DISCOVERING THE POTENTIAL OF SMALL WIND ENERGY

Building a framework for entry strategy to US market of MyPower Finland Ltd.

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Abstract

Thesis observed and analyzed the small scale wind turbine markets in the United States of America, and the development of that market in near future. Thesis were included into the wider process, where Finnish start up enterprise MyPower Finland Ltd. explores the alternatives and possibilities to enter to the markets of United States of America.

Thesis were conducted as a qualitative study, including normative and descriptive features. The actual research process is based on principals of Competitive Intelligence. Furthermore, benchmarking methods are used in data collection and analyzing process.

The markets were examined trough traditional marketing theories, including PEST-analyses, and trough high-tech marketing principles like Technology Adaptation Bell Curve.
Thesis exposed the tremendous potential of the target market. Furthermore the competitiveness of the technology of the case company was studied and compared to local technology

Thesis illustrated the development of small scale wind market in the United State of America. In addition, political climate regarding sustainable energy was recognized favorable. Furthermore markets of small wind energy in the United States of America are considered attractive, and enter to the market was recommended for the case company. If the case company decides to enter to the studied markets, it was recommended to do from cooperative basis.

Considering the strategy in local markets, it was expressed that a new entrant should consider cost leadership strategy to gain competitive advantage among the local suppliers.

Keywords
High-tech marketing, benchmarking, PEST-Analyses, competitive Intelligence, small scale wind Industry, small scale wind energy, wind energy, technology adaptation bell curve.

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Tiivistelmä

Opinnäytetyö tutki ja tarkasteli pientuulivoimamarkkinoiden tilaa ja lähitulevaisuuden kehityssuuntaa Yhdysvalloissa. Opinnäytetyö liittyi laajempaan kokonaisuuteen, jossa MyPower Finland Oy / Kotituuli Oy tarkasteli ja punnitsi mahdollisuutta viedä kehittämäänsä teknologiaa Yhdysvaltain markkinoille.

Opinnäytetyö toteutettiin pohjautuen Competence Intelligence -periaatteisiin ja käyttäen hyväksi vertailujohtamista. Markkinoiden tilaa tarkasteltiin teknologiamarkkinoinnin, sekä perinteisen markkinoinnin näkökulmasta. Merkittävimpänä tutkimusmenetelmänä käytettiin PEST-analyysiä. Tutkimus toteutettiin laadullisena.

Opinnäytetyö osoitti Yhdysvaltojen pientuulivoimamarkkinoiden elävän aikaisten markkinoiden vaihetta, jossa kovaa kilpailua ei ole vielä syntynyt. Lisäksi työ osoitti toimeksiantajan teknologian kilpailukyvyn suhteessa olemassa olevaan tarjontaan. Opinnäytetyö toi esille Yhdysvaltain markkinoiden kehittyneisyyden verrattuna kotimaan markkinoihin, sekä suopean poliittisen ilmapiirin toimialaa kohtaan. Edelleen työ toi esille pientuulivoima- sekä tuulivoimamarkkinoiden hyvät kasvunäkymät Yhdysvalloissa.

Perustuen opinnäytetyön havantoihin ja johtopäätöksiin, MyPower Finland Oy:lle suositeltiin siirtymistä Yhdysvaltain markkinoille. Siirtyminen tulisi tapahtua strategisessa yhteistyössä, tai yhteisyrityksen muodossa paikallisen toimijan kanssa.

Työssä tuotiin esille mahdollisuus toimia Yhdysvaltain kautta koko Pohjois-Amerikan markkinoilla. Opinnäytetyön tuloksiin ja tehtyihin johtopäätöksiin pohjaten, kustannusjohtajuus nähtiin strategisesti toimivimpana ratkaisuna MyPower Finland Oy:lle Yhdysvaltain markkinoilla.

Avainsanat (asiasanat)
Teknologian omaksumisen elinkaari, PEST-Analyysi, Pientuulivoima, Competitive Intelligence

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1 GLOSSARY

The glossary includes explanations for the abbreviations and certain important concepts used in the study.

ARRA	American Recovery and Reinvestment Act.
AWEA	American Wind Energy Association.
BTU	Brittish Thermal Unit. An unit to measure production. One kilowatt-hour is 56,87 BTUs
CEDA	Clean Energy Deployment Administration.
CI	Competitive intelligence.
DSIRE	Database of State Incentives for Renewables and Efficiency
EIA	Energy Information Administration of United States.
EWEA	European Wind Energy Association.
HAWT	Horizontal-axis wind turbine.
ITC	Investment Tax Credit.
kW	Unit of power, kilowatt.
kWh	Unit of production, kilowatt-hour.
Net metering	A metering method for electricity consumption that allows the meters to be run backwards, if a household is producing more electricity than it consumes.
PEST-analyses	Analyses of political, legal, environmental, socio-cultural, and technological factors of the market.
PTC	Production Tax Credit.
RES	Renewable energy stadard.
Smart Grid	Next generation utility grid that is compatible with electricity generated with wind turbines.
SWCC	Small wind certification council.
SWT	Small scale wind turbine.
TABC	Technology adaptation bell curce, a theory that observes the markets as a technology adaptator.
VAWT	Vertical-axis wind turbine.

2 INTRODUCTION

2.1 The motives to conduct a study regarding USA

This study focuses on clarifying the current state of small scale wind energy business in the United States of America. It was commissioned by a Finnish start up enterprise MyPower Finland Ltd. , a high-tech company that has developed a small scale wind turbine of its own. The author works as a marketing manager for MyPower Finland Ltd. , and partly affected the decision to study the US market.

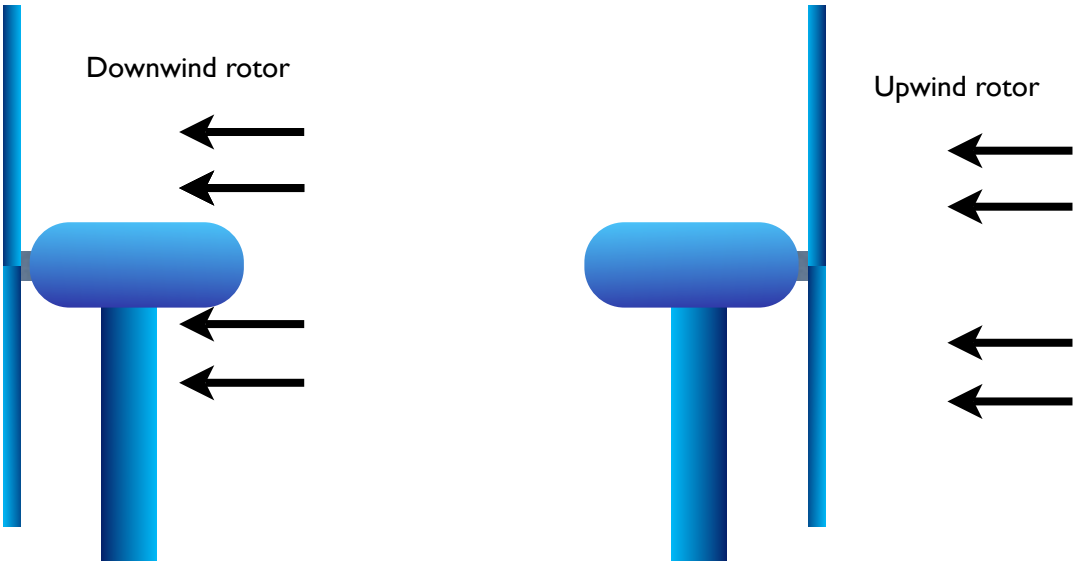
There were multiple reasons for doing this study. First, entering markets outside Finland is a necessity to MyPower Finland Ltd. due to the underdeveloped domestic markets. Second, the interest of parties from the United States of America in MyPower Finland Ltd.'s technology drove the company to study the opportunities to enter the United States Market and to collect information for a later strategy formulation. The third reason was to increase the awareness of the industry in the United States of America and of companies and technology there. Studying companies' business models, marketing methods and product features could provide MyPower Finland Ltd. with new perspectives for a later strategy development. In addition, it would inform the company of the possible rivalry from the United States of America.

2.2 Small scale wind energy– what is it?

Wind energy means refining the kinetic energy of wind into electricity. Surely, most of us are familiar with huge wind turbines often located close to coastal areas. Those turbines usually have generators of two or three megawatts. With the generator axis, i.e the part that drives rotation from the turbine into the generator, in a horizontal position, they are called horizontal-axis wind turbines, often shortened to HAWT (hereinafter this abbreviation is used). There are also wind turbines with the generator axis in a vertical position. These are called vertical-axis wind turbines i.e VAWT's (hereinafter this abbreviation is used).

