Suppliers’ involvement in Innovation & NPD
- A study of the wind turbine industry

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Preface

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Abstract

The purpose of this study is to identify the suppliers’ involvement in innovation and New Product Development (NPD) of wind turbine manufacturing. In this thesis we analysed the sources of innovation and also explored the benefits that the companies derive when they involve the suppliers in the process of innovation and NPD. We present results from the study of 31 wind turbine producers across the globe including, small, medium and large companies. The conclusions are that most of the companies claimed that they involve suppliers in innovation and NPD. In the theory chapter, we have presented different techniques of suppliers’ involvement in innovation: to, with and by (Wintelism) the suppliers. Most of the companies use “to” the suppliers technique when they involve suppliers in innovation. Improved quality, lower cost and utilising the suppliers’ knowledge & expertise are the main benefits that companies receive when they involve suppliers in innovation and product development.

Key Words: Innovation, New Product Development (NPD), Sources of Innovation, Suppliers, Wintelism.
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List of abbreviations

GDP – Gross Domestic Product
GWH – Gigawatt Hour
MW – Milliwatt
NPD – New Product Development
TWH – Terawatt hour
1. Introduction

Global economic growth, particularly in populous emerging markets, and the urbanization of societies around the world are increasing demands for energy and other commodities. The demand for energy is still increasing and two main reasons for this are the population growth and enhanced life style. It is expected that within the next 50 years the population will double and strive for better social and economic development, Sen (2004). Enhanced lifestyle and energy demand raise together, the wealthy industrialized economies, which contain 25% of the world’s population, consume 75% of the world’s energy supply, Fells (1990).

Birger T. Madsen, Head of R&D BTM Consultant Aps Denmark emphasizes the importance of innovation in wind turbine industry and explains that it is vital to achieve the goals of reducing global warming effect on climate.

“To achieve the goals of Copenhagen conference (2009) on global warming and climate change, the use of renewable energy is vital. Innovation in renewable sector will play important role to achieve the goals to reduce the global warming impact”.

Global climate change is caused by excess carbon dioxide and other gases in the atmosphere. However, many problems are caused due to increased use of energy in the world. The use of non-renewable sources like, fossil fuel, create potential phenomena such as pollution, acid rain precipitation, ozone depletion, stratospheric and global climate change. All these lead to greenhouse effect. Carbon dioxide (CO$_2$) is the major cause of global warming and a notable threat for the world’s climate. These issues must be taken into consideration simultaneously if humanity is to achieve a bright energy future with minimal environmental impacts. In order to reduce these unwanted and harmful effects, it is necessary to shift towards the use of environmental friendly, clean and renewable energy sources. Another important reason to shift from non-renewable energy sources to renewable energy sources is that the non-renewable energy sources are comparatively expensive to renewable energy sources. Non-renewable energy sources are also diminishing. According to Sen (2004), the world’s remaining oil will only last for approximately 40 more years. This means that the limited non-renewable sources are another lesson & motivation of using renewable energy. Renewable energy technologies offer the promise of clean,
abundant energy gathered from self-renewing resources such as the sun, wind, earth, and plants, Bull (2001).

As fossil fuels continue to diminish and climate change possesses an ever-increasing threat, scientists around the world are searching for new and more efficient methods of generating energy. The re-emergence of wind as a significant source of world’s energy must rank as one of the major developments of the 20th century. This trend has continued during the beginning of the 21st century, with European countries and manufacturers leading the development through government policies focused on developing domestic sustainable energy supplies and reducing pollutant emissions, Manwell (2009). Wind energy is one of the most promising alternative energy sources. Wind energy is clean, electricity generated by wind turbines does not pollute the air we breathe or emit pollutants like other energy sources that mean less smog, less acid rain and fewer greenhouse gas emissions. It is also one of the most cost-effective renewable energy options for reducing global warming, resulting in less than 1% of conventional generation CO₂ emissions per unit of electricity delivered, Europe Wind Energy Facts (1999).

The main function of a wind power system is to transform kinetic energy from wind into electric energy. An aerodynamic rotor is used to turn wind energy into mechanical energy. Thus mechanical energy in a slow turning rotor shaft of wind blade is engaged to high-speed shaft, which is connected to a generator. The rotational mechanical energy inside the generator is transformed into electrical energy. Finally, the electric output is connected to the grid.

1.1 Background
“Necessity is the mother of all inventions” as goes the proverb, so the crisis of oil in 1970s gave birth to the contemporary commercial wind energy in September 1982 in California which is known as “Californian wind rush” in the history of wind energy industry, Danish Wind Industry Association.

Wind turbines function by converting the kinetic energy in moving air into electricity, Wind Power: Capacity Factor. And the important thing is that wind is a source of environmentally friendly & clean energy. Although, the evolution of modern wind turbines in itself is a great achievement, the need for further research and development is inevitable to ensure wind industry a position of significance so that it can compete against the cheapest alternatives,
Wind Energy, The Facts (2009). The EU-funded research & development programmes like the ones under the Fifth Framework Programme have resulted in remarkable success. The development of large MW-scale turbines is one such achievement, EWEA (2009). Because the wind turbine needs to function independently as an automatically controlled “mini power station”, the development of the microprocessor has been a real assistance in this regard. Furthermore, two bladed large wind-turbines, which are supposedly less expensive and more efficient as compared to the standard three bladed turbines, is another fruit of innovation and product development. However, significant refinements of the two bladed wind-turbines are still required in order to fully match and outclass the three bladed machines, Illustrated History of Wind Power Development.

The wind energy industry is rapidly expanding. The wind turbine industry is a ‘non-high tech’ growth industry, Jacobsson & Johanson (2000). All wind turbines installed by the end of 2009 worldwide are generating 340 TWh per annum, equivalent to 2% of the global electricity consumption. Wind power showed the growth rate of 31.7%, the highest rate since 2001. The trend continued so that wind capacity doubles in every three years. The USA maintained its number one position in terms of total installed capacity and China became number two, only slightly ahead of Germany. Asia accounted the largest share of new installation (40.4%) followed by the North America (28.4%) and Europe fell back to third place (27.3%), World Wind Energy Report (2010). Further explanations about wind turbine installations worldwide are in appendix (B).

1.2 Problem Discussion
Wind energy turbines have developed increasingly and cost reductions are attributed from technical improvements, product development and innovation in components or system, Björk, A. (2009). Manufacturing wind turbines that can meet all the technical and social challenges require a lot of improvements through innovation & product development. To achieve the economies of scale and reduce cost, improvements and alternatives can be developed with the involvement of manufacturers and suppliers, these might include further standardization of components, or sharing of components manufacturing, Strategic Research Agenda (2008). Birger T. Madsen, Head of R&D BTM Consultant Aps, states that the wind industry is expected to increase its demand for installed capacity from today’s 20,000 MW/year to around 50,000 MW/year by 2012, this dramatic market expansion entails a
major challenge for the industry to increase component supply and innovation is very much required for larger wind turbines. To meet the acceleration of growth, collaboration between component suppliers and manufacturers of wind turbine is cardinal, The International Wind Power Industry forecast, (2008).

Supplier involvement in innovation is important concept because suppliers are the new source of innovation, identified by Von Hippel, (1988). Many researchers like Lam & Chin (2004), Ragatz & Handfield (1997), Clark (1989), Clark & Fujimoto (1991), McGinnis & Vallopra (1998), all argue that supplier involvement in innovation and product development is beneficial for the company. No doubt, supplier involvement is cardinal for innovation and product development but the questions arise: “How?” and “To what extent is the supplier involvement in innovation and product development?”, this is the focus of our thesis. Von Hippel (1988) identified innovation by the supplier and Borurs & Zysman (1997) introduced the concept of Wintelism, innovation by the supplier. Philipson (2010) added two more categories, with and to the supplier. Von Hippel’s studies on innovation by the supplier have been empirically validated by many researchers like Lam & Chin (2004), Ragatz & Handfield (1997), Clark (1989), Clark & Fujimoto (1991), McGinnis & Vallopra (1998) and Ragatz et al. (2002), and little empirical studies have been found on Wintelism/innovation by the supplier, introduced by Borurs & Zysman (1997). On the other hand, there have been no empirical studies done on innovation to and with supplier introduced by Philipson (2010).

Our aim is to validate the new theory of supplier involvement introduced by Philipson (2010) along with Von Hippel (1988) and Borurs & Zysman (1997) studies on innovation by the supplier. In this thesis, we will implement supplier involvement theories on Wind Turbine industry worldwide.

1.3 Purpose
We want to study and explore how suppliers are engaged in the technical development and innovative design solutions in wind turbine manufacturing.
2. Theoretical framework
In this chapter we present theories about innovation, product development and several methods, which a company can use to get supplier involvement in product development and innovation. At the end of this chapter, we present the different techniques of supplier involvement, benefits of supplier involvement and International Production Networks (IPNs).

2.1 Innovation
There are several definitions of innovation; most of the definitions are similar.

“Innovation is the generation, acceptance, and implementation of new ideas, processes, products, or services”, Kantar (1983).

“An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”, Westland (2008).

“Innovation is the successful application of new ideas in practice in the form of new or improved products, services or processes”, Bruce & Bessant (2002).

Innovation is one of the few ways in which a modern business can differentiate itself in the market, Westland, (2008). In today’s global business world, innovation is most important because successful innovations can increase firms’ profit and market share. The new and innovative product should have significant differences that are valuable for customers, Westland (2008) and Von Stamm (2008). The return and market capture on successful innovation is higher than traditional business. Companies use innovative products as a tool against their competitors. Innovation has received considerable attention as having a crucial role in securing sustainable competitive advantage. Tushman & Nadler (1986) affirm that to compete in an ever-changing environment, companies must create new products, services, and processes; to dominate they must adopt innovation as a way of life.

The relationship with suppliers leads to foster company innovation and competitiveness, Birou, L.M. & Fawcett, S.E. (1994). When companies create collaboration with their suppliers, the relation leads to innovation because of mutual understanding. Innovation is
likely to be more successful if it involves some interaction with suppliers, Birou, L.M. & Fawcett, S.E. (1994).

There is no doubt that innovations were, are, and will be extremely important for companies and individuals. The competition is increasingly harsh and companies must continuously bring innovative products and services to the market. Innovation is one of the few ways in which a modern business can differentiate itself in the market.

The term innovation consists of two elements; invention and commercialization, Westland, (2008) and Von Stamm (2008). The invention is the development of new products and services or a new way of doing things, while commercialization focuses on launching the invention in the market. Those definitions give a broad explanation of innovation. The key characteristics of innovation are: a new or improved goods/services or new ways of doing things, which add value that significantly improve the output, which later is commercialized. According to Porter, (1990) innovation is a new way of doing things that is commercialized.

Innovation can be summarized as:

\[ \text{Innovation} = \text{Invention} + \text{Commercialization} \] (Westland, 2008, p.3).

Innovation can be commercialized in different ways to capture the market. The commercialization of innovation varies from company to company. It starts from idea generation to market introduction.

2.2 New Product Development (NPD)

Authors define New Product Development differently. Barclay (2000), defines it as: “The term new product development is all embracing and ranges from products that are totally new to the world to minor modifications.” Trott (2008), defines NPD as follows: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.” Trott stated that it is difficult to know about the newness of a product. In the case of new product it is relative to what preceded the product.

Booz et al. (1992), identify the commonly accepted categories of new product development below:

**New-to-the-world products**

These products are more innovative and contain significant development in technology, such as new discovery. Such kinds of products are first of their kind and create a new market.
New product lines (new to the firm)

These products are not new to the world but these products are new to the particular company. Such kinds of products provide an opportunity for a company to enter into an already established market for the first time.

Additions to the existing lines

Such kinds of products are significantly different from the other products that a company is already operating in the market. This is the sub category of new product line.

Improvements and revisions to existing products

Such kinds of products are the replacement of existing products in a firm’s product line. This category also called the modified products line improves the performance, reliability and increased added value to the existing product line.

Cost reductions

This category may not be a new product in the marketing perspective because such kinds of products do not offer new benefits to the customer. These products only provide the cost reduced benefits to the customers. Indeed this category of new product provides more financial benefits to the company.

Repositioning

These new products are actually the discovery of new use of existing products. This has as much to do with consumer perception and branding as technical development, Trott (2008). This category of new product is also more important to the company.

2.3 Sources of Innovation

The role of innovation by users, suppliers and manufacturers differ significantly from industry to industry, between 6% and 90% of innovations come from external sources, Von Hippel (1988). His explanation, as to what determines the primary source of innovation is that it’s rooted in economic benefit. The economic rent generated by an innovation will tend to be the primary innovation driver. When users receive the benefits from using the products or services, they are the innovators, when manufacturers derive the benefits from
manufacturing, they are and when suppliers of components gain economic benefits from supplying the components, they are.

Hauschildt (1992) identified various sources of innovation within the firm and from external environment. He claims that there are four major sources of innovation externally to markets (customers and suppliers), scientific systems (universities and research institutions), government authorities (patent offices, and financial centres), and mediating systems (consultants, press and trade fairs). He also identified internal sources of innovation within the company like, employees, R&D department etc. A high level of external linkage results in higher level of externally stimulated innovation and high degree of knowledge intensity related to significantly higher levels of internally stimulated innovation, Willoughby & Galvin (2005). The sources of innovation, whether internal or external are both of vital importance. Baranano, M., et al. (2005), identified 10 sources of innovation within the firm and from the external environment. These include customers, co-workers, competitors, internal R&D, manufacturing, top management, suppliers, university and research institutions, and professional journals. Innovate or die; no one company acting alone can hope to out-innovate every competitor, supplier or external knowledge source around the world, Quinn (2000). Quinn argues that approximately 2 billion new minds became innovation sources for our marketplace between 1999 and 2010.

