working for a relatively small company which is experiencing economic growth, even at a steady and fast pace. You certainly are aware about this because you see more and bigger orders being booked, while you



only hear from the management: "Our workforce is doing a good job, keep up with this excellent work." However no further details are being provided.

The Management is interested to learn from you how a more stimulating environment can be created in assisting and keeping you motivated, to improve on your work performance and if necessary even improve work procedures.

It is appreciated if you could answer to the following questions, by indicating your choice:

- 1.) Would you like to learn more about our economic growth accomplishment, and the set targets?
  - a. : Yes I would like to
  - b. : No, not really
  - c. : I don't care, I do my job and I get paid for it
- 2.) If you chose in above question a, how would you like to receive this information?
  - a. : In a staff letter?
  - b. : By personal verbal approach from the boss to staff?
  - c. : Via a (p.p.) presentation split per department?
  - d. : Other form?.....

PLEASE CHOOSE TWO (2):

- 3.) What sort of information would you like to be acquainted with?
  - a. : Annual increase in turnover, on the basis year on year?
  - b. : Staff turnover
  - c. : Company's performance, such as total revenue, gross profit, return on investment.
  - d. : Total net income obtained?
  - e. : General overview of company's costs, broken down per department?
  - f. : Information about large projects accomplished?
  - g. : Others? .....

PLEASE CHOOSE THREE (3):

- 4.) To improve your work performance, what would you like to be done additionally?
  - a. : Detailed job description?
  - b. : Authority to making own decisions?
  - c. : More regular contact with upper-management?
  - d. : Improved work assistance and/or collegial relationship?
  - e. : Weekly staff meetings to discussing work progress, analyzing errors made, etc?
  - f. : Changes in office rules? If so, please specify: .....
  - g. : Better tools, computers, software, etc.? If so, please specify:.....
  - h. : Improvement on work environment, lightning, more space, cleanness? Please specify:.....
  - i. : Enhancement in communication facilities, internal – external?
  - j. : Once a week/month, on a regular basis, socially staff encounters?
  - k. : Annual company dinner celebration with partners included?
  - l. : Any more suggestion related to improvement of profit, cost reduction, efficiency enhancement, smoother procurement, environmental changes, or other desired changes for the better?

PLEASE CHOOSE TWO (2):

- 5.) What kind of training would you like to have to improve your work?
  - a. : Excel
  - b. : Word processing
  - c. : Power Point Presentations + Presentation skills
  - d. : Project management
  - e. : Sales skills
  - f. : Negotiation skills
  - g. : Computer skills
  - h. : Language skills

## Question 4

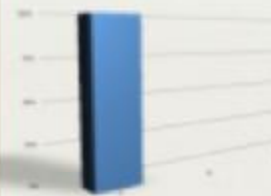
- Improve staff work performance:

\*A weekly staff meeting is seen as an important improvement in work performance (19%)  
\*12% want a detailed job description



## Question 1

- Would like to know about the company's growth and set targets:



The whole staff would like to know about the current status of the company

## Question 5

- Types of training:



\*58% find language skills of great importance.  
\*Project man. and negotiation skills are found important as well, 16% and 19% resp.

## Question 2

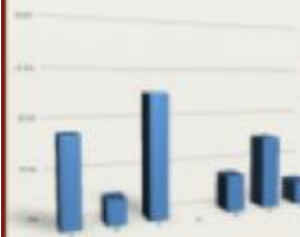
- In which way to receive the information about company's status:

\*44% of the staff answered "by personal verbal approach."  
\*44% answered "presentation split per department."  
\*12% other: "case study of other company's"



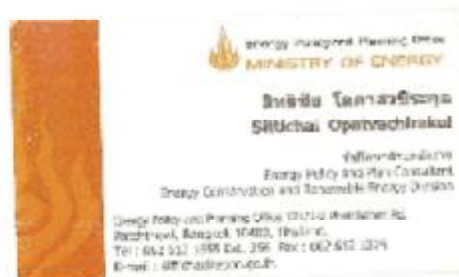
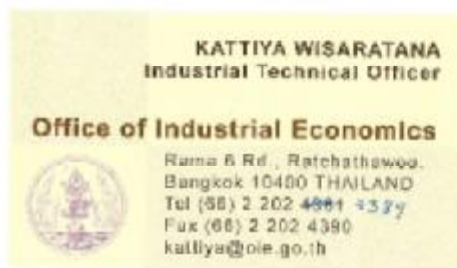
## Question 3

- Information that staff would like to know:



\*51% for TR, GP and RoI  
\*About similar response for A and P (increase in turnover; and info on large projects) 22% and 19% respectively.

## Annex 14 Contacts



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### ***Annex 15 Manufacturing Methods***

Manufacturing carbon steel pipes can be done by using several different techniques, each of which produces pipes with different characteristics. The characteristics that we are talking about are:

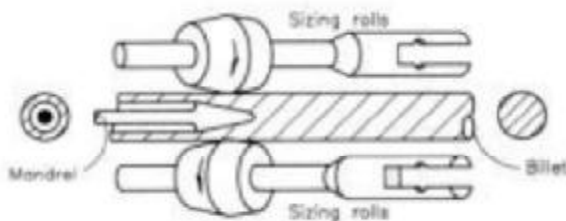
- Strength,
- Wall thickness,
- Corrosion resistance, and
- The limitations concerning temperature and pressure.

It is important knowing that a pipe with the same wall thickness but made by another process can vary in strength and pressure limits. The most common manufacturing techniques applied, are:

- Seamless,
- Butt-welded, and
- Spiral-welded pipe.

#### **Seamless pipe**

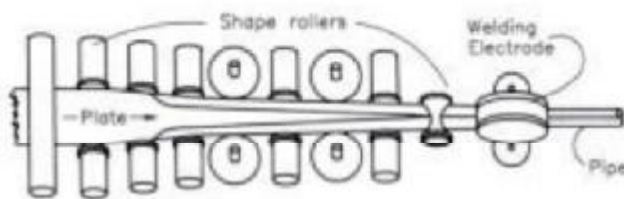
Is moulded by piercing a solid, near melting point, steel rod, which is named a billet, with a mandrel to produce a pipe that has no joints or seams.



**Figure 2-1. Seamless pipe.**

#### **Butt-welded pipe**

Is formed by passing a hot steel plate through so-called shapers that will roll the plate into a hollow circular shape. This forces both ends of the plate together, which will produce a seam or fused joint.



**Figure 2-2. Butt-welded pipe.**

#### **Spiral-welded pipe**

Is made by twisting strips of metal into a coiled shape forms these pipes, then the edges are welded together to form a seam. These pipes are used when little pressure is involved.



Figure 2-3. Spiral-welded pipe.

Seamless and butt-welded pipes are the most common methods used for manufacturing pipes. Van Leeuwen Thailand trade pipes made by those two methods. Specifically required for the petrochemical industry, where large pressures are endured.

#### **Wall-Thickness and Pipe Segment length**

In Thailand pipes are often indicated by their wall-thickness. This term is used to describe the thickness of the metal used to make the pipe. Wall thickness is also referred to as pipe's weight. Originally these were manufactured in weights to qualifying the characteristics as 'standard', 'extra strong', and 'double extra strong'.

Generally pipes are ordered in quantities 10% greater than originally calculated, due to the fact that not each pipe segment does have an exact standard length. Those vary by single random length from 5.5. till 6.5 meter and by double random length from 11.5 till 12.5 meter.

Moreover segments can get destroyed during construction works, as a result avoiding delays for reordering.