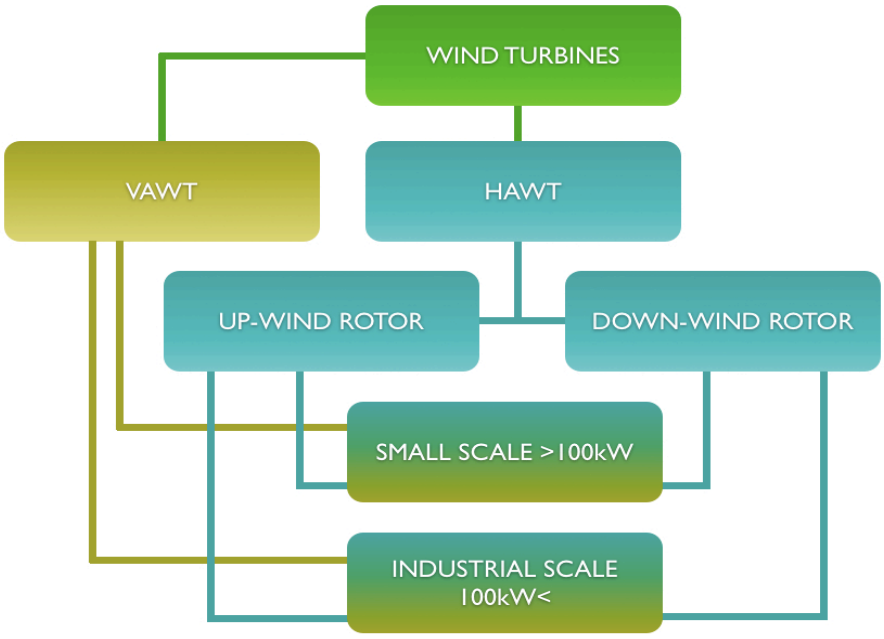
HAWTs are divided into two subcategories: upwind- and downwind rotors. An upwind-type turbine's blades face the wind before other parts of the turbine,

and usually uses an aenometer or alike device to determine the optional position to face the wind. Often these kind of turbines include a tail part that helps turbine to direct and redirect itself. A downwind-type turbine works in an opposite way: wind faces first generators cover and mast and blades are located behind them (See picture 2.1). A turbine does not need an especial device to determine optional position in a varying wind direction, due wind is turning turbine automatically in the optional position.



PICTURE 2.1 Principals of upwind and downwind HAWTs. Picture by the author.

According to European Wind Energy Association (hereinafter EWEA), a small wind turbine (hereinafter SWT) is a wind turbine that has a rated output of 100 kilowatt or less. A wind turbine that has a rated output between zero and seven kilowatts is a micro wind turbine. EWEA's counterpart beyond the Atlantic Ocean, American Wind Energy Association (hereinafter AWEA), uses exactly the same definition for small scale wind turbines but has a different approach to splitting small wind turbines to subcategories. AWEA divides small wind turbines into residential wind turbines with a rated output of one to seven kilowatts and commercial wind turbines with a rated output between 20 and 100 kilowatts.



GRAPH 2.1 The classification of wind turbines. Notice that small scale wind turbines are classified further, but the classification differs among the institutions. Graph by the author.

2.3 Case company

The study was commissioned by a start up company MyPower Finland Ltd. The author works as a marketing manager in the company, and is responsible for planning and implementing the entire domestic marketing.

MyPower Finland Ltd. was established in September 2009 by individuals who had earlier run a company called PEM-Energy Ltd. PEM-Energy Ltd. was the original developer of the product that MyPower Finland Ltd.'s is currently marketing. Along with marketing the product, MyPower Finland Ltd. also continues the research and development process regarding the turbine.

The company is entirely owned by Finns. More precisely, there are three individuals and one company, ScanOffice Ltd. that own the shares of the company.

Currently, the company is only offering one product, the MyPower 2 kW wind turbine. The size of the turbine is best understood when it is compared to the ones that people usually see in coastal areas. Those three megawatt turbines

are 1500 times bigger than the MyPower 2 kW wind turbine. The MyPower wind turbine is a HAWT and, according to EWEA's classification, a micro wind turbine. In the US market, AWEA's classifications are in use and there MyPower wind turbine would be considered a residential wind turbine.

As mentioned earlier, the product was engineered and designed by PEM energy Ltd. Mikael Seppälä, the development director of MyPower Finland Ltd. and the former chief executive officer of PEM-Energy Ltd. , says that there where several values that were emphasized in the engineering and design process. First, it had to be a product that people could proudly erect in their near environment, so the design was done accordingly. In addition, much attention was paid to making the product silent as possible. The second value was customer friendliness; the turbine has to be maintenance-free as possible so the owner can enjoy resource free electricity with almost zero efforts (Seppälä 2009).

According to Sved Hollensen (2007, 77), recent years' research has confirmed that increasing amount of companies are adapting patterns of international activities in the very beginning. Hollensen refers to the term 'Born Global,' a company title that is defined according to Hollensen by Oviatt and McDougall, and later by Gabrielson and Kirpalani as follows:

> *a firm that from inception pursue a vision of becoming global and globalize rapidly without any preceding long term domestic or international period (Sven Hollensen, Global Marketing, 2007, 77).*

The description almost perfectly matches MyPower Finland Ltd. , hence the company has been seeking opportunities to entry foreign markets, mainly in Central Europe and India, from the moment the company came to existence. As a conclusion, the company has an internal capability for internationalization.

MyPower Finland Ltd. has multiple reasons for internationalization. According to Hollensen (2007, 42), a company can have reactive or proactive motives for internationalization. Table 2.1 illustrates both reactive and proactive motives:

Proactive motives	Reactive motives
Profit and growth goals	Competitive pressure
Managerial urge	Domestic market: small and saturated
Technology competence / unique product	Overproduction / excess capacity
Economics of scale	Extended sales of seasonal products
Tax benefits	Proximity to international customer / physiological distance

TABLE 2.1 Major motives for internationalization. Table by Sved Hollensen, Global Marketing 3rd edition, 42, 2007.

According to marketing plan of MyPower Finland Ltd. , there are several drawbacks in domestic markets (MyPower Finland 2009):

-The underdeveloped regulatory

-Lack of governmental incentives

-Relatively low price of electricity

-Absence of feed in tariff

-The weak infrastructure for two-way electricity transport.

The marketing plan states that domestic markets can provide some revenues for the company, but to be profitable the company actively need to seek entrance to new, more favorable and developed markets. In the marketing plan, domestic markets are more considered as a final testing ground before the product is launched in the other markets (MyPower Finland 2009). From this perspective, internationalization will be based on reactive motives.

On the other hand, the company's product includes new cutting edge technology, with possibilities of which are tremendous outside Finland, especially in countries where electricity prices are much higher than in the domestic markets. Technology competence has already attracted some foreign distributors

to contact the company (Mikael Seppälä). From this perspective, MyPower Finland Ltd.'s motives for internationalization are proactive as well.

The marketing plan of MyPower Finland Ltd. states that the entire market population of a domestic market consists of all households, farms, businesses and institutions that own real estate that consume electricity or heating energy as well as all spots that are located outside of the reach of electricity distribution grid, but still need heating energy or electricity. The market population is segmented into:

-Agriculture

-Households

-Business

-Institutions

-Spots outside of the utility grid.

(MyPower Finland Ltd.'s Marketing Plan, 13, 2009)

According to the marketing plan, much of the market population is screened out before the target market dimension is reached. A wide screen out occurs, hence the market population which facilities are located in areas with poor wind condition are not taken account in the final target market. Considering the research, it is important to observe the target market from this perspective as well.

3 STUDY APPROACH

3.1 Competitive intelligence in thesis process

The Study is a qualitative research that follows the principles of competitive intelligence as they are presented by Walle (2000). Competitive intelligence refers to a process to create strategically or tactically important information out from an open-source or secondary data that is available for everyone. The collected data might appear irrelevant and fragment, but the conclusions that are

refined are important for company's strategy formulation. The competitive intelligence is often used in High-tech organizations (Alf H. Walle III, 2000, 1-5, 91). The method serves well the case company's need while maintaining low research costs.

Scientific, quantitative research is very popular in market researches, but often cannot provide adequate information. Well-performed competitive intelligence creates information and conclusions regarding strengths, weaknesses, goals etc of the group under intelligence (Alf H. Walle III, 2000, 1-5, 91). An approach to make conclusions is mainly descriptive, due a purpose is to provide a platform for later strategy formulation. Nevertheless, the conclusions include also the proposals for strategy formulation that are derived from research's findings. The proposals represent a normative approach to derive the conclusions.

Walle (2000) argues that companies have turned their strategic thinking more towards to marketing orientation. Marketing is no longer just a subordinate activity in the company, which follows the strategy set by top management, but the part of strategy formulation (Walle, 2000, 93-94). The study has a market oriented approach, and it often refers to marketing theories. As Walle says, the marketing orientation in a strategy formulation is acceptable, and serves companies well; hence the ultimate goal of all profit companies is simply to make profit.

The content of table in the next page is taken from book Qualitative Research Methods in Intelligence and Marketing: New Strategic Convergence by Alf H. Walle (Walle, 2000, 106). The study follows the procedure illustrated by table.