Image 1, New Sources of Innovation, modified after Philipson (2010).
To identify the major sources of innovation, we modified the original model made by Philipson (2010), “Sources of Innovation Revisited”. In the above model, the company is in the center of the model. Innovation can come from different sources including suppliers, customers, competitors and other sources (university researchers, consultants, market trends etc.). In this study, our focus is on the different techniques of suppliers’ involvement in innovation. In the theory chapter we have presented theories about sources of innovation and different techniques of supplier involvement in innovation. Borurs & Zysman (1997) identified innovation by the suppliers; Philipson (2010) added two other techniques to and with the suppliers. In the above model, there are three different techniques of suppliers’ involvement in innovation, to, with and by (Wintelism) the suppliers. In the above model on the right side there are different techniques of user involvement identified by Kaulio, M.A. (1998) but the purpose of this study is to highlight the suppliers’ involvement in innovation. There are 4 major sources of innovation in the above diagram because innovation can come from any of these sources. In our questionnaire for interview guidelines, we have mentioned all these sources of innovation.

2.4 Types of supplier involvement in innovation & NPD
Supplier involvement in innovation is important concept because suppliers are the new source of innovation, identified by Von Hippel, (1988). In today’s competitive world, many companies are trying to gain competitive advantage by involving suppliers in the product design and development process, Ragatz & Handfield (1997). Suppliers’ involvement is more important from idea generation to design of components, systems, processes, or services they supply. Many researchers, like Lam & Chin (2004), Ragatz & Handfield (1997), Clark (1989), Clark & Fujimoto (1991), McGinnis & Vallopra (1998) and Ragatz et al. (2002), argue that using the knowledge and expertise of suppliers in product development may help to reduce concept-to-customer cycle time, costs, quality problems, better product quality and improve the overall design effort.

Von Hippel (1988) identified the innovation by the supplier and for the firm. Philipson (2010), placed two other important categories of supplier involvement in innovation and these are innovation to and with the supplier, explained below:
To the supplier

To the supplier is the traditional outsourcing concept. In this concept the firm does all the invention inside the firm and just outsources the production to a supplier. When the firm outsources the production to the supplier, it is necessary to transfer the product components or design knowledge to the supplier.

Traditional outsourcing meant doing the same things better, faster and cheaper, Mazzawi, E. (2002). Companies could outsource product development activities such as non-critical assembly, production to more specialized and capable external parties, i.e. suppliers, Echtelt (2004).

Knowledge transfer (to the supplier)

Product knowledge plays an important role for the success of the companies. The firm plays the role of creation, magnification and applying knowledge. Knowledge is distinguished into two types, explicit knowledge of information and tacit knowledge or know-how. Explicit knowledge can be easily codified, such as facts. Tacit knowledge on the other hand is difficult to codify, such as knowledge of production. Transfer of tacit knowledge to supplier is a difficult task because it resides within the individuals and it can only be observed thorough application, and acquired through practice. To share tacit knowledge with the suppliers or individuals outside the boundaries of the firms, it is possible to bring the individual or suppliers to the firm to observe “applied knowledge” into practice, Modi & Mabert (2007).

Firms need to consider not only how to partition sets of required knowledge and distribute them to reduce potential risks of outsourcing, and improve the efficiency and effectiveness of the innovation project, Fine, C. (1998).

With the supplier

In this kind of supplier involvement in product development the firm asks the supplier to provide special or standard special product components to increase the value of its products. The basic purpose here is to develop standard products within the firm with the collaboration of the supplier.
**By the supplier/for the firm**

When the supplier of material invents new material characteristics that increase the value of firm’s product, this is called the product development by the supplier/for the firm.

**By the supplier/Wintelism**

Borurs & Zysman (1997) explain that Wintelism is a “code word” created by linking the names of the two most evident major victors of the new standards competition, Microsoft Windows the software operating system and Intel microprocessors. They define Wintelism as follows:

“Competition is shifting away from final assembly and vertical control of markets by final assemblers toward a struggle over setting and evolving de facto product standards in the market, with market power lodged anywhere in the value chain, including product architectures, components, and software”

Product development by the supplier/Wintelism is placed alternatively to the traditional outsourcing. In this concept the producer of product specifies the input and output of the component, leaving the supplier to decide the necessary transformation, Philipson (2010). Wintelism as the structural dominance of components providers over assemblers, is affected by applying strategies for controlling architectural standards in a horizontally segmented industry, Hart & Sangbae, (2002). Vertical segment and horizontal segment are two important concepts to understand Wintelism. In vertical segment industry, firms are responsible for all key aspects of design, manufacturing, software, sales, service and producing the whole product. In contrast, in horizontal segment industry, firms are forced to outsource its component manufacturing to create competition within the industry. In horizontal segment industry, companies outsource the development of product components to the supplier and make the final product inside the firm and market the products. The basic difference in traditional outsourcing and Wintelism is transfer of knowledge. In traditional outsourcing or product development to the supplier, firm transfers all the necessary knowledge to the supplier about product components production. In Wintelism, producers choose to only specify the input and output of the component, leaving the supplier to decide the necessary transformation, Philipson (2010).
Knowledge sharing (by the supplier)

Knowledge sharing in product development is one of the unique, valuable and critical resources that are central to having a competitive advantage. There is also a little doubt about shared knowledge in product development because useful knowledge is difficult to produce. One basic reason of this “sticky information” established by much of what needs to be understood across specialities. Shared knowledge is an important resource underlying product development capabilities. There are three kinds of knowledge shared: shared knowledge of customers, internal capabilities and supplier’s capabilities, Hong, P., et al. (2004).

Product development is information and knowledge-intensive work, Clark & Fujimoto (1991). Shared knowledge of suppliers refers to the extent of shared understanding (i.e. know-why) of suppliers’ design, process, and manufacturing capabilities among product development team members, Hahn (1990). Suppliers are actively involved in key process of product development, the knowledge of suppliers’ capabilities is critical for timely and cost effectively decision making in product development, Evans & Lindsay (1993). Shared knowledge of suppliers provides bases for product development members to improve their product process (communication and collaboration among design and manufacturing engineers) and enhance customer values (fairly assessing cost of raw materials of the product supplied by the suppliers) because a significant portion or part of their final product depends on suppliers’ work, Hong, P., et al. (2004).
The seller holds all the intelligence: Only the input and output of the component is specified.

The above model indicates that the seller outsources the product component production to the suppliers and holds all the necessary intelligence inside the box. The seller only specifies the component production to the suppliers and markets the final products by him/herself. The basic reason behind this is “knowledge sharing”. The seller keeps the knowledge inside the firm, just asks the supplier for component production. This concept is opposed to traditional outsourcing. In traditional outsourcing, the seller transfers all the related knowledge to the suppliers for component production.

2.5 International Production Networks (IPNs)
International Production Network (IPN) is the production organization counterpart to Wintelism. It is a label given to the consequent disintegration of the industry’s value chain into constituent functions that can be contracted out to independent producers; the companies may be located anywhere in the global economy, Borrus & Zysman (1997). IPNs have transformed large segments of complex manufacturing into a commodity in the market. They allow firms to put together the constituent elements of the value chain into competitively efficient novel production systems and simultaneously permit diverse points of innovation.
IPNs are different kinds of organizations, across national borders, through which the firm conducts research and development, product definition and design, procurement, manufacturing, distribution, and support services. Such networks comprise a lead firm, its subsidiaries and affiliates, its subcontractors and suppliers, its distribution channels and sources of value-added product or service features, its joint ventures, R&D alliances and other cooperative arrangements, Borrus & Zysman (1997). IPNs allow and result in an increasingly fine division of labour. Through IPNs, a large segment of complex manufacturing can be turned into commodity available in the market.

Wintelism and International Production Networks (IPNs) are very much interrelated and interwoven emerging developments and their origin can be traced to American technology competition. These two together are changing the terms of competition in many global markets and shifting the structure of many industries.

2.6 Benefits of supplier involvement in innovation and New Product Development (NPD)

“Every outsourcing opportunity offers possibilities to improve innovation”, Quinn (2000). Effective integration of suppliers into New Product Development and Innovation can yield such benefits as reducing cost and simultaneously improving quality. “Faster, better, cheaper” are the magic words that summarize the daunting challenge for any innovation and product development. To meet this challenge we require an efficient role of the suppliers in innovation and NPD process, Ragatz (1997). Suppliers’ role in product development is a source of competitive advantage, Echtelt (2004). There is a very high demand on innovation and new product development performance in terms of speed, efficiency and cost. It is argued that the earlier and more extensive involvement of suppliers in this regard is very beneficial and will help to achieve productivity, speed and product quality, Clark (1989) and gain access to additional resources that are not available within the firm and expand the production capacity, Deavers (1997). Furthermore, it could be a source of innovative ideas, Håkansson (1987) and critical technologies, Bonaccorsi & Lapparini (1994).

Imai (1985) has illustrated by the example of Japanese industries (such as the automotive, copier, camera, and personal computer industries) that extensively use supplier networks, had a healthy impact on the speed and flexibility of product development. Burt (1989)
reported that Xerox achieved a reduction in time and cost by 50% because of the closer partnerships with suppliers in innovation and product development, besides other factors.

Following Echtelt (2004), we sum up the benefits of supplier involvement in innovation and NPD and divide them into two types according to their short-term and long-term character. The short-term or operational benefits of supplier involvement are: improvement of product quality, reduction of product cost, reduction of development time and reduction of development costs. Whereas the less tangible benefits are the long-term strategic benefits of suppliers’ involvement and they are not reaped after a single collaboration but created over time. The long term benefits are: more efficient & effective future collaboration, alignment of technical strategies, improved access to supplier’s technology and a contribution to product differentiation, Echtelt (2004).

2.7 Discussion
The focal point of this thesis is supplier involvement in innovation and product development. We tried to identify how wind turbine producers involve suppliers in innovation and product development. We have presented different theories about innovation, NPD and suppliers’ involvement in innovation & NPD. We want to validate Philipson’s (2010) theory about different techniques of suppliers’ involvement in innovation and NPD. We want to implement this theory in wind turbine industry across the globe. For this purpose we have chosen a sample of 31 wind turbine manufacturing companies (further information about sampling and total number of wind turbine manufacturing companies are given in the methodology chapter).

2.7.1 State of the Art
The theories and definitions that we have presented about innovation and New Product Development (NPD) are empirically validated Trott (2008), Tushman (1986), Herstatt & Von Hippel (1992), Johne (1999), Baregheh & Rowley (2009) and are generally accepted and hence dominant. Most authors consider innovation and New Product Development (NPD) more or less in the same way. Most authors argue that supplier involvement in innovation and New Product Development (NPD) is beneficial for the companies.

Von Hippel (1988) and Borurs & Zysman (1997) identified one common technique of supplier involvement, which is “innovation by the supplier”. This technique of supplier involvement is

Philipson (2010) identified the different techniques of supplier involvement in innovation and product development. She identified innovation and product development to, with and by the supplier. This is the new theory, which presents different techniques of supplier involvement in innovation and product development and is not empirically validated by peers. This is, therefore, considered to be a gap that has to be filled in.

In this thesis we will investigate the supplier involvement in innovation and product development in wind turbine industry.

### 2.8 Research Questions

- *Are wind turbine producers innovating and developing new products?*
- *Do wind energy turbine producers involve suppliers in innovation and New Product Development (NPD)?*
- *How and to what extent do they involve their suppliers?*

### 3. Methodology

“Research method refers to systematic, focused and orderly collection of data for the purpose of obtaining information from them, to solve particular research problem”, Ghauri & Gronhaug (2005). According to Downward (2003), there are three different research approaches; induction, deduction and abduction. As we have no inclination to generate new theories out of the empirical data and our approach is to test existing theories in practice and then verify or falsify the same, we have chosen to use a deduction approach. Our research design is based on descriptive survey and it has the focus on gaining more information about the suppliers’ involvement in innovation and product development of wind-turbines.

### 3.1 Sample

Since we do not have enough time and resources to reach the entire wind turbine manufacturing companies in the world, we have chosen to sample the industry. The selection method will affect the ability to generalize the results, Bryman (2008). Because we
can easily recognize an access problem we have opted for a convenience sample, which is a non-random sampling technique. However non-random selection approach reduces the possibility for generalization, Bryman (2008). We also realize that the selection of non-random sample could have an impact on the overall result of this thesis.

By using the World Wide Web, we found 231 wind turbine manufacturing companies across the globe. We identified these companies from different sources. All 231 companies are listed in appendix (F). To find out the contact information of all 231 companies from all over the world, we found information about the Annual European Wind Energy Conference and Exhibition 2010 in Warsaw, Poland. We found that several wind turbine manufacturers from different regions of the world are going to attend the conference and exhibition. Instead of making contact with the wind turbine manufacturers through e-mails and telephones, we planned to attend the European Wind Energy conference and exhibition in Poland. The reason to attend the conference and exhibition was to get the up to date information about the wind turbine manufacturers and face-to-face interaction with the wind turbine manufacturer companies. We preferred direct interviews because this leads to an understanding of the behavior, attitude and background of the company. These interviews will further lead us to understand the concept of innovation and product development in wind turbine manufacturing industry and the involvement of the suppliers in this phenomenon.