Issue	Procedure	Discussion
Purpose	Competitive intelligence professional need to understand the exact purpose of their assignments.	The CI process and the way in which information is presented needs to be determined “up front” before the project begins.
Choosing Method	Various research / analytic methods exist. The CI professional and the client must decide what methods are most appropriate.	Both scientific/quantitative and qualitative methods are viable options. Circumstances and the need of clients will help to determine what methods are most appropriate.
Gathering Data	Data-gathering procedures must be adjust to the circumstances faced by decision makers and goals they harbor.	Based on methods chosen, data will be gathered according to mutually acceptable guidelines.
Data information	The goal of competitive intelligence is to take data (unprocessed empirical evidence) and convert it into actionable information.	The ways in which data is processed into information must be considered by both CI analysts and client. They need to agree on how this process will occur.
Appraisal	The quality of the data the methods used to process it, and appropriateness of the end product must be determined.	The CI analyst and the must agree on what constitutes valid levels of proof. The CI process must work with this criterion on mind.
Dispersal	Data must be proven to decision makers in a form to which they can relate and respond	CI analysis is created for clients. The needs of clients, their tastes and decision making habits must be factored into decisions regarding its dispersal
Debriefing	CI analysts and their clients need to constantly evaluate the effectiveness of specific projects. Debriefing forms and meetings may lead to a greater understanding of what works and what is not effective	CI analysts work in specific circumstances. The effectiveness of specific techniques may be an artifact of circumstances. although analysts should stand up for what they believe, they also need to adjust to the situation.
Discussion	Although CI professionals work within a milieu that may somewhat force their hand, they should strive to embrace the full toolkit of the field as required and not be locked into only applying a part of the available array f techniques. To this end, CI professionals need to present the case for whatever kind of tool they feel is most appropriate.	

TABLE 3.1 The Process of Competitive Intelligence

In actuality, the table is a combination of two approaches of competitive intelligence, formulated and presented by Walle (2000, 106). The column Discussions in table 3.1 refers to discussion between the client, which the case com-

pany represents, and to CI professional, which is the author. The exception to the methods of table is the lack of these discussions. The lack occurs due the author works for the company, and the task was commissioned to do separately from other functions of the case company.

In practice, the process of competitive intelligence matches well to the thesis process. The issue “Purpose” refers to the ultimate purpose of the study i.e. the research problem. The research problem of the study is to determine the current state of small wind industry and market environment in the United States of America and discuss the opportunities of MyPower Finland Ltd. to enter the market.

The research problem is solved using series of research questions. To describe a competition in the market, the questions like how many small wind turbine suppliers there are, and what is the average pricing of SWTs in US, are answered. To formulate deeper understanding of a marketing environment the questions regarding politics, regulations, climate, infrastructure, electricity prices and wind resources are responded.

The theoretical and conceptual framework of thesis correspond “Choosing Method” -procedure in table 3.1. The chosen theories and relevant tools are presented more specifically in chapter four.

Third step, Data Gathering, is the methods that are used to collect the data. Commonly, the data collection process is explained in research methods section and this study makes no exception. The research method is described in chapter three section one (3.1).

Appraisal is an evaluation of creditability of collected data. The creditability is ensured using only the secondary data from creditable sources, like American wind Energy Association or the bureaus of the government of United States.

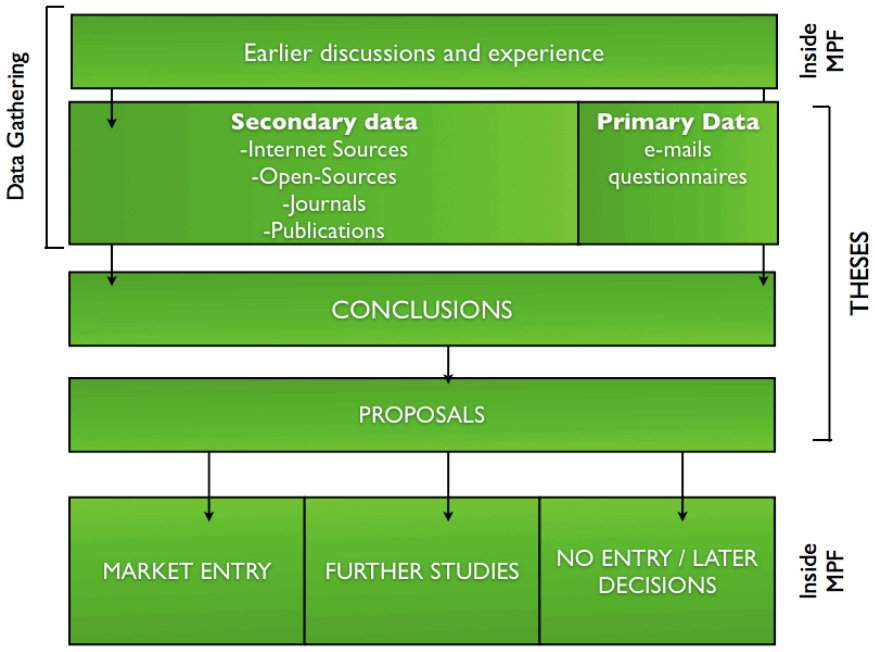
“Dispersal” is the final part that is included to thesis process. The conclusions of study are provided to case company’s CEO.

As the process of competitive intelligence suggests, the debriefing and discussions need to take place after the output of the competitive intelligence is presented. The decision weather debriefing and discussions will occur in the

case company from regular basis, is done by the top management of the case company, not the author. These functions will take place from regular basis more likely, if the output of the study encourages the case company to study target market closer, or even to start formulate a strategy to enter to this market.

The author works for the case company as a marketing manager, which enables an exceptionally deep understanding of the case company, its strategy and the technology company is developing and marketing. In addition, the author has independently planned entire marketing plan of the case company thus the continuous discussion with case company representative are not required.

Graph 3.1 illustrates how the strategy formulation process is divided between research process and case company. As the graph shows, the case company has three different alternatives to choose after the study: To enter, to study more or abandon target market or postpone the strategically decisions regarding target market.



GRAPH 3.1 How theses process is included to the case company's strategy formulation

3.2 Research method

Competitive intelligence is a process where a professional derives the relevant information from fragmented data. The data used in this study is mainly secondary, collected from other studies, publications and internet sources. Nevertheless, some information was collected trough the e-mails and so proclaimed as primary data of study.

The case company has earlier discussed about the opportunities of US markets with US ambassador Bruce Oreck. The author has also took part to these conversations. During the meeting, Mr. Oreck and his advisories emphasized the importance of the economic value that MyPower SWT can provide. This conversation had significant influence to the pattern of the research process. Considering the opinion of Mr. Oreck, the data regarding the prices and productivity of local SWTs and the price of the electricity was weighted more in the data collection process.

In addition, several political and legal publications have been studied during the data collection.

Most of the literature that provides a theoretical framework for the study was read by the author during the studies in the Jyväskylä University of Applied Sciences, but some literature was studied especially for the study.

Even though the study is qualitative, some of the data used was collected on the quantitative basis. A reason why qualitative and quantitative methods were combined in the study is the nature of data collection in competitive intelligence. Data used in competitive intelligence is fragmented, and there are no strict rules whether it should be qualitative, quantitative, primary or secondary. The main target was to analyze the findings and formulate useful information based on the data.

In benchmarking process, a presentative of one small scale wind turbine supplier was requested to fulfill a questionnaire. The questionnaire covered areas of business development and key success factors in US market and the company's marketing mix considerations. Additionally a questions regarding technology was asked as well.

The findings and conclusions are presented separately, mainly to ensure a clear distinction between the data collected and the conclusions made by the author. The decision making process regarding the data selection, theory selection and how two use these elements, is described more detailed in chapter four.

The data regarding the product features and product pricing is listed and compared in graphs. The method was chosen partly to ease the illustration of product differentiations and partly to help the author to derive conclusions from the findings. The comparison table is attached as appendix one (1).

To ensure creditable information of the prices, the information was obtained from two or more alternative sources. The price used in comparison table, is the average of prices obtained from different sources. The table illustrating the original prices and sources is attached as appendix two (2). The prices illustrated on the companies' web pages, or provided by the suppliers trough e-mail, are exceptions.

The conclusions and proposals regarding the market entry strategy are presented after findings. The purpose is not only present the conclusions, but also discuss how these conclusions should affect to market entry strategy, and why.

4 THEORETICAL BACKGROUND AND CONCEPTUAL FRAMEWORK

4.1 PEST-Analyses

In the chapter The Marketing Environment in the USA, several different approaches are used to formulate comprehensive outlook of marketing environment of small wind turbines in the United States of America.

To study marketing macro environment, the problem is approached using PEST-Analyses. The theory mets well need to analyze the marketing envi-

ronment of an industry where wide range of different regulation tend to take place.

The letter combination PEST is the abbreviation for words political-legal, economical, sociocultural and technological. The idea has been later extended to cover environmental factors as well. In addition, in a modern version of PEST analyses, legal issues are weighted more and separated to independent factor. This is why PEST abbreviation is sometimes extended to PESTEL, where additional E stand for environment and L for legal.

According to The Chartered Institute of Personnel and Development the origin of the management tool is not unambiguous due the large amount of professional who have introduced similar concepts including ETPS by Francis J. Aguila, STEPS by Arnold Brown and several different variations introduced by Fahey, Narayanan, Morrison, Renfro, Boucher, Mecca and Porter in 1980s.

According to Kottler, Armstrong, Wong and Saunders (2005, 26), “Most organizations need to observe the macro-environment to understand how they need to adjust to it.” The PEST analyses offers the comprehensive summary of marketing macro-environment, and provide significant information for the market entry strategy formulation of the case company.

The study discuss and analyses each element separately observing issues from MyPower Finland ltd.’s perspective.

A word S in PEST abbreviation stand for Sociocultural factors of target market. The study will exclude sociocultural section because it would require another, probably large quantitative study, to formulate correct attitude of entire culture towards SWTs. Despite the exclusion, the abbreviation remains PEST.

In wind industry, the business is there were the wind conditions allow. In the study, the PEST-analyses include the analyses of environmental factors, which focuses solely to wind conditions of target market.

4.2 Technology Adaptation Bell Curve and Rate of Technology Adaptation

MyPower Finland Ltd. provides product that represents a change in status quo thus traditionally people have tended to obtain their electricity from utilities, not

from their own wind turbine. The marketing of such a product could not invoke the traditional marketing methods, but trust in the high-tech marketing methods. The one of the crucial elements of the high-tech marketing is the concept of technology adaptation bell curve, which identifies the current state of the market as a technology adapter.

Geoffrey A. Moore, member of TGG Advisor consult company and venture capitalist in Mohr Davidow Ventures company, refers in his books often to Technology Adaptation Bell Curve (hereinafter TABC). According to Moore, TABC is the concept that describes the customers as a technology adaptors which are distributed among five different adaptation groups. Moore states that each adaptation group has their own psychographic profile, which is the combination of psychological and demographical features, and which causes all groups to react differently towards discontinuous innovations and high-technology. The adaptation groups differentiate from each other in size and in psychographic profile (Moore, 1999, 10).

The groups that Moore (1999) is introducing are Techies, Visionaries, Pragmatics, Conservatives and Skeptics. The groups adopt technology usually in hierarchy, so that Techies are the first to obtain new technology. Thecies are followed by Visionaries. Together these two group formulate the early markets of high technology markets. After Visionaries have adapted the technology, a leap to mainstream markets should take place. The first adapter group in the mainstream market is Pragmatics, which also represents the one-third of entire market population. Another part of mainstream market consist from the group of Conservatives which represents the another share of one-third of market population. The last group that adopts new technology is Skeptics. According to More, companies should move among the TABC providing the technology for each group at time and use previous group as a reference for next one (Moore 1999, 13). This is how market is created for the technology by the supplier(s).

An important ingredient in high-tech markets is the fundamentalism for references. Moore describes high tech markets as follows:

> *High-tech markets consists of the certain selection of the products or services for the group of potential or realistic customers, who has simi-*

> *lar needs and wants and whose use each other as a reference while doing purchase decisions (Moore G.A, Crossing the Chasm, 1999, 27)*

In the high-tech marketing the importance of references should never be underestimated. If there is no-one to ask a reference then there is no trade. How then new technology can ever made its way to market? The answer lies on first adaptation group; Techies. According to Moore (1999, 28-32), Techies, also know as technology enthusiasts, do not seek an advantage from technology but obtain it just for it own sake. The importance to have latest cell phone model or microprocessor is not to improve the quality of life but to see how the product works. Techies do not need references, they seek actively opportunity to be one. They usually don't spent a lot to technology, but are eager to receive a test or a pilot product that they can examine.

Despite the fact, that a company will not probably do any profit while serving products for Techies, they are the gatekeepers of high tech markets and an important ingredient for successful high-tech marketing.

The path of technology is not straight and easy after Techies. The next challenge is the phase when technology should move from Visionaries to Pragmatics i.e. from the early markets to the mainstream markets. This part of the TABC is called The Chasm (Moore, 1999, 18). Moore states that this spot is most unforgivable, and often unrecognized. The Chasm exists because the group of Visionaries and the group of Pragmatics do not communicate each other in right level. In the other words, the chain of the references is broken hence practical Pragmatics do not trust Visionaries as a reference. Moore's book, Crossing the Chasm (1999), tells how this challenge is overcome.

For MyPower Finland Ltd. the issue is to understand if the small wind turbine technology has crossed the chasm or not in the United States of America Understanding the concept, ensures that company's strategical decisions regarding US markets are founded to right basis. Weather the technology has cross the chasm or not, there are significant differences in each adaptation group and the strategy should be created to satisfy the needs of adaptation group that innings at the moment of entry.

The velocity of technology adaptation depends on technology's rate of adaption. According to Mohr, Sengupt and Slater, (236-237, 2009) there are six elements that affect to technology adaptation. These factors are presented and discussed shortly in the next paragraphs.

The first factor is relative advantage, which simply refers to benefits that new technology can provide.

Compatibility is the technology's capability to fit to existing environment. A good example regarding SWT technology is compatibility of electricity to households electricity grid.

Complexity refers to challenges use new technology. If innovative product requires especial skills from end user, it is more unlikely adopted to markets.

Trialability means the possibility to try or experience the benefits of the technology before the actual purchase decision.

Ability to communicate product benefits is important factor. The end user need to discuss and share their experience about product. If these discussion are positive, they feed the demand of technology.

Observability means possibility to observe the relative advantage. In case of SWTs this means the possibility to observe how much electricity a customer have saved or how much less he or she has produced carbon dioxide.

For a new entrant, the benefit to recognize the affects of factors listed above, is that the entrant could focus to improve its technology's rate of adaptation and gain competitive advantage so.

4.3 Benchmarking and Competitive Advantage

According to Kottler, Wong, Saunders and Armstrong:

> *Companies normally learn about their competitors' strengths and weaknesses through secondary data, personal experience and hearsay (Principles of Marketing, Kottler, Wong, Saunders and Armstrong, 2005, 500).*

This is one description for action called benchmarking.

J. David Hunger and Thomas L. Wheelen mention in their book Essential of Strategic Management (2007) that Xerox corporations, which Wheelen and Hunger consider as a pioneer of this method, has stated:

> *benchmarking is continual process of measuring products, services, and practices against the toughest competitors or those companies recognized as industry leaders (Thomas L. Wheelen & J David Hunger, Essential of Strategic Management, 2007, 159)*.

Benchmarking focuses to identify the best practices i.e business methods, that exceeds methods of the competitors and rise the company to leading position. Other companies may identify the best practices continuously collecting the data about business leaders activities and analyzing it. By doing this, they gain competitive advantage (Anton and Gusting, 2000)

In the study, benchmarking is conducted to gather the relevant information regarding SWT suppliers' practices in target market. It is also a method to collect data in the competitive intelligence process. The obtained information is used later strategy formulation process, outside of the study (see pages 13-14).

The benchmarking will focus on the marketing mix of two industry leaders. In addition, much attention is paid to determine the competitive position of MyPower Finland Ltd.'s product. Observing and analyzing the marketing mix of two industry leaders, will give MyPower Finland Ltd. a starting point for its marketing mix considerations for the United States market.

Product, price, place and promotion also know as four Ps formulate a marketing mix concept. Marketing mix means all the possible areas of influence that firm can control to increase demand for its product (Kotler, Wong, Saunders and Armstrong, 2005, 34).

Hunger and Wheelen present the theories of competitive strategies in their book The Essentials of Strategic Management. Competitive strategy provides more secured position in the market against competitors and even outperforms competitors. (Wheelen & Hunger, 83, 2007). Hunger and Wheelen also presents Michael Porters two "generic" competitive strategies: lower cost strategy and differentiation strategy. They also illustrate how Porter has developed idea further adding the other dimension, competitive scope, to strategy

formulation. From these two dimension Porter's Generic Competitive Strategy-table is created. The figure in below illustrates the table.

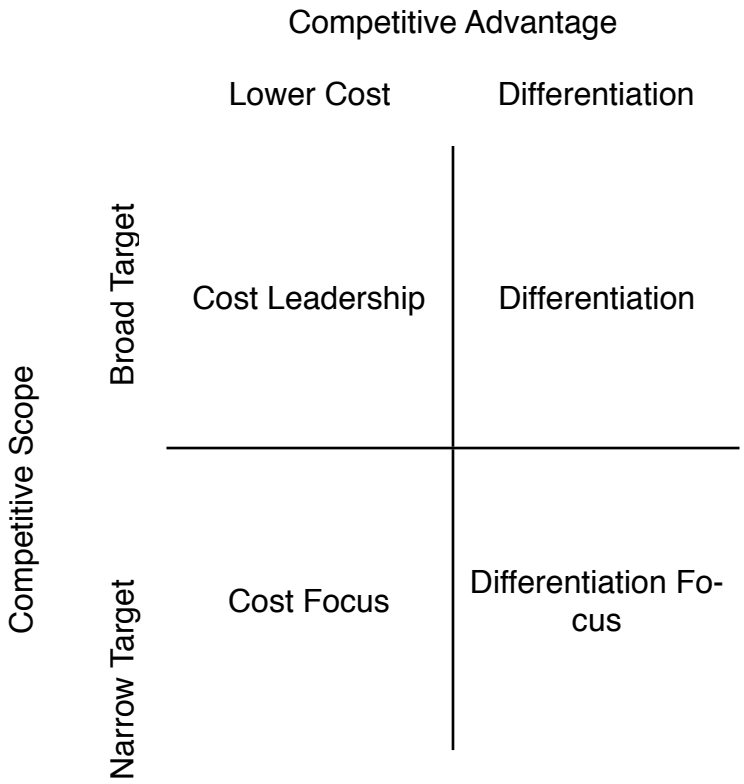


TABLE 4.1 Porter's Generic Competitive Scope, Table originally in book The Essentials of Strategic Management, 4th edition, Hunger & Wheelen, 83, 2007.

Wheelen and Hunger (83-85, 2007) say that Porter has stated that companies have to achieve one of the alternatives to be successful. The study focuses to provide tools to choose among these alternatives.

In this process, benchmarking is a tool to collect the information that guides decision makers, while they choose which generic competitive strategy to follow.