3.2 Data Collection
According to Bryman & Bell (2007), data can be classified into two types; primary and secondary. Primary data is original data collected by us with the explicit aim of answering our research questions. We have used both primary and secondary data in this thesis. By the effective use of the World Wide Web we obtained secondary data from the information shared on the web pages of World Wind Energy Association and from Annual reports made available on the Internet by these associations and wind turbine manufacturing companies from all over the world.

Empirical Data Collection
Primary data, which is the main source for our thesis work will be obtained through survey. “The means of collecting primary data include observations, experiments, surveys
(questionnaires) and interviews, Ghauri & Gronhaug (2005). “Within business and management research, the greatest use of questionnaires is made within the survey strategy”, Saunders (2009). “A descriptive survey attempts to describe or document current conditions or attitudes – that is, to explain what exists at the moment”, Wimmer & Dominick (2006). Therefore, we collected our empirical data through direct personal interviews with the representatives of the companies including Director Marketing, Sales Representatives, Product Development Engineers, R&D Directors, Product Managers, and Marketing Managers etc. A total of 45 wind-turbine manufacturing companies from all over the world attended the conference and exhibition and we interviewed with 31 companies. We managed to do direct interviews with 25 companies. Each interview lasted from 10 to 20 minutes. The remaining 6 companies promised to answer our questionnaire through e-mail. During the interviews with the representatives of the companies, we felt that sales representatives and product development engineers were not much aware of the product development activities, nevertheless, they all did their best to actively participate in the interviews and tried to answer all the questions.

3.3 Interviews Guidelines
For the purpose of collecting empirical data from wind turbine manufacturers, we used structured interviews. Structured interviews are more reliable, accurate and have ease of data processing, Bryman (2007). The aim of structured interviews is to provide the same context of questions to all the interviewees. This means that each respondent receives the same questions as others. When we conducted the interviews, we asked all the questions in the sequence that we have written our questionnaire. Furthermore, we provided explanation of the questions whenever any of the interviewees seemed unclear about a particular question.

3.4 Questionnaire for interviews
To understand the supplier involvement in innovation and product development, we conducted questionnaire for the interviews based on the theories that are presented in the theory chapter. In the beginning of the questionnaire, we briefly introduced ourselves and gave a short description of our thesis, and the purpose of this interview. After that we recorded in our notebook the short description about the company profile, contact person,
total number of employees and turnover. The purpose of writing this data about the company is to ensure we can contact them if we needed further information.

In European Wind Energy Conference and Exhibition 2010 held at Warsaw, Poland, we realized that different sizes of companies participated in this conference and exhibition. Our interview questionnaire consisted of total 10 questions and we presented the same questionnaire to all the participants in the conference and exhibition. The questionnaire is in the appendix part of this thesis.

The first five questions in the interview questionnaire guidelines are close end questions since we tried to understand the innovation, product development and supplier involvement in wind turbine industry. These close end questions can provide us base for further questions. The rest of five questions are open end since we wanted to give the interviewees a platform to explain more: how and to what extent of supplier involvement, what kind of knowledge transfer to suppliers, benefits of supplier involvement in innovation and product development and one question about International Production Networks (IPNs).

3.5 Operationalization
Instead of directly asking the questions about supplier involvement in innovation and product development, we started the questions to understand the concept of innovation and product development in wind turbine industry. We started from first question about innovation.

Innovation
The first question is about innovation. Are you working with innovation? The purpose of this question is to understand the concept of innovation in wind turbine industry and how they define innovation. According to Westland (2008), “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it.” We mentioned this definition in our questionnaire for interviews. Many other definitions of innovation by several authors are presented in theory chapter, but we realized that this definition is simple and understandable for wind turbine manufacturers.
New Product Development (NPD)

The second question is about New Product Development (NPD). *Are you working with New Product Development (NPD)?* The purpose of this question is to understand the concept of New Product Development (NPD) in wind turbine industry and how they differentiate innovation and NPD. In this question we focused on the NPD definition by Trott (2008), he defines NPD as “Preparation of full-scale manufacturing of a product not previously offered by the marketer.” We think that this is the simplest definition of NPD that can be understandable for wind turbine producers.

First two questions about innovation and New Product Development provides us the base to ask further questions about supplier involvement in innovation and NPD. If wind turbine producers do innovation and are working with NPD, then we can realize how and to what extent they involve suppliers in innovation and NPD.

Sources of Innovation

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) others

The third question is about the sources of innovation in wind turbine industry. *What are the major sources of innovation in your company?* The purpose of this question is to understand from where they get the innovation/innovative ideas. Who is the actual source of innovation in wind turbine industry? According to Von Hippel (1988), the sources of innovation differ significantly from industry to industry. He mentioned that innovation can come from users, suppliers, manufacturers, and other sources like university researchers etc. On the bases of Von Hippel (1988) studies, we tried to find out the actual source of innovation in wind turbine industry.
Supplier involvement in innovation & product development

The fourth question is about supplier involvement in innovation and product development. *Do you involve suppliers in innovation and product development/New Product Development?* Many researchers, like Lam & Chin (2004), Ragatz & Handfield (1997), Clark (1989), Clark & Fujimoto (1991), McGinnis & Vallopra (1998) and Ragatz et al. (2002), argue that using the knowledge and expertise of suppliers in product development may help to reduce concept-to-customer cycle time, costs, quality problems, better product quality and improve the overall design effort. In this question we tried to find out the involvement of supplier in innovation and product development, and then this provides us the base for further questions about innovation and product development to, with and by the supplier.

In question five we tried to find out if the wind turbine producers involve suppliers then which technique they use to involve the supplier? In the theory chapter we have presented different techniques of supplier involvement in innovation and product development. Von Hippel (1988), Borurs & Zysman (1997), and Philipson (2010) identified different techniques of supplier involvement in innovation and product development and these are: with, by and to the supplier. We have further explained these techniques in question 6-8.

Question six discusses about the concept of innovation to the supplier. “*Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?”* Innovation to the supplier is a new technique of supplier involvement in innovation and product development identified by Philipson (2010). In this concept the firm possesses all the invention inside the firm and just outsource the production to the supplier. In the second part of this question, we tried to identify if wind turbine producers outsource the production to suppliers then what kind of knowledge they transfer to the supplier.

In this question we tried to understand the concept of innovation and product development with the supplier. “*When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?”*
innovation and product development with supplier is also a new technique identified by Philipson (2010). In this kind of supplier involvement the firm asks the supplier to provide special or standard special product components to increase the value of its products.

In this question our purpose is to understand the concept of innovation and product development by the supplier. “Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?” Von Hippel (1988) identified the innovation by the supplier.

Borrus & Zysman (1997) identified innovation and product development by the supplier/Wintelism. Innovation and product development by supplier/Wintelism is alternatively to traditional outsourcing. In this concept the producer of product specifies the input and output of the component, leaving the supplier to decide the necessary transformation.

**International Production Networks (IPNs)**

The purpose of this question is to understand the concept of INPs. “Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?” International Production Networks (INPs) is a label given to the consequent disintegration of the industry’s value chain into constituents that can be contracted out to independent producers: the companies may be located anywhere in the global economy, Borrus & Zysman (1997). These companies include contractors, suppliers, subsidiaries, joint ventures, R&D etc.

**Benefits of supplier involvement in innovation and product development**

In this last question we tried to find out the benefits if wind turbine producers involve suppliers in innovation and product development. “What benefits do you see in involving suppliers in innovation and product development?” Effective integration of suppliers into New Product Development and Innovation can yield such benefits as reducing cost and simultaneously improving quality. “Faster, better, cheaper” are the magic words that summarize the daunting challenge for any innovation and product development. To meet this challenge we require an efficient role of the suppliers in innovation and NPD process, Ragatz & Handfield (1997). Earlier and more extensive involvement of suppliers in this
regard is very beneficial and will help to achieve productivity, speed and product quality, Clark (1989).

<table>
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<th>Type</th>
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<tr>
<td>- Innovation</td>
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<td>- Sources of innovation</td>
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<td>- Supplier Involvement</td>
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To identify different technique of supplier involvement

- Innovation and NPD “to” the supplier | 5               |
- Innovation and NPD “with” the supplier| 6               |
- Innovation and NPD “by” the supplier  | 7               |

- Benefits of supplier involvement        | 8               |
- International Product Networks (IPNs)   | 9               |

**Open questions**

**Closed questions**

### 3.6 Reliability

We believe that the reliability in this thesis is discussable. The reason behind this, we conducted interviews with different personnel with different designations including Director Marketing, Sales Representatives, Product Development Engineers, R&D Directors, Product Managers, and Marketing Managers etc. We think that the result may vary depending upon the time interviews have been carried out and by whom. If the interviews would be carried
out with same personnel and with the same questionnaire that we have presented, the results would be the same.

### 3.7 Validity

We think that the validity of this thesis is rather high. We managed to measure what we premeditated to and we think that the interview guideline is well connected to the theory. We also believe that the interview guideline is founded in our theoretical base. After the interviews, we have been able to equate the answers from the respondents with the theory of supplier involvement in innovation and product development.

### 4. Empirical Study

In this chapter we present the empirical presentation of 31 wind turbine manufacturer companies. This empirical data is gathered from European Wind Energy Association conference & exhibition 2010 at Warsaw, Poland. We attended the conference and exhibition from 20\(^{th}\) to 23\(^{rd}\) of April 2010. Total 45 wind turbine manufacturers from all over the world attended the conference and exhibition. Due to shortage of time and resources, we interviewed with 25 companies and 6 companies filled the questionnaire later through E-mail. We interviewed with the representatives of the companies including Director Marketing, Sales Representatives, Product Development Engineers, R&D Directors, Product Managers, and Marketing Managers etc. The empirical data is summarized in an empirical table, which is included in appendix (A).

#### 4.1 Innovation

Out of 31 wind turbine manufacturers that were interviewed all 31 said that they considered innovation important in one way or the other and therefore, they were involved in manufacturing with innovation.

EWT explained the significance of innovation in these words: “As wind turbine market is a relatively young market with a lot of potential for growth and improvement; therefore, innovation is quite inevitable.” Yes “we are manufacturing new products that have unique features to solve problems of wind turbine industry in general and meet the demands of our customers in specific.”
Acciona Windpower and Gamesa told us that innovation is important for them because of the tough competition in the market. “Innovation has the capacity to differentiate; our strategy is to exploit differentiation and so we work with innovation”, explained Gamesa.

Alstom Wind claims that they are making new products that have new uses for the customers. They define innovation as “new products with new features for increasing customer satisfaction”.

Clipper Windpower and Siemens Windpower A/S explained the importance of innovation in the perspective of shorter life cycles of the products. KENERSYS Europe GMBH said: “Innovation is becoming more and more important because of tough competition and shorter life cycles of products.”

GE Power & Water commented that innovation is very important. Frank Hoersting, Leader Communications, Renewables – Europe, explained: “We have to find technical solutions to problems in wind turbine industry. Our engineers have to come up with improved technology in order to stay on top.”

LEITWIND Spa – AG told us, “Yes, we are working on it. We are manufacturing wind-turbines with no gearbox. As some technical problems in wind turbines were associated with the gear-box so we thought of manufacturing wind turbines without them.” SWAY AS claims, “Yes we are working with innovation and the proof is that we are giving new products in the market.” WinWinD responded to the question about working with innovation by saying that they were always looking to enhance customer value and innovation is part of it.

Lagerwey Wind BV, Northern Power Systems and Vergnet SA said they were working with innovation as per definition of innovation that we have presented. PowerWind GmbH has described innovation as important key to success. “Innovation enables us to find solutions for problems and it also increases the value of our products. How much successful we can be in meeting the demands of the competitive market depends on how efficiently we can improve our products through innovation.”

The Chinese Ningbo Ginlong Technologies Co, Ltd. stated: “Always yes to Innovation, this is our conviction that there is survival only for the fittest. Innovation determines who is the fittest.”
4.2 New Product Development (NPD)

26 companies are working with NPD. Five companies claim to be working with innovation, but do not work with NPD: REpower Systems, ResQ-Cresto, Lagerwey Wind BV, EWT, and SWEG.

Adventum SRL, Fuhrlander AG, KENERSYS, Nordex, SUZLON Wind Energy A/S and SWAY AS consider NPD to be the same as innovation. Whereas, Acciona Windpower SA, ADES, Clipper Windpower, Inc., GE Power & Water and Ningbo Ginlong Technologies Co, Ltd. explained that innovation and NPD are interrelated and they work together in pair.

Acciona Windpower, S.A. said, “We think that if you are working on innovation then you are automatically developing new products.” Clipper Windpower, Inc. described the relationship of innovation and NPD in these terms: “Innovation and NPD join hand in hand in our organisation. We don’t have separate processes for them.”