5 THE MARKETING ENVIRONMENT IN USA

5.1 PEST-Analyses

5.1.1 Political-Legal Environment

Political conditions in the USA are very favorable towards the small wind turbine industry, wind energy and other renewable energy industry.

According to the Annual Wind Industry Report 2008 by AWEA, the government of the United States of America has set a tax credit considering investment in small wind turbines. The credit is worth of 30 % of the total cost of the system investments, and the program is set to be operational until 2016. The very same report states that the US government has issued bonds worth of 1,6 billion US dollars to be distributed among trial governments, electricity cooperatives and public power providers to finance their investment in renewable energy production facilities.

Besides presented stimulators, President Barack Obama's government issued the "American Recovery and Reinvestment Act" (hereinafter ARRA) that extended the Production Tax Credit (hereinafter PTC). PTC is a taxation regulation that imposes a tax of 2.1 cents per kilowatt hour on wind energy production. Furthermore, ARRA also gives producers an option to choose Investment Tax Credit (hereinafter ITC) instead of PTC. As stated before, ITC is 30 % of the total cost of the system investments. ITC is also available investing in small scale wind turbines (AWEA).

According to the publications of the White House, ARRA funds are also directed to the development of the smart grid. Altogether 3,375 billion USD are granted for investments in the smart grid with additional 615 million USD granted for smart grid demonstrations (White House, Vice President Biden Outlines Funding for Smart Grid Initiatives). A smart grid is a utility grid that makes it easier to face the challenges set by the varying output of wind turbines.

Furthermore, the United States Department of Labor states that 500 million US dollars have been directed to create "green jobs" and to educate profes-

sionals to work in the green energy industry, like wind energy. (United States Department of Labor: US Department of Labor announces $100 million in green jobs training grants through Recovery Act)

Obviously, a lot has been done politically and legally in the United States to stimulate usage of renewable energies, including small wind turbines and other distributed energy systems. Yet, there might be much to come. One example is the bill of American Clean Energy Leadership Act. If the bill came into force in its current form, the effect on renewable energy business would be remarkable. The bill includes the proposal to create a new financial instrument that would increase the usage of different alternative and renewable energy sources. It also proposes that the research and development costs directed to clean technology should be increased from 3,2 billion US dollars (2009) to reach 6,56 billion US dollars in 2013. In force, the act would create a new entity, Clean Energy Deployment Administration (hereinafter CEDA), which main goal is following:

> *with strong financial expertise and with a specific purpose to create an attractive investment environment for the development and deployment of clean energy technologies." (American Clean Energy Act of 2009, Summary)*

Still, not all legislative issues are favorable in the United States of America. Poor or even absent state-level permissions for utility connection prevent the industry from growing. Even more harmful are the fragmented policies of zoning permits which have cut down the sales of small wind turbines in the United States of America by 1 / 3. Suppliers consider the situation being the worst on Hawaii and in New Jersey regarding zoning permits. Nevertheless, some states have planned to create certification, which would cover utility connection, zoning permission and the requirement to apply incentives (AWEA, Small Wind Turbine Global Market Study 2009). On the other hand, there is no proof that these plans have developed further.

ITC is the only federal incentive for small wind turbine customers, hence PTC is mainly meant for commercial users of wind turbines. The additional, state level incentives are available, but the policies are fragmented and unstable. These incentives are the buy-down grant, productivity incentive and net metering. The buy-down grant is publicly funded. It could provide SWT customers a

possibility to apply a percentage grant, say 50 percent, for his / her SWT investment. This grant is then collected back adding extra charge, e.g. $0,02 - 0,04, to the electricity charge on the kilowatt hour basis (Database of State Incentives for Renewables and Efficiency).

Net metering means a possibility to assemble a special utility meter that can also meter backwards, which will happen, if a SWT connected to utility will produce more than a real estate is consuming. As a result, an SWT owner will pay for the utility company only according to the net consumption of electricity, i.e he or she is storing surplus energy to the utility grid (Database of State Incentives for Renewables and Efficiency).

A productivity incentive provides an SWT owner with a special grant paid according to the kilowatt-hours generated by SWT. (Database of State Incentives for Renewables and Efficiency)

AWEA paints some positive future scenarios that would affect remarkably to sales of SWTs and other renewable energy systems. These include the possibility that the United States apply Renewable Energy Standard (hereinafter RES),which would obligate the utility companies to obtain a certain portion of electricity from renewable sources. Another positive scenario is that the United States will apply Federal Climate Change Legislation which would force everyone to decrease their CO2 pollution boosting the sales of small wind turbines (AWEA Small Wind Turbine Global Market Study, 2009). These future prospects should be considered speculations rather than predictions, because AWEA is not providing any information source for the arguments.

Taking account the very technical character of the product of MyPower Finland Ltd. , the company needs to prepare for the process of applying different certificates in order to fulfill the standards of a target market. Small Wind Certificate Council (hereinafter SWCC) is an independent certification body that provides required certifications. A new products need to pass a test process, planned by SWCC, and then send the results for SWCC. After SWCC have examined the results, it decided if the product is SWCC certificated or not. The SWCC certificate proves that SWT fulfills all the standards necessary in the US markets. The SWCC certificate also indicates certain features of the prod-

uct, including noise factor, rated output, annual output and power curve (Small Wind Certification Council, 2010)

5.1.2 Economical

At the time this study is written, the economical situation is very unstable all over the globe.

United States of America is undeniable the largest economy in the world. World Development Indicator, released by Word Bank in October 2009, reports that gross domestic production of United States was 14 204 322 millions of dollars. This is 2.89 times higher then in Japan, which holds the second place of world's largest economies.

Although American products can be found from the every corner of the world, the two most remarkable trade partners are the neighboring countries: Canada and Mexico. The third important trade partner is China, due the trade between the countries was 365,98 billion US dollars from beginning of the year 2009 until December 2009. Comparable figure for Mexico is 305,53 billion USD and for Mexico 429,64 billion USD. (US Census Bureau, 2009)

Bureau of Labor Statistics reported unemployment rate of 9,8 percent from all labor force in United States in September 2009. The very same institution stated that the median of incomes of one week per person were 738 US Dollars in third quarter 2009. (Bureau Labor Statistics, 2009) Unemployment rate is considerable market factor for industry, which customers are mainly consumers.

Despite the financial crises, the source for unstable economical situation that currently riots on, originated in United States, country has managed to heal its economy relatively fast. Bureau of Labor Statistics (2009) reported that the downfall of gross domestic production has declined recently only 0,7 percent (that is from second quarter to third quarter of 2009).

There is one significant element, that is included to economical factor of PEST analysis particularly in this study, due it has remarkable influence to SWT industry: the price and the consumption of electricity. Politically independent source to provide information regarding these two is US Energy Information Administration (hereinafter EIA). According to EIA's Annual Energy Outlook

Early Release Overview, 2009, the production of electricity will grow from 74,23 quadrillion British thermal units (i.e. 21 755 gigawatt-hours) to 81,58 British thermal units (BTUs) by year 2020 (23 909 gigawatt-hours). The portion of other renewable energy sources, where wind energy belongs, was 1.17 BTUs in 2008 and about to grow to 3.01 (882,14 gigawatt-hours).

The average price, i.e price that notifies all electricity consumer segment like industry and households, was 9,8 cents per kilowatt-hour in 2008. EIA projects that price will surprisingly decrease to 9 cents per kilowatt-hour at 2020. The significance of these factors are naturally discussed more in chapter Study conclusions and proposals regarding the entry strategy.

5.1.3 Technological

“The technological environment is changing rapidly. Marketers should watch the following trends in technology” (Kottler, Wong, Saunders and Armstrong, The Principles of Marketing, 2005, 107).

American Wind Energy Association’s Annual Wind Industry Report 2009 often refers to a technical obstacle that harms the development of wind energy sector in the full speed. The problem is the underdeveloped and aged electricity distribution grid. The case company’s marketing plan points out that very same problem is an external threat for success of the case company in the domestic markets. The building time of wind farm is approximately 18 months while renewing of the high-voltage lines, the ones that are needed to transfer electricity produced by wind farms, will take five to ten years (Paul Davidson, USA Today, Wind energy confronts shortage of transmission lines). In fact, there are 300 000 megawatts potential that depends on development of electricity grid, according to the Annual Wind Industry Report 2009 by AEWA.

Despite the technological restriction in the infrastructure are remarkable, local manufacturing of wind turbine and related components has expanded rapidly in recent years. Annual Wind Energy Industry Report states there has been established somewhat 70 new facilities that are related to the wind turbine component manufacturing in US in last two years.

Obviously, there is a required technology to manufacture MyPower Finland Ltd.'s products locally. The argument is that 35 per cent of all SWT manufacturers in globe are located into the United States (AWEA 2009).

5.1.4 Environmental

In the United States, the wind conditions are determined using evaluation scale of seven, where number one refers to the poorest area of wind energy contribution and seven to the best. It has been recognized that level three is the minimum for the beneficial wind energy contribution with large scale turbines and level two for small scale turbines (Wind Energy Resource Atlas of the United States). It is necessary to understand this classification, especially because corresponding classification system does not exist in domestic markets.