In contrast, few companies distinguished NPD from innovation. EWT (Emergya Wind Technologies BV) responded to our question about NPD by saying, “No, we are not working with this concept. We work with innovation but not with NPD, as the definition you have just quoted says the preparation of full-scale manufacturing of a product not previously offered by the marketer.” REpower systems AG claimed that they work to improve the existing products only.
Some companies pointed out that their definition of NPD was different from the definition that we were presenting in our interview. ResQ-Cresto explained, “We view NPD as Product renewal, often development of already existing products.”

On the importance of NPD, Vestas Wind Systems A/S said, “It is essential to know what the customers’ preferences are! In order to create the best products possible we must improve them so that they qualify to the specific concerns of our customers.”

Vergnet SA explained that NPD is crucial for maintaining or growing the market share. Siemens Windpower A/S claimed that, “New Product Development is vital in order to differentiate and compete well. Our in-house engineers are responsible for the development of new products and they do this with the assistance of Research & Development department.”

UNISON Co, Ltd of South Korea responded clearly in favour of NPD, “Yes we work with New Product Development and this includes manufacturing totally new products as well as improvement and modification of existing products.”

WinWinD claimed, “Our engineering teams utilize global synergy and are always working on supporting current product and improving to make the product more efficient and cost effective to our end users.”

Alstom Wind gave example of their NPD. They said that the development of the offshore wind-turbines serves as an example in this perspective.

(Total number of interviewed companies 31)
4.3 Sources of Innovation

As far as the sources of innovation are concerned, there is a variety of mix for all the 31 companies who are working with innovation. However, the major sources for majority of them are a combination of two things; the in-house (within the company by the producer) and the users. A total of 25 companies claimed that the major source of innovation for them besides other things is the in-house. Users are also one of the significant sources as 19 companies mentioned the customers as the main source of innovation for them.

Suppliers as the major source of innovation got their relevance only with 10 companies out of 31 that are working with innovation.

Eight of them said that the Universities & Consultants were part of their sources of innovation. Three also included market trends and two of the companies working with innovation even named the competitors as their source of innovation along with other significant sources.

GE Power & Water elucidated by saying, “Major sources of innovation are the users and the employees within the company. Identifying the customers’ needs and satisfying them is the actual reason behind any innovation.”

Gamesa claimed that their major source of innovation is from in-house (within the company by the producer). They made it clear in the following words, “…our answer is In-house research, because the Production and R&D departments have the responsibility to do it and that is where all attention is focussed when we are working with innovation.”

Siemens Windpower A/S quite proudly expressed, “Our R&D is specialised department with employees that have expertise in their field of work. We derive innovation from the in-house.”

Adventum SRL explained it in plain words, “The major sources of innovation are the customers. We give a great significance to what our customers want and we take their feedback regularly. The other source of innovation is our own employees especially those working in the production and R&D departments.”
Clipper Windpower, Inc. told us that the major source of innovation in their organisation is within the company itself. “The employees in the R&D department are quite efficient and come up with novel ideas”, they claimed.

4.4 Types of supplier involvement in Innovation & NPD

Except for Fuhrlander AG, Ningbo Ginlong Technologies Co, Ltd. & REpower systems AG; all wind-turbine manufacturing companies that were interviewed claim to involve suppliers in innovation and NPD.

WinWinD simply elaborated the involvement of suppliers in innovation and NPD in the following statement, “Our suppliers are our partners and hold a stake in our mutual success, we are tied to the hip and it makes sense to involve them early on in the process.”

Lagerwey Wind BV said, “We have cooperation with our suppliers for doing innovation and development of new products.”

SUZLON Wind Energy A/S argued, “We cannot ignore the suppliers. They are so important because of the specific knowledge and experience that they have.”

About the question of suppliers’ involvement in the process of innovation & NPD, GE Power & Water replied, “Yes we are involving the suppliers in NPD process, their experience could help.”

KENERSYS Europe GMBH gave the following opinion, “Yes, suppliers are important and cannot be ignored because they have a lot of specialised knowledge.”
LEITWIND Spa – AG shared their experience in the following lines, “Quite often we involve the suppliers in innovation and product development. We have experienced that the earlier integration of suppliers in the innovation process is even better.”

ADES on the other hand, assigns an occasional involvement of the suppliers in innovation & NPD. “We involve them sometimes”, said ADES. Similarly, XEMC DARWIN relates it to the principal of Lean Enterprise and said, “Yes, but it could be more lean, we are following the Lean Enterprise Principle.”

REpower systems AG denied suppliers’ involvement in innovation & NPD and stated, “No we don’t involve suppliers in the actual process of innovation; however, we might accept useful ideas and suggestions from them.”

ENERCON GmbH also commented on the role of suppliers in the process of innovation in the following words, “Sometimes, yes. It depends on the product and also the confidence level of our relationship with the particular supplier, that we may involve him.” Similarly, SWAY AS explained their company’s policy in such terms, “Yes – agreements are entered with more relevant suppliers.”

EWT has a positive view of suppliers’ involvement in innovation and NPD and said, “Yes we involve them because we believe that suppliers can play a vital role in innovation and New Product Development.”

Nordex AG claimed, “Yes we do involve suppliers in innovation and product development and the example is our gear-box manufacturing.”

PowerWind GmbH said, “Yes suppliers are integral part of our innovation and product development process”.
Outsourcing the production of wind-turbine components to Suppliers

Out of 31 wind-turbine manufacturers that were interviewed 19 declared positively in favour of outsourcing the production of wind-turbine components to the suppliers whereas 12 of them said no to this phenomenon.

Siemens Windpower A/S elucidated the importance of outsourcing and integration of suppliers in the following statement, “we believe that an efficient outsourcing of turbine components to suppliers can play a decisive role in the success of the company.”

SUZLON Wind Energy A/S told us, “Yes we are outsourcing many of the wind turbine components to the suppliers as we are not expert in manufacturing all the components.”

SWAY AS replied to the question in affirmative and said, “Yes – most components will be manufactured by suppliers.”

About outsourcing the production of wind-turbine components to suppliers, SWEG said, “Yes we do, because suppliers can provide us with products that are more specialised.”

Similarly Vergnet SA gave their companies practice in this issue and remarked, “As we do not manufacture all wind turbine components ourselves, we outsource some to suppliers.”

Alstom Wind related by sharing their company’s practice in these words, “Yes we depend a lot on outsourcing. Many components are developed by our suppliers and we have long term business relationship with them.”

Speaking about those who do not outsource the manufacturing of wind-turbine components to suppliers, we give the reference of ResQ-Cresto who denied it by saying, “No,
manufacturing of components is not outsourced at our company.” And similar were the views of LEITWIND Spa – AG who commented, “No we take pride if we can have the production at our own manufacturing plants. We do not outsource the manufacturing of components to suppliers.”

However, KENERSYS Europe GMBH explained the importance of this phenomenon in the following statement, “outsourcing saves a lot of time and other resources.”

GE Power & Water recorded its opinion by saying, “Yes, outsourcing is the focal point. It helps in getting specialised components for our wind turbines.”

The statement of XEMC DARWIND also explained why they have to outsource, they said, “XEMC DARWIND is an integrator rather than an OEM: We produce specifications and we assemble the components coming from the Supply Chain.”

Summing up we quote PowerWind GmbH here. They said, “Yes, so many components are manufactured by the suppliers and we just assemble into making the final product.”

Transferring the related knowledge of product components to suppliers (innovation and product development “to” the supplier)

Only 14 companies said “Yes” to the question whether they transfer the related knowledge of product components to suppliers. Two companies, WinWinD and Vestas Wind Systems A/S refused to give this information as they termed it confidential. The remaining 15 wind-
turbine manufacturing companies that were interviewed negated the transfer of such knowledge to the suppliers.

Siemens Windpower A/S explained the culture and working of their organisation in this perspective and replied, “Yes, but not with all suppliers, transferring knowledge is very much dependent on the relationship with supplier. We cannot give you the specific details about the kind of knowledge that could be transferred.”

Acciona Windpower, S.A. claimed, “We have no problem with knowledge transfer with our suppliers and we transfer any knowledge that can help in the development of various components for wind turbines. For example, our inside engineers share the knowledge of wind turbine hub when we ask the supplier to manufacture this hub for us.”

Alstom Wind explained in the following lines, “Yes we think it is important for both that we share the related knowledge. The kind of knowledge that we share include specific design parameters, drawings etc. Because we want to make sure that the components are manufactured exactly to our required specifications.”

Regarding the question of transferring the related knowledge to suppliers, XEMC DARWIND said, “Yes, in order to get the best solutions we allow our strategic suppliers to look into our design. Strategic suppliers might be interested to share profit & risk.”

EWT (Emergya Wind Technologies BV) claimed, “Yes sharing knowledge helps because we have to work in coordination; we transfer any knowledge that is necessary. And to ensure that the knowledge is not leaked to others a proper agreement (NDA) is signed with the suppliers. To give the details about what kind of knowledge we do share with our suppliers is against the policy of the company.”

Gamesa briefly explained, “We share only limited knowledge which is necessary to produce the product. For example in the manufacturing of the wind turbine hub, our suppliers need some knowledge sharing”.

“Yes it is needful that we transfer the knowledge to our suppliers because it is a joint development and the suppliers build components by our design”, remarked GE Power & Water.
KENERSYS Europe GMBH stated, “Yes, we transfer only the related knowledge about product components to the suppliers. We mostly have to transfer technical descriptions, plans etc. to our strategic suppliers.”

Nordex AG elucidated this phenomenon, “As our suppliers have to build what we want them to build, we somehow automatically transfer knowledge about the component - In Joint development, we are sharing our knowledge as we want to have an optimized product at the end; of course our suppliers will probably not have full insight in our experience and we not in his experience, but details are shared and so far transferred.”

PowerWind GmbH claimed, “Yes, we do share the knowledge that is necessary for the production of any component; it can be any knowledge for example designs. We are compelled to transfer specific knowledge because we need to get the components that match our model. But we can do this without transferring detailed engineering information.”

SUZLON Wind Energy A/S commented, “Yes we believe in cooperation and because suppliers are integral part of the product development and manufacturing, we are transferring the related knowledge about product components to our strategic suppliers.”

UNISON Co, Ltd claims, “We are all in favour of cooperation between the company and the trusted suppliers and so we transfer the required knowledge to those who have long-term relations with the company. This detail is confidential.”

In similar statement Vergnet SA said, “Yes when we are out sourcing we have to work hand in hand with our suppliers, therefore, we share necessary data with our suppliers. That knowledge that we share with our suppliers is confidential.”

However, speaking against knowledge transfer to suppliers, ADES said, “No, but because we use standard products from market there is no need as such to transfer knowledge, our suppliers have their own skills and they are independent.”

SWAY AS has its own reasons against knowledge transfer and remarked, “We will in general not transfer related knowledge to the suppliers. Why should we do that? Most of the components are designed by us -- and also patented. They will be manufactured according to Sway specifications and drawings – being our property. There will also be NDAs in place between the suppliers and Sway. We can’t see any reason for the suppliers having the
technical knowledge about our products or the engineering work – beyond transferring the knowledge to competitive companies”.

(Different techniques of supplier involvement in innovation and NPD)

TKS: Transfer the related product component knowledge to supplier

DTKS: Do not transfer the related product component knowledge to supplier

CON: Confidential information

(Total 14 companies replied that they transfer the related component knowledge to supplier)

DR: Depends on Relationship

KWTH: Knowledge of Wind Turbine Hub

SDP: Specific Design Parameters
AKN: Any Knowledge Needs by supplier for manufacturing product components

NKD: Necessary Knowledge of Design components

**Special product components for enhanced product value (innovation and product development “with” the supplier)**

17 companies claim that they do motivate suppliers to provide them with special product components for enhanced final products (wind turbines). ADES, however, responded to this question by neither a total denial nor confirmation. It said, “Yes, at times they make the special modifications without altering their product, but the purpose is not to increase the value of our products.”

12 companies responded with a “No” because they do not involve suppliers in the production of wind turbine components.

Acciona Windpower, S.A.’s Manager R & D Unit, said, “I don’t know; I am not sure if we ask the suppliers for special products…”

XEMC DARWIND explained it in this statement, “Well, they (suppliers) propose solutions and we determine whether they would add any value to our product.”

Nordex AG claimed, “Suppliers offer their special products and we’ll check whether an integration helps to improve our product; or we have defined particular needs and are asking our suppliers whether they can assist us and develop /modify products in order to support us.”

SWAY AS elucidated this concept in the following words, “For instance we are for our floating tower buying a standard, modified, turbine – and of course this component will increase the value of the complete product – since it’s a special product for the actual operational environment.

In general we are trying to buy standard products if we are not carrying out the engineering ourselves. In some cases we are (we have to!) developing the components in close co-
operation with the manufacturer/supplier – but not based on the intention of a request of increasing the value.”

SWEG remarked, “Yes it depends on case to case, we might ask for special product components that will help in improving our final product. Most of the components are, however, in accordance with our drawings/specifications and patented, and of course increasing the value of the assembled product. However - some suppliers have a high internal engineering-level, and consequently cooperation can be of relevance.”

Vergnet SA replied to this question and said, “Yes our suppliers are experienced manufacturers of their components and they provide us with special products, as they are needed.”

EWT (Emergya Wind Technologies BV) claimed, “To increase the value of our products we are looking for special product components and we sit together and discuss it with our suppliers and share our ideas in brain storming sessions. Finally we may decide on something substantial for the suppliers to work on.”

Sharing knowledge about the final product and marketing it (innovation and product development “by” the supplier)

All the wind turbine manufacturing companies unanimously claimed that they market their final product themselves.

On the issue of sharing any knowledge about the final product with the suppliers, only 9 wind turbine manufacturers out of 31 claimed that they do it.
21 companies denied any sharing of such knowledge with the suppliers. The remaining one company, Nordex AG negated the sharing of knowledge by saying that they only gave the feedback. “We share knowledge in the sense of giving feedback to our supplier, i.e. whether his proposed solution is working or whether modifications are required, but he will not have insight in our final product in detail but only in the part he is supplying.”

Acciona Windpower, S.A. explained it in the following statement, “We definitely share the knowledge about our final product with the suppliers. It is all about close cooperation and that is why we share the knowledge of our final product with our suppliers and this is beneficial for the future relationship also.”

ADES described their practice and said, “We share knowledge about the final product with the suppliers because they have been part and parcel of the whole process; for along term strategic working relationship this sharing is significant.”

XEMC DARWIND explained it in these words, “In order to get the best supply we want the suppliers being aware of our mission. We believe in strong and intimate relationship with the suppliers and consider they are part of the bigger team at XEMC DARWIND. They are in no way separate from us.”

EWT (Emergya Wind Technologies BV) claimed, “Yes we share the basic knowledge about component manufacturing with the supplier because their supplied components enhance the value of our products but the detailed engineering knowledge is not shared unless a special demand is made and in that case NDA has to be signed.”

“There is no risk if we share the knowledge of the final product with our strategic suppliers as we have signed agreements with them”, said KENERSYS Europe GMBH.

Vestas Wind Systems A/S claimed, “Yes we enjoy strong ties and close relationship with our suppliers. As we derive at the final product by mutual collaboration we trust to share the final product with our partners. We don’t want that our suppliers should feel alienated.”

WinWinD explained it by saying, “Depending on the relationship, nature of the components and critical interface with other components, varying degrees of information is share relating to the final product.”
Gamesa debated it by saying, “No, there is no need to share the knowledge about the final product which is the result of the skilful work of our engineers. We can’t give this knowledge to people outside the company.”

SWAY AS also gave its opinion against it, “No – we are NOT sharing knowledge – beyond general public information – with our suppliers (and why we should?) They are getting paid for what they are delivering and our relationship with our suppliers is based on clear agreements.”

“We are doing the marketing ourselves, however, if we find it to the purpose, suppliers of the main components will be asked to contribute.”

4.5 International Production Networks (IPNs)

From 31 wind-turbine manufacturing companies we received only 14 responses in affirmation when we discussed about International Production Networks (IPNs). 17 companies denied having such production networks that help in innovation or manufacturing.

ADES explained that they have only commercial alliance in other countries but no subsidiaries, joint ventures or R&D alliance that conduct research and development or help in manufacturing.

4 companies namely Nexans, UNISON Co, Ltd, Vergnet SA and Vestas Wind Systems A/S claimed that they have International Production Networks, however, expressed their inability to give the details because of confidentiality.
WinWinD claimed that they are a global company and they do source globally, therefore they do have a combination of these in networks of production.

“Yes we do have suppliers, joint ventures, subsidiaries and R&D etc in other countries that work together with us in cooperation for new product development and Innovation. After all we are a global company”, was the claim of Acciona Windpower, S.A.

Alstom Wind explained it in the following lines, “Yes we work together with different contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in different parts of the world. They conduct research and manufacturing for our company, so it’s a well developed network.”

KENERSYS Europe GMBH explained their company’s position in this perspective and said, “Yes only the suppliers. We have suppliers in other countries that work for our company to do innovation and New Product Development.”

SWAY AS claimed, “We have formal agreements with suppliers, consulting companies and R&D institutions outside Norway.”

SUZLON Wind Energy A/S explained in response to the question about IPN’s, “Yes we have contractors, suppliers, subsidiaries, R&D alliances etc. in other countries that contribute in research and development, manufacturing, distribution etc. for SUZLON.”

Siemens Windpower A/S, “Yes, we do have contractors, suppliers, joint ventures R&D alliances etc. in different countries and they work together in coordination to conduct research and development etc. for Siemens.”
4.6 Benefits of suppliers’ involvement in Innovation & NPD

All the 19 companies that claimed that they involved the suppliers in Innovation and NPD quite logically also claimed many benefits of this phenomenon. What was the opinion of various companies in this regard has been summed up as follows:

Acciona Windpower, S.A. explained, “There are so many of them. To name a few, improving Quality, lower cost of production and therefore lower Price and especially a broad base of knowledge.”

Alstom Wind described it in the following statement, “The major benefits of suppliers’ integration in innovation and new product development, as we see them are: broader knowledge base and insight into new development.”

Talking about the benefits of involving the suppliers in innovation and product development, ADES said, “We can say that they firstly help in forming strong relationship with the suppliers, secondly to improve our supplier range of products and applications and thirdly to reduce inner R&D”

XEMC DARWIND remarked, “Being an integrator means leveraging the value into the supply chain in order to provide the client with the best solution fitting a specific project. To achieve this supply chain should share the mission (Risk & Profit).”

EWT (Emergya Wind Technologies BV) said, “Both (the supplier and the company) benefit. The result is a better quality, and customer satisfaction which is the key to our success.”

Gamesa claimed, “Integrating the suppliers in innovation and product development is beneficial as it brings new knowledge along with new possibilities.”

GE Power & Water claimed as well that suppliers’ involvement is beneficial, “The basic benefit is that the suppliers are specialists in their field and their experience can help.”

KENERSYS Europe GMBH said, “The benefits of suppliers’ integration in innovation and NPD are many and well known. To name a few: it helps in more innovation, faster and cheaper production and flexibility.”
Nexans stated, “The significance of involving the suppliers in innovation and product development is manifold. It is a key to improved product quality, reduction of product cost and development time, access to suppliers’ technology and resources. In short, it increases the overall efficiency of the development process.”

Nordex AG very briefly stated their opinion in this perspective, “Suppliers integration into innovation and product development can help to give us access to the knowledge of know-how and the knowledge of the competitors.”

PowerWind GmbH that there are so many benefits and gave the example of tailor-made solutions/products.

Siemens Windpower A/S elucidated what they believed in the words as follows, “Suppliers are much specialised with the ability to create value in their specific niche/component. Working together with suppliers will facilitate a faster and more customer-value oriented product development.”

SUZLON Wind Energy A/S gave their opinion on this subject and said, “Benefit of knowledge from suppliers is the greatest advantage.”

SWAY AS claimed, “Many suppliers have top competence with their business sector and can be very contributing in the development of our products.”

SWEG reply was brief and to the point. They named the following benefits, “Better Quality, increased value, cost effectiveness, time saving, risk free to name a few.”

UNISON Co, Ltd said, “Added value to our products, access to knowledge and experience, enhanced quality, cost and time reduction are some of the many benefits of using suppliers in innovation and new product development.”

Vergnet SA replied to the question of suppliers’ involvement in innovation & NPD and its usefulness by simply naming a few benefits, “Resource share, knowledge sharing, cost reduction, financial benefits etc.”

Vestas Wind Systems A/S claimed, “Most important outcome for suppliers’ involvement in innovation and new product development is Quality and R&D.”
And finally, WinWinD of Finland also indirectly referred to the benefits of suppliers’ involvement in innovation & NPD by saying their suppliers are their partners and hold a stake in their mutual success.

5. Analysis

5.1 Innovation
In our theory chapter we define innovation according to Westland’s view. He states: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”. We
interviewed 31 wind turbine producers and we forwarded the same question about innovation to all the companies. When interviewing the companies, we realized that they define innovation differently. All 31 companies claimed that they do innovate, but when we took a closer look, some companies claimed that when they develop new products to solve the problems of wind-turbine industry and meet customer demands, this is the innovation. Some companies thought that when they develop new products with new and unique features to solve technical problems in the industry, they consider these new products as innovative products. We think that for practical reasons the companies find it more simple and convenient to consider innovation and NPD synonymous. However, a few of them such as Lagerway Wind BV, Northern Power System and Vergent SA define innovation just like Westland.

In the theory we discussed the importance of innovation in competitive business world. When we interviewed the companies, 25 out of 31 gave more importance to innovation and considered innovation to be important for the success of the firm. The theory states that innovation is one of the few ways in which a modern business can differentiate itself in the market. Couple of firms also claimed that they are working with pure innovation. Acciona Windpower and Gamesa stated, just like theory predicts: “Innovation has the capacity to differentiate: our strategy is to exploit differentiation and so we work with innovation”. In spite of all differences in defining and understanding innovation, all wind turbine producers argue that innovation is vital for success.

5.2 New Product Development (NPD)
In our theory chapter we define NPD according to Trott’s view. He defines NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer”. When we interviewed the 31 wind turbine manufacturing companies, we identified that 26 out of 31 companies claim that they are working with NPD. Only 5 companies replied that they are not working with NPD. In the theory chapter we discussed innovation and NPD separately and we also presented both differently to wind-turbine manufacturing companies. Acciona Windpower SA, ADES, Clipper Windpower Inc., GE Power and Ningbo Ginlong Technologies Co. explained innovation and NPD are interrelated and they work together in pair. According to our theory chapter, we discussed different kinds of new products. Most of the companies, like Repower Systems AG, ResQ-Cresto, Vestas Wind
Systems AS and WinWinD are working with improvements and revisions to the existing products. They claim that NPD when it is just a product renewal, often development of already existing products.

Most of the companies that we interviewed consider innovation and NPD to be the same. They argue that if we are working with innovation this leads to the development of new products. Acciona Windpower SA said, “We think that if you are working with innovation then you are automatically developing new products”. Only one company agreed with the definition that we have presented in theory chapter about NPD. “Yes we work with new product development and this includes manufacturing totally new products as well as improvement and modification of existing products” explained by UNISON Co. Ltd.

5.3 Sources of innovation

Based on Von Hippel studies, in theory chapter we discussed innovation can come from customers, suppliers, manufacturers, university researchers, consultants and others. When we interviewed with companies we took a closer look at this to know from where the innovation comes in wind turbine manufacturing industry. We analysed that there is a variety of mix for all the 31 companies who are working with innovation. However, the major sources for majority of them are a combination of two things, in-house (within the company by the producers) and the users. We realized that 25 out of 31 companies claimed that the major source of innovation for them, besides other sources (users, suppliers, university and consultants) is in-house. There were 19 companies that argued that innovation comes from customers. The focal point of this thesis is supplier involvement in innovation and product development. Based on Von Hippel studies, the sources of innovation vary from industry to industry. In wind turbine manufacturing industry, only 10 companies claimed that suppliers are the source of innovation, 8 out of 31 companies considered university and consultants as sources of innovation.

The theory states that innovation comes from two major sources, one is internal source and the second is external. Three companies also stated that market trends are an external source of innovation and only two companies considered competitors as a source of innovation.
5.4 Types of supplier involvement in innovation & NPD

In our theory chapter we discussed the supplier involvement in innovation is the most important concept and new source of innovation, identified by Von Hippel & Sarah Philipson. There are several ways to involve suppliers in innovation and product development that we have mentioned in our theory chapter. Von Hippel and Borurs & Zysman identified innovation by the supplier. Philipson identified two other categories of supplier involvement, to and with the supplier. Based on theory chapter, when we interviewed with wind turbine manufacturer companies, 28 out of 31 companies claimed that they involve suppliers in innovation and product development. Theory says “using the knowledge and expertise of suppliers in product development, may help to reduce concept-to-customer cycle time, costs, quality problems, better product quality and improve the overall design effort”. Several companies like, SUZLON Wind Energy AS, GE Power, KENERSYS Europe GMBH, LEITWIND Spa and EWT explain just like the theory: “We cannot ignore the suppliers. They are so important because of the specific knowledge and experience that they have”, said by SUZLON Wind Energy. GE Power stated that, “Yes we are involving the suppliers because their experience could help in product development”. Several other firms also explained that supplier involvement in innovation and product development is vital for success.

Referring to the different techniques of supplier involvement, 19 out of 31 companies stated that they do innovation and product development “to” the supplier. In theory chapter we explained Philipson’s view of outsourcing of product components to the supplier. According to Philipson’s view, this means that the firm possesses all the knowledge inside and just outsources the product components to the supplier and transfer product component or design knowledge to the supplier. Several companies argued that they transfer the related product component knowledge to the supplier. Siemens Windpower elucidated: “we believe that an efficient outsourcing of turbine components to suppliers can play a decisive role in the success of the company”. SUZLON Wind Energy AS explained,” Yes, we are outsourcing many of the wind turbine components to the suppliers as we are not expert in manufacturing all the components”. In the theory chapter Echtelt (2004) stated about the expertise of the suppliers and GE Power, PowerWind, SUZLON Wind and SWEG agreed on
this point. Several companies only replied that they outsource the product components to the suppliers because it is essential for successful products.