The Wind Energy Resources Atlas of United States by Pacific Northwest National Laboratory (1986) determines the wind conditions in United States. According the Atlas, overall there are good wind conditions to produce wind energy in US, due level three wind areas can be found all over the country. In addition, there are plenty of areas where wind conditions reach level four and five. The level four areas are exploded to coastal areas, in high land spots of east Montana, and around great lakes. The level five ares, for example, lie in North Dakota. The wind maps are provided in appendix three (3).

The top conditions, class six and seven, are usually in the east and west parts of country and more precisely in the summits of the mountains and in crest of high hills. On the other hand, the atlas states that weather conditions in these areas are harming wind turbines' ability to work, mostly due ice and deep snow.

The coast of Mexico and the Gape Cod in Massachusetts has their own outstanding feature in wind conditions thus there the coastal wind carry remarkable further into the inland.

United States of America has a distinguishing feature in wind conditions: the wind corridors. The phenomenon exists alongside the mountains where wind is forced to move trough the contraction. The extend of the corridor might vary from a few kilometers up to 50 kilometers. In these corridors the wind speeds

are relatively higher then in the surrounding environments. Besides, the areas where the wind corridors exists, the land is more favorable to installation of wind turbines compared to problematic zones located to high hills and mountains. To see the exact locations of wind corridors, exam the map provided in appendix 4.

It is self evident that wind condition vary from season to another. In United States half of the year is remarkable more windy then another. During the winter and spring, the wind is blowing relatively more then in summer and autumn. The maps describing the wind condition in different seasons are placed to same picture in appendix three (3) to ease the illustrate of seasonal variations.

5.2 Technology adaptation

As stated in the chapter four, Theoretical background and conceptual framework, the strategical decision should also cover the consideration if market has adopted the technology and in which degree.

American Wind Energy Associations Annual Wind industry Repot states that the growth of sold capacity of small wind turbines was 78 percents, which is very remarkable. The more relevant figure considering the case company is the growth of installations of residential size turbines. The approximated growth of residential size turbines was 15 - 20 percents according to report. According to an another report by AWEA, Global Small Wind Energy Study (AWEA 2009), the overall amount of installed small wind turbine units was 13 990 at the end of year 2008, of which 7599 units were residential size.

There are 219 manufacturers of small wind turbines in the world of which 35 percent are based on USA (AWEA 2009).

Moore (1999) argues that mainstream market cover 2 / 3 of overall technology markets. AWEA has estimated, that there are 37,2 million households in US that are potential for SWT owners. Together these arguments tell that the mainstream market is still merging, and technology is adapted more likely by visionaries then pragmatics currently. In addition there are supporting institutions like AWEA and American Recovery and Reinvestment Act that gives a strong support to the development of the markets. Even though there are

some obstacles on the way of the development, them are recognized by the authorities and the methods to overcome the challenges are already in process.

Hence the mainstream markets are emerging, a new entrant should recognize the threat of heavy competition in near future. The competition might not exist yet, but once the mainstream markets adopt the technology and demand explodes, the battle will turns on. An emerging mainstream market also mean that one company might soon gain a Gorilla position, as Moore puts it (Moore G.A 1999, 2005). The Gorilla is a company which incomparably leads the new emerged market. The gorilla exists, because when pragmatics decide to start purchase new technology, they do it at the same time. To ensure, that there will be no disappointments, they will all buy from the same supplier. They also aim to move fast to new market mindset, and then settle to new status quo. (Moore, 2005, 66).

As stated, the United States of America lives the late phase of the early markets of small wind turbines. According to Moore (2005), this means that the ethnographic group inning is Visionaries. In his book Inside Tornado Moore describes Visionaries as follows:

> *Their expectation is that by being first to exploit the new capability they can achieve a dramatic and insurmountable competitive advantage over the old order. (Moore G.A. Inside the Tornado, 2005, 15).*

For a new entrant, it is vital to recognize the especial needs of inning ethnographic group. The status of TABC should also have remarkable influence to strategic management, hence the danger of chasm might still lie ahead.

5.3 Small scale wind industry in the United States

The SWT industry has grown enormously in US in recent years. In 2008, the sales of SWTs grew by 78 per cent, which means 10 500 units and 77 million USD. The capacity rose by 17,3 Megawatts, which equals to 8 650 MyPower 2 kW units. Overall, the small wind turbines had a capacity of 80 megawatts in the United States of America in 2008. Altogether, the sales of US manufacturers covered 49 percent of the global sells (AWEA, Small Wind Global Market Study).

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- Web pages of Ventera Energy, http://venteraenergy.com

8.4 Other

- Interviews and discussion with CEO of MyPower Finland Ltd, Mr. Mikael Seppälä.
- Questionnaire fulfilled by Eric Lovely, Business Development Manager in USA, Proven Energy Ltd. Questionnaire attached as appendix five (5).
- E-mail from Fortis Energy, Alex Hagen. Mail attached as appendix six (6).
- E-mail from Ventera Energy. Mail attached as appendix seven (7).
- Marketing plan of MyPower Finland Ltd. (MyPower Finland 2009).

9 APPENDICES

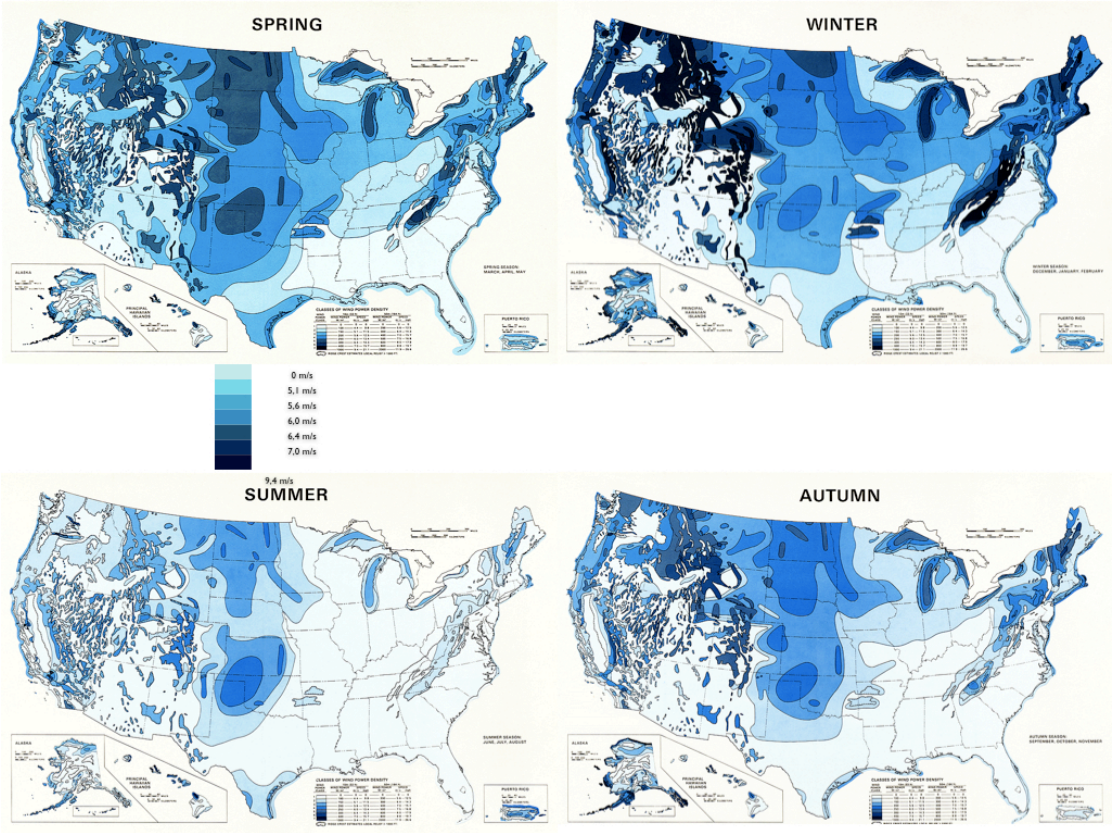
Appendix 1. Comparison table for SWT suppliers in USA