The theory states that when the firm outsources the production to the suppliers, it is necessary to transfer product component or design knowledge to the suppliers. Several companies argued that they transfer the related product component knowledge to the supplier. But none of them explained how they transfer the knowledge to suppliers. In theory chapter we mentioned two kinds of knowledge, explicit and tacit knowledge, identified by Modi & Mabert (2007). Explicit knowledge can be easily codified, such as facts. Tacit knowledge on the other hand is difficult to codify, such as knowledge of production. 14 out of 19 companies claimed that they transfer the product component knowledge to the suppliers. The theory also states that tacit knowledge is difficult to transfer or share. To identify what kinds of knowledge do wind turbine manufacturers transfer, 4 out of 14 companies argue that they transfer any knowledge to suppliers that can be helpful for component design or manufacturing. 4 out of 14 companies stated that they only transfer the specific knowledge related to component manufacturing. 3 out of 14 companies replied that they transfer the knowledge about specific design parameters to the suppliers. 2 out of 14 companies said that they transfer the knowledge of wind turbine hub to the suppliers when they outsource the wind turbine hub manufacturing to the suppliers. Only one company stated that it depends on the relationship with the supplier. According to the theory about knowledge, we realized that product component knowledge is more related to tacit knowledge but none of all 31 companies said anything about how they transfer the knowledge. Theory states, “Product knowledge plays an important role for the success of the companies”. All the companies gave more or less importance of transferring knowledge to suppliers.

The second technique of supplier involvement is innovation and product development “with” the supplier. In theory chapter, we cited in Philipson’s point of view, ‘When the firm asks the supplier to provide special or standard special product components to increase the value of its products. When we asked this question to wind turbine manufacturers, 17 out of 31 companies claimed that they ask the suppliers to provide special product components for enhanced final products. When we took a closer look we found that all 17 companies more or less replied as the theory proposed. XEMC DARWIN, Nordex AG, SWAY AS, SWEG,
Vergnet SA, and EWT explained that they collaborate with the suppliers who provide them product components to increase the value of their products. Some companies also mentioned that they discuss with the suppliers whether their provided components will increase the value of their products or not.

The third technique of supplier involvement in innovation and product development is “innovation by the supplier” or “Wintelism”. In our theory chapter, Borurs & Zysman and Philipson explain this technique of supplier involvement. According to theory, the producer of product specifies the input and output of the component, leaving the supplier to decide the necessary transmission. Companies outsource the development of product components to the suppliers and make the final products inside the firm and market the final product. Innovation and product development by the supplier/Wintelism is alternatively to traditional outsourcing. As stated in the presentation of the empirical data, only 9 out of 31 companies argue that they share final product knowledge with the suppliers. When we talked about the market of final product, all 31 companies claimed that they market their final product themselves. The theory states that the basic difference in traditional outsourcing and Wintelism/innovation by the supplier is the transfer of knowledge. When we looked at the empirical presentation, we found that companies claim that they only share the final product knowledge with the suppliers. We realized that 9 companies share the knowledge of final products with the suppliers this indicates that they are using the technique of innovation by the supplier. According to the theory, shared knowledge of suppliers refers to the extent of shared understanding (i.e. know-why) of suppliers’ design, process, and manufacturing capabilities among product development team members, Hahn (1990). Acciona Windpower claimed, “we definitely share the knowledge about our final products with the suppliers. It is all about close co-operation and that is why we share the knowledge of our final product with our suppliers and this is beneficial for the future”. The theory also states that shared knowledge is an important resource underlying product development capabilities. Most of the companies also gave the importance of shared knowledge with the suppliers. But none of these companies replied that how they share the knowledge with the suppliers.
5.5 **International Production Networks (IPNs)**
In the theory chapter we define International Production Networks (IPNs) according to Borrus & Zysman’s view. They define IPNs as: “IPNs are different kinds of organizations, across national borders, through which the firm conducts research and development, product definition and design, procurement, manufacturing, distribution, and support services”. When we interviewed, we analyzed only 14 out of 31 companies claimed that they were working with IPNs. Several companies replied that they have different kinds of organizations across national boundaries, including suppliers, joint ventures, subsidiaries, R&D alliances, consultant companies, contractors etc. We also realized only couple of firms work with pure IPNs. Siemens Windpower, Alstom Wind, WinWinD and SWAY explain IPNs in the same that we have presented in our theory chapter. We also analyzed that supplier is a common alliance in IPNs and several companies claimed that they have suppliers in other countries.

The theory states that “IPNs allow and result in an increasingly fine division of labour. Through IPNs, a large segment of complex manufacturing can be turned into commodity available in the market”. When we interviewed, we explained the complete concept of IPNs in front of the interviewees, and we also talked about the division of labour. Several companies argued that all these alliances support them in innovation and product development. Only Alstom Wind, SUZLON Wind Energy and WinWinD claimed that they work with IPNs for production purpose.

5.6 **Benefits of supplier involvement**
The theory states that there are several benefits that companies receive when they involve suppliers in innovation and product development. Ragatz (1997), Echtelt (2004), Clark (1989), Håkansson (1987), Bonaccorsi (1994), Imai (1985) and Burt (1989) all argue about different benefits of supplier involvement in innovation and product development including improved quality, reduced cost, source of competitive advantage, efficiency, speed to market etc. When we conducted interviews we realized that 19 out of 31 companies claimed that they receive different benefits of supplier involvement in innovation and product development. All 19 companies who claimed and pointed out different benefits of suppliers’ involvement same or less have been stated in our theory chapter. When we took a closer look at all, we concluded that these benefits include, cost reduction, improved quality,
knowledge of suppliers, benefits of strong relationship with the suppliers, increase the overall efficiency of development process etc.

The theory also explains the supplier involvement in innovation and product development is beneficial for the company. Several companies agree on this point that supplier involvement is beneficial. Gamesa claimed, “Integrating the suppliers in innovation and product development is beneficial as it brings new knowledge along with new possibilities”. GE Power also agrees on this point that supplier involvement is beneficial for company. GE Power stated, ” supplier involvement is beneficial, the basic benefit is that the suppliers are specialists in their field and their experience can help”.

6. Conclusions
In this part we aim to answer our research questions which are:

- Are wind turbine producers innovating and developing new products?
- Do wind energy turbine producers involve suppliers in innovation and New Product Development (NPD)?
- How and to what extent do they involve their suppliers?

We have conducted interviews with 31 wind turbine producers and all of these companies are working with innovation. Most of the companies define innovation in different ways but more or less they all work with innovation. Only few companies are working with pure innovation that we have defined in our theory chapter. Out of 31 wind turbine producers those claimed that they work with innovation, 25 companies are working with New Product Development (NPD). There seems to be no difference between innovation and NPD for most of the companies.

The purpose of this thesis is to highlight the suppliers’ involvement in innovation and NPD of wind turbine production. 28 companies involve suppliers in innovation and NPD, using different techniques of suppliers’ involvement.

The conclusion of this thesis is that all companies consider innovation and product development as most important in wind turbine manufacturing industry. The sources of innovation differ from company to company. The major sources of innovation in wind turbine industry are, in-house and from the customers. Suppliers are the sources of innovation only for few companies. When we look at the Suppliers’ involvement in
innovation and product development in wind turbine industry, there is a combination of different techniques of suppliers’ involvement. 19 companies do innovate using the technique of “to”, 17 “with” and 9 “by” the suppliers. All companies receive different kinds of benefits from involving suppliers in innovation and product development. Improved quality, lower cost and utilizing the suppliers’ knowledge and expertise are the primary benefits that companies receive when they involve suppliers in innovation and product development.

7. Reflections
- In this thesis we realize that interviews were conducted with different personnel with different designations. We asked the same questions to all interviewees and our interview guidelines consisted of open and close end questions. We made questionnaire for interviews especially for marketing and product development personnel but we have also conducted interviews with sales representatives and product development engineers. All these personnel were not adept to give us the exact information of product development. This may have affected the outcomes of the analysis.
- We also realize that some companies didn’t participate in our study because they considered requested information as confidential.
- The first two questions in questionnaire for interview guidelines were related to innovation and NPD. We think that the interviewees were confused to differentiate among these two terms. We gained the related information about innovation and NPD but it could be more understandable if we had asked one question about innovation.

8. Further research
In this thesis we focused on suppliers’ involvement in innovation and NPD of wind turbine producers. We have made this study on organizational perspectives and we tried to understand from where the inspiration for innovation comes. For further research, it would be interesting to study the subject from suppliers’ perspective. Most likely, suppliers’ point
of view would differ and additional information would be gained. In this study we felt that wind turbine producers are much dependent on the suppliers and it might be interesting, if the study would be carried out from the suppliers’ perspective.

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# Appendices

## Appendix A: Empirical Table

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<th>Name of the company</th>
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<th>Q.2</th>
<th>Q.3</th>
<th>Q.4</th>
<th>Q.5</th>
<th>Q.6</th>
<th>Q.7</th>
<th>Q.8</th>
<th>Q.9</th>
<th>Q.10</th>
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<tr>
<td></td>
<td></td>
<td>Working with innovation</td>
<td>Working with NPD</td>
<td>Sources of Innovation</td>
<td>Supplier involvement</td>
<td>Different techniques of supplier involvement</td>
<td>Innovation and product development To the supplier</td>
<td>Innovation and product Development By the supplier</td>
<td>IPNs</td>
<td>Benefits of supplier involvement</td>
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</tr>
<tr>
<td>1</td>
<td>Acciona Windpower</td>
<td>Yes</td>
<td>Yes</td>
<td>User, supplier, in-house, university, consultants</td>
<td>Yes</td>
<td>Yes, a lot of components are outsourced</td>
<td>Yes, transfer the knowledge of wind-turbine hub to suppliers</td>
<td>Not sure about this</td>
<td>Yes, close cooperation</td>
<td>Yes, have suppliers, contractors, RD in other countries</td>
<td>Improved Quality, Lower Cost of production, lower price &amp; broad Knowledge base etc.</td>
</tr>
<tr>
<td>2</td>
<td>Adventum SRL</td>
<td>Yes</td>
<td>Yes</td>
<td>Customers, production and R&amp;D department</td>
<td>Yes, accepting suggestions that could be helpful</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Alstom Wind</td>
<td>Yes</td>
<td>Yes</td>
<td>Production department</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, specific design parameters, drawings etc.</td>
<td>Yes, new product components with special features from the suppliers</td>
<td>No, do not share knowledge about the final product, risk of knowledge leakage to the competitors</td>
<td>Yes, work together with contractors, suppliers, subsidiaries, joint ventures, R&amp;D alliance etc.</td>
<td>Broader knowledge base, insight into new development</td>
</tr>
<tr>
<td>4</td>
<td>ADES</td>
<td>Yes</td>
<td>Yes</td>
<td>Customers &amp; employees</td>
<td>Yes, sometimes</td>
<td>Yes, manufacturing of various components</td>
<td>No, because have standard products</td>
<td>Yes, sometimes, but not for increasing the value of product</td>
<td>Yes, for long term strategic working relationship</td>
<td>No, only have commercial alliance</td>
<td>Strong relationship with the suppliers, improving supplier range of products &amp; reducing inner R&amp;D</td>
</tr>
<tr>
<td>5</td>
<td>Clipper Windpower</td>
<td>Yes</td>
<td>Yes</td>
<td>In-house and R&amp;D department</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>XEMC-DARWIND</td>
<td>Yes</td>
<td>Yes</td>
<td>Users, consultants, Universities and especially in-</td>
<td>Yes, but follow Lean Enterprise Principle</td>
<td>Yes, the company is an integrator rather than OEM</td>
<td>Yes, to get the best solutions, strategic suppliers may share Profit &amp;</td>
<td>Suppliers propose solutions</td>
<td>Yes, suppliers are part of the bigger team</td>
<td>Yes collaborate with contractors, institutes,</td>
<td></td>
</tr>
</tbody>
</table>

Leveraging the value into supply chain. Best solutions & SC share risk and profit.
<p>| | | | | | | | | | |</p>
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<tbody>
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<td>7</td>
<td>EWT</td>
<td>Yes</td>
<td>No</td>
<td>Customers, consumers, employees, suppliers, universities &amp; consultants</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, have to work in coordination. Sign NDA with suppliers, no details given</td>
<td>Yes special products with unique features, brainstorming sessions with suppliers</td>
<td>Yes, no details without NDA</td>
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<td>8</td>
<td>ENERCON</td>
<td>Yes</td>
<td>Yes</td>
<td>In-house</td>
<td>Yes, sometimes depends on the product &amp; relationship with the particular supplier</td>
<td>No</td>
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<tr>
<td>9</td>
<td>Fuhrländer</td>
<td>Yes</td>
<td>Yes</td>
<td>Users &amp; in-house</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>10</td>
<td>Gamesa</td>
<td>Yes</td>
<td>Yes</td>
<td>In-house</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes, limited knowledge sharing e.g. knowledge of wind turbine hub</td>
<td>Yes, special features, to counter tough competition</td>
<td>No, knowledge and work of own skillful engineers can’t be shared to outside suppliers</td>
</tr>
<tr>
<td>11</td>
<td>G E Power &amp; Water</td>
<td>Yes</td>
<td>Yes</td>
<td>Users &amp; employees</td>
<td>Yes, suppliers experience could help</td>
<td>Yes, outsourcing is the focal point</td>
<td>Yes, suppliers build components company’s designs</td>
<td>Yes, to differentiate in the market</td>
<td>Yes, long term strong relationship also agreement to ensure confidentiality</td>
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<td>Ningbo Ginlong Technologies Co</td>
<td>Yes</td>
<td>Yes</td>
<td>Users, Market trends &amp; Competitors</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<td>13</td>
<td>KENERSY S</td>
<td>Yes</td>
<td>Yes</td>
<td>In-house &amp; customers</td>
<td>Yes</td>
<td>Yes, outsourcing saves time and many resource</td>
<td>Yes, transfer technical descriptions, plans etc. to strategic supplier</td>
<td>Yes</td>
<td>Yes, Have signed agreements with strategic suppliers</td>
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<tr>
<td>14</td>
<td>Lagerwey Wind</td>
<td>Yes</td>
<td>No</td>
<td>Customers</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<td>Yes</td>
<td>Yes</td>
<td>Users, employees, &amp; suppliers</td>
<td>Yes</td>
<td>No</td>
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<td>In-House</td>
<td>In-House &amp; Suppliers</td>
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<td>Universities &amp; Consultants</td>
<td>Demand of Knowledge</td>
<td>Value of Product</td>
<td>Final Product</td>
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<td>Yes</td>
<td>Yes, limited sharing of knowledge; details can’t be given</td>
<td>Yes to increase the value &amp; demand of their products; vital for survival in tough competition</td>
<td>No sharing of the final product with the suppliers</td>
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<td>Yes, joint development</td>
<td>Yes, particular needs have been defined, suppliers come up with special products</td>
<td>Suppliers will have no insight in final product; only feedback is given</td>
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<td>Yes, so many components are manufactured by the suppliers, the company simply assembles them into final product</td>
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<td>No, do not share the knowledge about final product</td>
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<td>Yes, outsourcing many components because the company does not manufacture them all</td>
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## Appendix B: Total wind energy capacity country wise

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Total: 159,213.3 [MW] 38,312.0 [MW] 31.7 [%] 120,902.9 [MW] 93,926.8 [MW] 59,024.1 [MW]
Appendix C:

Country Share of Total Capacity 2009


Appendix D

Major Components of Wind Turbine

Appendix E:

How wind turbine works

Essentially, a wind turbine functions by converting the kinetic energy in moving air into electrical energy.