	PRODUCT	Rated power (kW) AC	Rated power (kW) DC	Rated wind speed (m/s)	Start-up wind speed (m/s)	Survival Wind Speed (m/s)	War-ranty years	Price	Price per kW	Average output in 14 mph	Power Output -ratio	ROI compari-son value
FORMULA									Price / Rated power		Output / Rated power	Price / (Average output x 0,098)
Southwest windpower Inc.	Skystream 3,7	2,4		13	3,5	63	5	6 212,00 $	2 588,33 $	5400	2250,00	11,74
	Whisper 500	3		10,5	3,4	55	5	7 778,33 $	2 592,78 $	7200	2400,00	11,02
Bergey Windpower Co.	BWC XL.1		1	11	3,5	54	5	2 790,00 $	2 790,00 $	2790	2790,00	10,20
	BWC XL EXCEL R/48		7,5	12	3,4	60	5	24 750,00 $	3 300,00 $	16440	2192,00	15,36
	BWC XL EXCEL R/120		7,5	12	3,4	60	5	23 500,00 $	3 133,33 $	16440	2192,00	14,59
	BWC XL EXCEL R/240		7,5	12	3,4	60	5	23 500,00 $	3 133,33 $	16440	2192,00	14,59
	BWC XL EXCEL-S/60	10		12	3,4	60	10	29 500,00 $	2 950,00 $	18600	1860,00	16,18
ARE	Are 110	2,5		12	3	N/A	5	12 650,00 $	5 060,00 $	6984	2793,60	18,48
Aerostar	Aerostar 6 meter	10		13,85	3,5	N/A	5	24 950,00 $	2 495,00 $	17 400	1740,00	14,63
SWIFT	Swift windturbine	1		11	3,58	64,8	5	8 500,00 $	8 500,00 $	1900	1900,00	45,65
Raum Energy	Raum 1.5	1,5		11	3,3	50	5	4 875,00 $	3 250,00 $	4143	2762,00	12,01
	Raum 3.5	3,5		11	3,2	50	5	8 250,00 $	2 357,14 $	10730	3065,71	7,85
Fortis Wind Energy -Us	Passaat 3.1	1,4		16	3	N/A	5	8 500,00 $	6 071,43 $	2 080	1485,71	41,70
	Montana 5.0	5		17	2,5	N/A	5	20 500,00 $	4 100,00 $	9 880	1976,00	21,17
ReDriven Power Inc.	ReDriven 3kW	3		10	2	40	5	12 165,00 $	4 055,00 $	10862	3620,67	11,43
	ReDriven 5kW	5		10	2	40	5	14 825,00 $	2 965,00 $	15191	3038,20	9,96
Ventera Energy Inc.	Ventera VT10	10		13	2-3	55	?	21 200,00 $	2 120,00 $	20 400	2040,00	10,60
Proven Energy Ltd.	Proven 7	3,2		12	N/A	N/A	5	N/A	N/A	7842	2450,63	N/A
	Proven 11	6		12	N/A	N/A	5	N/A	N/A	13606	2267,67	N/A
MyPower Finland Ltd	MyPower 2kW	2		8	3	N/A	3	10 700,00 $	5 350,00 $	N/A	N/A	N/A

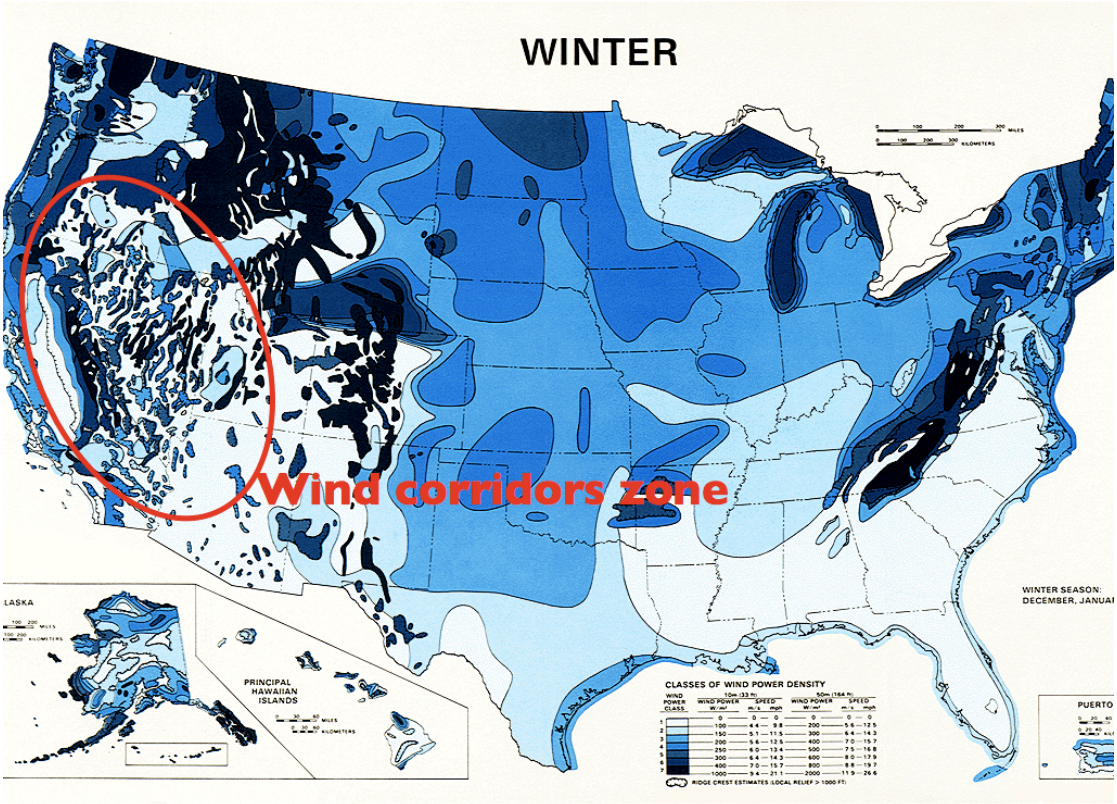
Appendix 2. The prices and sources of SWTs in US

Skystream 3,7	Price	Source
Source 1	6 212,00 $	http://www.gogreensolar.com/collections/frontpage/products/skystream-3-7-grid-tie-1-8kw-wind-power-system
Source 2	6 212,00 $	http://www.windmonkey.com/product-pricing.php
Source 3	6 212,00 $	http://www.solardyne.com/skys37netwin.html
Average	**6 212,00 $**	
Whisper 500		
Source 1	7 830,00 $	http://www.solardyne.com/whis175higvo.html
Source 2	7 675,00 $	http://www.windenergycolorado.us/sitebuildercontent/sitebuilderfiles/skystreampriceswhispersept152009.pdf
Source 3	7 830,00 $	http://www.amrenewable.com/amrsales/category.php?category_id=75
Average	**7 778,33 $**	
BWC-XL1	**2 790,00 $**	http://www.bergey.com/
BWC XL R/48	**24 750,00 $**	http://www.bergey.com/
BWC XL R/120	**23 500,00 $**	http://www.bergey.com/
BWC XL R/240	**23 500,00 $**	http://www.bergey.com/
BWC XL -S/60 -50	**29 500,00 $**	http://www.bergey.com/
Ampair6000		
Source 1	15 978,00 $	http://www.nooutage.com/windgen.htm
Source 2	19 500,00 $	http://www.wire-wiz.com/catalog/c13_p1.html
Average	**17 739,00 $**	
ARE 110		
Source 1	12 650,00 $	http://www.abundantre.com/ARE_Wind_Turbines.htm
Source 2	12 650,00 $	http://www.solarhome.org/browseproducts/ARE-110-Wind-Turbine.HTML
Source 3	12 650,00 $	http://otgea.com/index.php?page=shop.browse&category_id=11&option=com_virtuemart&Itemid=58
Average	**12 650,00 $**	
Aerostar 6 meter		
Source 1	24 950,00 $	http://www.trendir.com/green/two-blade-wind-turbine-aerostar-6-meter.html
Source 2	24 950,00 $	http://store.greenabc4u.com/aerostar-wind-turbine.html
Source 3	24 950,00 $	www.**aerostar**wind.com/images/**Aerostar_Price**_List_3-1-09.pdf
Average	**24 950,00 $**	
Swift	**8 500,00 $**	http://www.swiftwindturbine.com/frequently_asked_questions.php
Raum 3,5		
Source 1	**8 250,00 €**	http://www.otgea.com/products?page=shop.browse&category_id=21
Raum 1,5		
Source 2	**4 875,00 €**	http://www.otgea.com/products?page=shop.browse&category_id=21
ReDriven 3kW	**12165,00 $**	http://www.redriven.ca/products/3kw-wind-turbine/
ReDriven 5kW	**14 825,00 €**	http://www.redriven.ca/products/5kw-wind-turbine/
Fortis Passaat	**8 500,00 €**	Trough e-mail, see appendix 6
Fortis Montana	**20 500,00 €**	Trough e-mail, see appendix 6
Ventera VT10	**21 200,00 €**	Trough e-mail, see appendix 7

Appendix 3. Wind resources of the United States of America



Appendix 4. The location of wind corridors



Appendix 5. The questionnaire fulfilled by Proven Energy Ltd.

Questionnaire for small wind industry supplier

Dear Respondent,

The questionnaire collects primary data for study, related to bachelor thesis for Jyväskylä University of Applied Sciences, Finland. The purpose of the study is to determine the current state of small scale wind industry business in US, and the possibilities of new entrant in the industry. Please fulfill the questionnaire honestly and return it trough e-mail.

Respondent's information

Name: Eric Lovely
Title: Business Development Manager – North America
Company: Proven Energy

1. Could you shortly describe your role and responsibilities in the company?

I manage commercial operations in North America including distributor and installer relationships, market landscape reporting, government policy, and marketing opportunities. I also keep close watch on customer support cases, and shipping/logistics with our order support team.

2. What is your experience regarding small scale wind industry?

After graduating with a Bachelor of Science degree in Environmental Studies/Policy in 2004 I kept an eye on small scale distributed renewable energy scene attending some conferences/seminars until I joined a group called the Solar Living Institute (SLI) in 2006. In 2007, after spending an educational internship with the SLI, I helped launch a company called Teton Power in Wyoming. Teton Power set out to handle projects from concept to integration for solar, wind, energy efficiency consulting. It was with this company that I began a relationship with Proven Energy and went to work directly for this UK based manufacturer in 2008. So, in a relatively short period, I have seen this industry from the inside out from trenching through frozen ground for power lines in Wyoming to lobbying in Washington DC for a federal tax credit…

Questions

1. According to AWEA, Proven Energy Ltd. is the second best selling small wind turbine supplier in US. According to you, what are the key success factors of Proven Energy Ltd. regarding US market?