A wind turbine harnesses the breeze that passes over the rotor blades of the wind turbine and rotates a hub. The hub is connected to a gearbox via low-speed and high-speed shafts that drive a generator, which is contained within a nacelle. The nacelle is mounted at the top of the tower and has the electrical components.

The process of producing wind energy has 6 basic steps which are described briefly as follows:

1. The wind blows on the blades and makes them turn.
2. The blades turn a shaft inside the nacelle
3. The shaft goes into a gearbox which increases the rotation speed enough for....
4. The generator uses magnetic fields to convert the rotational energy into electrical energy.
5. The power output goes to a transformer that converts the electricity coming out of the generator at around 700 Volts to 33,000 Volts which is the appropriate voltage for distribution system.
6. The national grid transmits the power around the country.

The Yaw mechanism turns the turbine so that it faces the wind. Sensors are used to monitor wind direction and the tower head is turned to line-up with the wind.

In excessive winds, to avoid damage, turbines adopt a mechanical breaking system or stop.
Appendix F: Wind Turbine Manufacturers across the Globe:

1. AAER Wind Energy (Canada)
2. A & C Green Energy (USA)
3. Abundant Renewable Energy (ARE) (USA)
5. Acciona (Spain)
6. Adventum SRL (Italy)
7. ADES (Spain)
8. AES (Germany)
9. Aeolos Wind Turbine Ltd (Denmark)
10. AeroCraft Energietechnik GmbH (Germany)
11. Aerogeneradores Canarios SA (ACSA) (Spain)
12. AeroJoule (Canada)
13. Aeronautica Windpower (USA)
14. AeroStar (USA)
15. AeroMax (USA)
16. AeroVironment (USA)
17. African Wind Power (South Africa)
18. Aircon Windcraft (Germany)
19. Alizeo (France)
20. ALSTOM Power (Spain)
21. AMOS Technology & Projects CC (South Africa)
22. AMSC Windtec (USA)
23. Ampair Natural Energy (UK)
24. AREVA (France)
25. Arman (Iran)
26. Atlantic Power Master (Ireland)
27. Atlantic Orient Canada Inc. (AOCl) (Canada)
28. Auton Home Productions (France)
29. Avantis (Germany)
30. AVENTA Walter Hofer (Switzerland)
31. AWE (Canada)
32. Bard (Germany)
33. Bergey Windpower Co (USA)
34. BFE (Betriebsfuhrung Eisenschmidt) (Germany)
35. Blue H Technologies BV (The Netherlands)
36. Bornay Aerogeneradores, slu (Spain)
37. BRAUN – Windturbinen GmbH (Germany)
38. Bronte Windpower (USA)
39. Cascade Engineering, Inc. (USA)
40. Cleanfield Energy (Canada)
41. Clipper Windpower (USA)
42. Coemi Wind Turbines (UK)
43. COMOTI (Romania)
44. Daewoo Shipbuilding & Marine Engineering (DSME) (S. Korea)
45. Davinci (Germany)
46. DeWind (Germany)
47. Dongfang (China)
48. Doosan (S. Korea)
49. EasyWind GmbH (Germany)
50. Ecer SA (Spain)
51. Eclectic Energy Ltd. (UK)
52. Elecon (India)
53. ElectroVent (Canada)
54. Endurance Wind Power Inc. (Canada)
55. Enercon (Germany)
56. Energie PGE (Canada)
57. Energie Ressource Developpment (Canada)
58. Energotech SA (Greece)
59. Enerlim Albia SL (Spain)
60. Enertech (USA)
61. E.N.O. Energy (Germany)
62. Entegrity Wind Systems (Canada)
63. Eoltec SAS (France)
64. Eozen (Spain)
65. Equipaggiamenti Elettronici Industriali s.r.l. (EEI) (Italy)
66. Evance Iskra (UK)
67. Eviag AG (Germany)
68. EWT (Emergya Wind Technologies) (The Netherlands)
69. EXMORK New Energy Company (China)
70. Fairdeal Corporates Sales and Services (India)
71. FEECO (Flory Energy Equipment Co Ltd) (China)
72. First Renewable Energy Group Ltd (China)
73. Flowtrack Wind Turbines (Australia)
74. Fortis Wind Energy (USA)
75. Fuhrlander (Germany)
76. Fuji Heavy Industries Ltd (Japan)
77. Gaia Wind Ltd. (Denmark / UK)
78. Gamesa (Spain)
79. Gazelle Wind Turbines (MKW Group) (UK)
80. GB – Kilmarnock (UK)
81. Genvind (Denmark)
82. GE Wind (USA / Germany)
83. Ghodawat (India)
84. Goliath (Estonia)
85. Green Giant Technology Co Ltd (UK)
86. Greentec (Germany)
87. Greentecno SA (Switzerland)
88. Gusto Energy Limited (New Zealand)
89. Hanjin Ind. Co. Ltd. (S. Korea)
90. Helix Wind, Corp. (USA)
91. Humdinger Wind Energy, LLC (USA)
92. Hummer Wind Power, LLC (USA)
93. Hymoto Energever Ltd (UK)
94. Hyosung (S. Korea)
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128. NEPC (India)
129. Nexans (Germany)
130. NGUP Holding b.v. (The Netherlands)
131. HNEOLIS (France)
132. Ningbo Ginlong Technologies Co. Ltd. (China)
133. Nordex (Germany)
134. Nordic Windpower (USA)
135. Northern Power Systems (USA)
136. Norwin (Denmark)
137. o2 Vindcompaniet AB (Sweden)
138. Ohio Wind Turbines (USA)
139. Oy Windside Production (Finland)
140. PacWind (USA)
141. Pitchwind Systems AB (Sweden)
142. PowerWind (Germany)
143. PROKON Nord Energiesysteme GmbH (Germany)
144. Proven Energy Ltd (UK)
145. PROWIN Professional Windmills (The Netherlands)
146. Qingdao Arena International Co. (China)
147. Qingdao Jintaida Industry & Trade Co Ltd (China)
148. Raum Energy Inc. (Canada)
149. ReDriven Power (Canada)
150. Relight Srl (Italy)
151. REpower (Germany)
152. ResQ – Cresto (Denmark)
153. Renewable Devices Swift Turbines Ltd (UK)
154. Rizhao Bluecarbon Technology Co, Ltd (China)
155. Rocky Wind Power (USA)
156. Rooftop Wind Power (USA)
157. Ropatec AG – SPA (Italy)
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| 160. | SEaB Energy Ltd (UK) |
| 161. | Shanghai Roy Solar Co. Ltd (China) |
| 162. | Shield Innovations (Finland) |
| 163. | Siemens (Germany / Denmark) |
| 164. | Sinotech Energy Development Co Ltd. (Taiwan – Chinese Taipei) |
| 165. | Sinovel (China) |
| 166. | Skystream Energy Europe GmbH (Germany) |
| 167. | Sky Rota LGC (Ireland) |
| 168. | SMA Technologies AG (Germany) |
| 169. | Solar Sky SL (Spain) |
| 170. | Solar Team, Gunther Hacker (Germany) |
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| 172. | Solwind Ltd. (New Zealand) |
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| 176. | Superwind GmbH (Germany) |
| 177. | SUREnergy (USA) |
| 178. | Suzhou Yueniao Machinery & Electronics Tmp & Exp Co. Ltd (China) |
| 179. | SUZLON (India) |
| 180. | SVIAB (Sweden) |
| 181. | SWAY – AS (Norway) |
| 182. | Swea Europe BV (The Netherlands) |
| 183. | Sweg (Egypt) |
| 184. | Tachometric Controls (India) |
| 185. | Taechang N.E.T. (S. Korea) |
| 186. | Tecno – Aranda (Spain) |
| 187. | TechnoSpin Inc. (USA) |
| 188. | Thermodyne Systems (USA) |
| 189. | Travere Industries SAS (France) |
| 190. | Triad WindGen (USA) |
191. Tuulivoimala.com (Finland)
192. Turbex Rotary Windmills (South Africa)
193. Turbowinds (Belgium)
194. Turby NL (The Netherlands)
195. TV95 Premier SL (Spain)
196. Unison Co Ltd (South Korea)
197. Unitron Energy Systems Pvt.Ltd (India)
198. Urban Green Energy (USA)
199. Vaigunth Ener Tek (P) Ltd. (India)
200. VENSYS Energy AG (Germany)
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203. Vertical Wind AB (Sweden)
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206. VTEK Energy AB (Finland)
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208. WePower (USA)
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210. Westwind (Australia)
211. WIKOV Wind (Czech Republic)
212. Wincon West Wind AS (Denmark)
213. Windbrokers BV (The Netherlands)
214. WindEn (Sweden)
215. Wind Energy Solutions bv (The Netherlands)
216. Windey (China)
217. Windflow (New Zealand)
218. Windmission (Denmark)
219. Windon AB (Sweden)
220. Windpower Enertec (Germany)
221. Windsave (UK)
222. Wind Simplicity Inc. (Canada)
Appendix G: Questionnaire for interviews

Questionnaire for interview

1

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Acciona Windpower, S.A.

Country: Spain  Website: www.acciiona.es

Contact person: Iwona Gieldowska  Designation: Manager R & D Unit

Contact no: +34 948720535  Email: igieldowska@acciiona.es

No. of employees: 35,000  Turnover: 13,000 €m (2008)
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes innovation is vital for us because of tough competition in the Market.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Of course, we think that if you are working on innovation then you are automatically developing new products.

Q. 3. What are the major sources of innovation in your company?

- From users
- In-house (within the company by the producer)
- From suppliers
- Universities, consultants
- Other

ANS: All of the above. We get our inspiration for innovation from our customers, from the suppliers, who are very important for us, from inside the company in our R&D and even the consultants and Universities are important sources of innovation for us.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes, the role of the Suppliers is very beneficial.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.
Ans: Yes, we do. Actually a lot of the components are outsourced.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: We have no problem with knowledge transfer with our suppliers and we transfer any knowledge that can help in the development of various components for wind turbines. For example, our inside engineers share the knowledge of wind turbine hub when we ask the supplier to manufacturer this hub for us.

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: I don’t know; I am not sure if we ask the suppliers for special products...

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Yes to both the questions..... We definitely share the knowledge about our final product with the suppliers. It is all about close cooperation and that is why we share the knowledge of our final product with our suppliers and this is beneficial for the future relationship also.

We have our own marketing and sales for the wind turbines that we finally manufacture.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes we do have suppliers, joint ventures, subsidiaries and R&D etc in other countries that work together with us in cooperation for new product development and Innovation. After all we are a global company.
Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: There are so many of them. To name a few, improving Quality, lower cost of production and therefore lower Price and especially a broad base of knowledge.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Innovation as you have given the definition......so we are doing that.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: We find no difference between innovation and new product development. It is hard to differentiate between the two...so we are doing innovation and NPD both.

Q. 3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) other

ANS: The major sources of innovation are the customers. We give a great significance to what our customers want and we take their feedback regularly. The other source of innovation is our own employees especially those working in the production and R&D departments.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we also involve the suppliers in innovation and New product development by accepting their suggestions that we feel could be helpful.
Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: NO, we manufacture it all by ourselves.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not applicable

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not applicable

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not applicable

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not applicable

Q. 10. What benefits do you see in involving suppliers in innovation and product development?
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Alstom Wind

Country: Spain  
Website: [www.alstom.com/power](http://www.alstom.com/power)

Contact person: Harold Linkert  
Designation: Marketing manager

Contact no: +34 932257600  
Email: andrea.hitz@power.alstom.com

No. of employees: 76,500  
Turnover: confidential

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”
Ans: Yes, we are innovating; we are making new products that have new uses for the customers. We define innovation as “new products with new features for increasing customer satisfaction”.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans Yes, as we have manufactured Offshore wind turbines, it is an example of our NPD.