It's important to note that we are the "world's 2nd largest small wind manufacturer", not specific to the USA. The USA represents 10-15% of our total global market.
Our success has been largely built on our reputation of having simple and robust small wind turbines. There are now roughly 3,500 of our turbines operating globally. Here in the USA, we are often referred to as the 'John Deere of small wind'. People see our

machines up close or in action and can understand how they work. We take pride in our high integrity: working with the IEC to not only help create internationally accepted performance based accreditations for small wind equipment, but becoming the first manufacturer to complete the testing process; ensuring that a Proven trained installer commissions every project; maintaining a 5 year warranty. Other things that help include: working with groups such as AWEA on legislative efforts that benefit small wind on state and federal levels; making sure that we are included in product reviews such as the *Home Power* 'Guide to Purchasing a Small Wind Generator', and roundtable discussions at events such as the Small Wind Conference held in Wisconsin each June; having an informative web site with solid case studies and a live energy calculator. Word of mouth referral sales are also a growing success worth mentioning. Once a turbine is installed in a favorable wind area in a visible location, they start to sell themselves. In the end it's about motivating a channel of dealers and installers to have a presence in areas that have good wind, favorable policies/incentives, and willing customers.

2. What kind of marketing channel Proven Energy Ltd. has in US? Is there intermediaries or do you sell directly to customers?

We sell to a small number of distributors who in turn support a network of installers nationwide. Proven Energy do not handle direct projects in North America. We receive leads from our website that get passed along to local installers to handle. However, most successful sales are generated locally to installers through their own efforts in areas of wind regimes greater than 12mph annual average wind speeds.

3. How many years Proven Ltd. has operated in US markets?

Officially, 10 years. At first a few customers begged for us to ship overseas and our turbines began to trickle across. However, there was a greater push beginning near the end of 2007 extending through today.

4. Could you shortly tell, how and why company entered to US market?

The USA has massive amounts of open lands suitable for small farm and large residential wind project development. The media in the USA really began turning the heat on 'green products' just before a régime change and coincidentally right when we hired a local rep here. Though really, Proven Energy has yet to become the dominant force in the USA that we aspire to become. There is much work yet in store for us on this side of the pond!

5. Is Proven Energy an importer, or do you manufacture Proven turbines locally?

We manufacture our turbines in Scotland and ship ex-works to distributors from there. However, some towers are now sourced locally from the mid-west USA.

6. Have Proven Ltd. faced unexpected regulatory, or any other administrative issues, that have remarkably affected to company's strategy in US?

Yes. Electrical safety polices are more stringent here in the USA requiring testing and certification beyond what is required in the rest of the world, particularly Europe.

7. What is the retail price / price for the end user of Proven 7 and Proven 11 wind turbines[1]. Please, if possible exclude the price of the tower.

I can answer this, but first let me point out that Proven Energy sells complete wind energy systems which must include a tower. A turbine in motion operating at a known range of RPM will create a range of harmonic frequency. Our engineers work hard to ensure that the natural frequency of the towers we specify and provide do not interfere with the frequency of our turbines. If these harmonics overlap there will be considerable and unacceptable added fatigue over the life of the machine, which we figure as over 25 years. We realize that no tower/structure standards in the USA address anything beyond static loading (though do figure this for extreme winds with some ice loading). For this reason and more we have to maintain control of the tower as a critical component of a complete system. We refuse to allow used or second hand towers, though it's amazing how many stories I hear about installers who say they can put other manufacturer's small wind turbines on such equipment.

Now onto pricing:

A tower usually accounts for about 30-35% of the total cost of the system and will vary with type and size. Project cost variables include: local cost of labor, materials such as concrete, ancillary electrical components from switch gear to conduit and wire, local permitting and more.

Pricing for the P7 will range between $25-35K for a complete project, inclusive of tower.

Pricing for the P11 will range between $45-55K for a complete project, inclusive of tower.

8. What is the rated wind speed of Proven 7 and Proven 11?

Both are rated at 12m/s or about 27mph. However, each of these turbines is being tested to IEC standards (adopted in the USA under the SWCC) which will give them an official rating at 11m/s or about 25mph. It's important to know that this rating is a mere snapshot of instant power at a specific wind speed. What is much more important is yield or production of energy, which we measure in kWh (the same units the utility company bills their customers).

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[1] The purpose of the question is to collect the data of all suppliers of small scale wind turbines in US, and analyze the average price of the turbines, customers' ROIs, and price variations. Proven Ltd's information is only one missing.

Appendix 6. E-mail conversation with Fortis Energy

Suggested retail price of Fortis Passaat and Fortis Montana.

From:
Pasi Leppänen (paslepp@hotmail.com)
Sent:
Wednesday, March 24, 2010 3:51:41 PM
To:
alex@fortiswindenergy.us
Dear Alex,

I appreciate Your help. You are absolutely right regarding return on investment.

Thank you for the tip regarding the www-source.

Best Regards,

Pasi Leppänen

From: alex@fortiswindenergy.us
To: paslepp@hotmail.com
Subject: Re: Suggested retail price of Fortis Passaat and Fortis Montana.
Date: Wed, 24 Mar 2010 06:36:47 -0400

Passaat, controller, and inverter - retail $8,500
Montana, controller, and inverter - retail $20,500
Alize, controller, and inverter - retail $38,500

But without annual energy output, there is no way to compare ROI and most turbine companies don't publish.

Here is a much better source than allsmallwindturbines.com... you should use this...
http://homepower.com/view/?file=HP131_pg38_Sagrillo

We are not included in that edition, but we will be this summer. See our comparison table on our web site for annual energy output.

Let me know what else you need.
Thanks
Alex Hagen
Fortis Wind Energy - U.S.
607-379-9463
www.fortiswindenergy.us
----- Original Message -----
From: Pasi Leppänen
To: alex@fortiswindenergy.us
Sent: Tuesday, March 09, 2010 11:24 PM
Subject: RE: Suggested retail price of Fortis Passaat and Fortis Montana.

Dear Alex,

Your request is reasonable. I will send you the final version of thesis, or more likely the company version without theoretical background including only the findings and the conclusions. What ever you prefer.

Thank you for your help!

-Pasi Leppänen

From: alex@fortiswindenergy.us
To: paslepp@hotmail.com
Subject: Re: Suggested retail price of Fortis Passaat and Fortis Montana.
Date: Tue, 9 Mar 2010 22:03:06 -0500

Hi Pasi -

We would be more than happy to help you collect this information. Our only request is that we be given a copy of the final thesis document for our records. Please confirm and we will provide the data you need in the coming days.

Many thanks,
Alex Hagen
Fortis Wind Energy - U.S.
607-379-9463
www.fortiswindenergy.us

----- Original Message -----
From: Pasi Leppänen
To: info@fortiswindenergy.us
Sent: Thursday, March 04, 2010 6:14 AM
Subject: Suggested retail price of Fortis Passaat and Fortis Montana.

Dear Representative of Fortis Wind Energy US.

I am Finnish student in field of high-tech business, currently conducting my bachelor thesis. My topic is small scale wind industry business in US.
I have carefully studied trough your company's web pages, but could not find the exact information regarding the price of your turbine. For me, it would be a great help, if You allow me to know suggested retail price of Fortis Passaat and Montana turbines. I have already discovered your prices from allsmallwindturbines.com web data base, but I would like to receive creditable information directly from supplier.

The price shouldn't include tower, foundations etc. but the necessary equipment for turbine to function on-grid-basis. I will list all the prices of the small wind energy suppliers in US and make comparisons, ROI calculations, and deeper analyses regarding product features.

I hope that you are willing to help me.

Best Regards,

Pasi Leppänen
Jyväskylä University of Applied Sciences.

Appendix 7. E-mail conversation with Ventera Energy

RE: Pricing of your turbine

From:
Pasi Leppänen (paslepp@hotmail.com)
Sent:
Wednesday, March 03, 2010 8:03:50 PM
To:
mhall@venteraenergy.com
Dear Michelle,

Thank you for your help. I wish you the best like for future business.

-Pasi Leppänen

From: mhall@venteraenergy.com
To: paslepp@hotmail.com
Subject: RE: Pricing of your turbine
Date: Wed, 3 Mar 2010 11:50:22 -0600

The turbine is $12,800 which includes all accessories except for the inverter with is priced at $8400.

Michelle Hall

Ventera Energy

Office Manager

218-464-4045

mhall@venteraenergy.com

From: Pasi Leppänen [mailto:paslepp@hotmail.com]
Sent: Wednesday, March 03, 2010 11:47 AM
To: sales@venteraenergy.com
Subject: Pricing of your turbine

Dear Presentative of Ventera Energy,

I am Finnish student in field of high-tech business. Currently I'm conducting a study, regarding small scale wind turbine business in the United States of America. I have carefully studied your web pages, but could not find specific information regarding price of VT-10 turbine. For my studies I need the retail price of turbine and required accessories like inverter / direction unit, excluding mast, foundation etc.

Web data base 'allsmallwindturbines.com' says, that price for VT-10 is 12,000 US$. To avoid using false information in my study, I would like to ask if this price is correct suggested retail price for Ventera's VT-10turbine, included accessories mentioned. If not, I appreciate if you could let me know the correct price.

Best Regards,

Pasi Leppänen, Student / Jyväskylä University of Applied Sciences