Q. 3. What are the major sources of innovation in your company?

a) From users  
b) In-house (within the company by the producer)  
c) From suppliers  
d) Universities, consultants  
e) Other

ANS: The major source of innovation in Alstom Wind is within the company in the production department that works with the collaboration of R&D.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we quite often involve the suppliers in product development.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we depend a lot on outsourcing. Many components are developed by our suppliers and we have long term business relationship with them.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes we think it is important for both that we share the related knowledge. The kind of knowledge that we share include specific design parameters, drawings etc. Because we
want to make sure that the components are manufactured exactly to our required specifications.

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes we demand and expect that the suppliers would come up with new product components with special features so that we can win a competitive edge over other manufacturers. It becomes a necessary demand in the case of our new model of wind turbines and that needs appropriate changes in the components also, so that both can fit together well.

Q.8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Yes we market our products ourselves; however, we do not share the knowledge of the final product with the suppliers. It is not feasible because it involves many risks for example the knowledge could also be leaked to other turbine manufacturers i.e. the competitors that we have.

Q.9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes we work together with different contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in different parts of the world. They conduct research and manufacturing for our company, so it’s a well developed network.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: The major benefits of suppliers’ integration in innovation and new product development, as we see them are: broader knowledge base and insight into new development.
Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: ADES
Country: Spain
Website: www.ades.tv

Contact persons: Sebastian Lahuerta Antoune  Designation: Head of Production
Alberto Gomez  Designation: Marketing Coordinator

Contact no: +34 625547383  Email: slahuerta@ades.tv
+34 976571193  agomez@ades.tv

No. of employees: 60  Turnover:
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes we are working with innovation. We manufacture products that have features that are new in the market.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we are working with NPD. Innovation and NPD function together in pair.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: We have the customers and employees of the company as major sources of innovation.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: We involve them sometimes.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we are outsourcing the manufacturing of various components to the suppliers.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?
Ans: No, but because we use standard products from market there is no need as such to transfer knowledge, our suppliers have their own skills and they are independent.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes, at times they make the special modifications without altering their product, but the purpose is not to increase the value of our products.

We don’t ask the suppliers to provide special product components.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Yes, for the two questions. We share knowledge about the final product with the suppliers because they have been part and parcel of the whole process; for a long term strategic working relationship this sharing is significant.

We have our own marketing teams that market our products.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: No, we have only commercial alliance in other countries.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: To sum up the benefits we can say that they firstly help in forming strong relationship with the suppliers, secondly to improve our supplier range of products and applications and thirdly to reduce inner R&D.

Thanks for giving us your precious time for this interview

Regards,
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Clipper Windpower, Inc.

Country: USA
Website: www.clipperwind.com

Contact person: Thomas Thomsen
Designation: Director Commercial Operations
Contact no: +1 (805) 6903275
Email: tthomsen@clipperwind.com
No. of employees: 740+ (Global Employees)
Turnover: $743.5 million (2009)

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

Ans: Yes we consider innovation as the process of making products or services that offer some new uses for the customers. Innovation is important because of shorter life cycles of products.
Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”

Ans: Innovation and NPD join hand in hand in our organisation. We don’t have separate processes for them.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: The major source of innovation in our organisation is within the company itself. The employees in the R&D department are quite efficient and come up with novel ideas.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes, at Clipper, we are involving the suppliers in Innovation and New Product Development.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we do not outsource the production of wind turbine components to suppliers.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable
Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: XEMC DARWIND
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes we are working with innovation.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes also with New Product Development.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: There are several sources of innovation for us, the users, consultants, Universities and especially in-house plays an important role.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes, but it could be more lean (check Lean Enterprise Principle)

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.
Ans: Yes, XEMC DARWIND is an integrator rather than an OEM: We produce specifications and we assemble the components coming from the Supply Chain.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes, in order to get the best solutions we allow our strategic suppliers to look into our design. Strategic suppliers might be interested to share profit & risk.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Well, they (suppliers) propose solutions and we determine whether they would add any value to our product.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: In order to get the best supply we want the suppliers being aware of our mission. We believe in strong and intimate relationship with the suppliers and consider they are part of the bigger team at XEMC DARWIND. They are in no way separate from us.

Yes we market the end product ourselves.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: We do collaborate with contractors (Freelancers), institutes, consultancies (Tech & Management), Govt. organisations (to get Subsidies).

Q.10. What benefits do you see in involving suppliers in innovation and product development?
Ans: **Being an integrator means leveraging the value into the supply chain in order to provide the client with the best solution fitting a specific project. To achieve this supply chain should share the mission (Risk & Profit).**

*Thanks for giving us your precious time for this interview*

*Regards,*

*Aamer Khan & Ashfaq Lodhi*

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**Questionnaire for interview**

**7**

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: EWT (Emergya Wind Technologies BV)

Country: Netherlands  
Website: [www.EWTinternational.com](http://www.EWTinternational.com)

Contact person: Marcel Daniel  
Designation: Business Unit Manager

Contact no: +31 (0)334540520  
Email: m.daniel@ewtinternational.com

No. of employees: 100+ (worldwide)  
Turnover:

**Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)**
Ans: As wind turbine market is a relatively young market with a lot of potential for growth and improvement, therefore, innovation is quite inevitable. Yes we are manufacturing new products that have unique features to solve problems of wind turbine industry in general and meet the demands of our customers in specific.

Q. 2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: No, we are not working with this concept. We work with innovation but not with NPD, as the definition you have just quoted says the preparation of full-scale manufacturing of a product not previously offered by the marketer.

Q. 3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) Other

ANS: For innovation we derive inspiration from all the following sources; customers, consumers, our own employees, the suppliers, universities and the consultants.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes suppliers play a vital role.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we are outsourcing.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?
Ans: Yes sharing knowledge helps because we have to work in coordination; we transfer any knowledge that is necessary. And to ensure that the knowledge is not leaked to others a proper agreement (NDA) is signed with the suppliers.

To give the details about what kind of knowledge we do share with our suppliers is against the policy of the company.

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes we demand for special products with unique features. To increase the value of our products we are looking for special product components and we sit together and discuss it with our suppliers and share our ideas in brainstorming sessions. Finally we may decide on something substantial for the suppliers to work on.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Yes we share the basic knowledge about component manufacturing with the supplier because their supplied components enhance the value of our products but the detailed engineering knowledge is not shared unless a special demand is made and in that case NDA has to be signed.

We market the final product ourselves.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes we have such alliances. We work together with suppliers, contractors, R&D alliances in many countries. This makes research and development, manufacturing and distribution easy and more effective.
Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Yes, there is a lot. Both benefit. The result is a better quality, and customer satisfaction which is the key to our success.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Linneuniversitetet

Questionnaire for interview

8

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: ENERCON GmbH

Country: Germany             Website: www.enercon.de

Contact person: Mrs. Maike Hilderbrand        Designation: Marketing Head

Contact no: +49 4941 9270             Email: maike.hildebrand@enercon.de

No. of employees:             Turnover:

Research & Development:   Over 180 engineers in a variety of specialist disciplines
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes we are working with innovation

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”) 

Ans: Yes with NPD too we are working.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) other

ANS: In-house is the major source of innovation at Enercon.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Sometimes, yes. It depends on the product and also the confidence level of our relationship with the particular supplier, that we may involve him.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we don’t outsource to the suppliers the manufacturing of the components of our wind-turbines.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?
Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Fuhrländer AG

Country: Germany                                      Website: www.friendly-energy.de
Contact person: Matthias Kahl                   Designation: Marketing Manager
Contact no: +49 2664-9966-0                     Email: marketing@fuhlaender.de
No. of employees:                               Turnover:

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it ”)

Ans: Yes we are doing innovation as we have developed new products.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we do, as explained above.

Q. 3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) other

ANS: Major sources of inspiration are the users and in-house.
Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: No we don’t involve the suppliers in innovation and NPD.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we do not outsource. We have entirely our own production.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable.

Q. 10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview
Questionnaire for interview

10

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Gamesa

Country: Spain/Poland Website: www.gamesacorp.com

Contact person: Monika Grudke Designation: Sales Engineer

Contact no: +48 602692792 Email: info@gamesacorp.com

No. of employees: 6000 Turnover: 3,651 (mm€)

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

Ans: Yes we are a company that is working with innovation because it is the one of the best means to survive the tough competition. Innovation has the capacity to differentiate; our strategy is to exploit differentiation and so we work with innovation.
Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we do for example Gamesa G10x-4.5MW is one of our new products.

Q.3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: If you want to know what the major (with emphasis on major) source of innovation at Gamesa is then our answer is In-house research, because the Production and R&D departments have the responsibility to do it and that is where all attention is focussed when we are working with innovation.

Q.4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: We give a lot of importance to suppliers’ integration in product development process.

Q.5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes, because outsourcing has so many benefits that every body knows.

Q.6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: We share only limited knowledge which is necessary to produce the product. For example in the manufacturing of the wind turbine hub our suppliers need some information.
Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes our suppliers try to bring forth products that have special features because there is a tough competition, they want to prove that they are useful for us otherwise we might think about hiring services of some other suppliers.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: No, there is no need to share the knowledge about the final product which is the result of the skilful work of our engineers. We can’t give this knowledge to people outside the company.

The marketing of the finished product is done by none other than Gamesa itself.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: I don’t know if we are having any such relationship.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Integrating the suppliers in innovation and product development is beneficial as it brings new knowledge along with new possibilities.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: GE Power & Water

Country: USA Website: www.ge-energy.com

Contact person: Frank Hoersting

Designation: Leader Communications, Renewables – Europe

Contact no: +49 59719801756 Email: frank.hoersting@ge.com

No. of employees: 40,000 Turnover: $21.8 billion (2007)

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

Ans: Yes because innovation is so important. We have to find technical solutions to problems in wind turbine industry. Our engineers have to come up with improved technology in order to stay on top.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)
Ans: Yes NPD is associated with innovation. Both are linked.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: Major sources of innovation are the users and the employees within the company. Identifying the customers’ needs and satisfying them is the actual reason behind any innovation.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we are involving the suppliers in NPD process, their experience could help.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes, outsourcing is the focal point. It helps in getting specialised components for our wind turbines.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes it is needful that we transfer the knowledge to our suppliers because it is a joint development and the suppliers build components by our design.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes, we do. We have to ask for special product components because we want to produce products with unique features that will differentiate us in the market.
Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Yes we share the knowledge of the final product with our suppliers. This helps in developing a long term strong relationship. But we must sign clear agreement too that ensures confidentiality.

We do the marketing ourselves.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: No we don’t.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: The basic benefit is that the suppliers are specialists in their field and their experience can help.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Ningbo Ginlong Technologies Co, Ltd.

Country: China  
Website: [www.ginlong.com](http://www.ginlong.com)

Contact person: Liang Chi  
Designation: Manager Product development

Contact no: +86 574 6578 1806  
Email: [info@ginlong.com](mailto:info@ginlong.com)

No. of employees:  
Turnover:

**Q.1. Are you working with innovation?** (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

**Ans:** Always yes to Innovation, this is our conviction that there is survival only for the fittest. Innovation determines who is the fittest.

**Q.2. Are you working with New Product Development (NPD)?** (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

**Ans:** If innovation is yes then how can New Product Development be no!

**Q. 3. What are the major sources of innovation in your company?**

- a) From users
- b) In-house (within the company by the producer)
- c) From suppliers
- d) Universities, consultants
- e) other
ANS: The main sources of innovation that we have acknowledged are the users and market trends, even our competitors can be a source of innovation.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: No we don’t involve them.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we don’t.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable.
Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan
Ashfaq Lodhi
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

Ans: Yes we do work with innovation. Innovation is becoming more and more important because of tough competition and shorter life cycles of products.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: NPD and Innovation are not different according to what we have developed the understanding.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: Major source of innovation is in-house (within the company by the producer) and also customers.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes, suppliers are important and cannot be ignored because they have a lot of specialised knowledge.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes, outsourcing saves a lot of time and other resources.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?
Ans: Yes, we transfer only the related knowledge about product components to the suppliers. We mostly have to transfer technical descriptions, plans etc. to our strategic suppliers.

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes, we demand for special product components that can enhance the value of our products.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: There is no risk if we share the knowledge of the final product with our strategic suppliers as we have signed agreements with them.

We market the products ourselves.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes only the suppliers. We have suppliers in other countries that work for our company to do innovation and New Product Development.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: The benefits of suppliers’ integration in innovation and NPD are many and well known. To name a few: it helps in more innovation, faster and cheaper production and flexibility.

Thanks for giving us your precious time for this interview
Questionnaire for interview

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We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Lagerwey Wind BV

Country: Netherlands Website: www.lagerweywind.nl
Contact person: Ron Kammeijer Designation: Business Unit Manager
Contact no: +31 342 751 935 Email: info@lagerweywind.nl
No. of employees: Turnover:

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it“)

Ans: Yes we do it according to the definition you have quoted.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)
Ans: NO we are not working with NPD as you have defined it as the process of preparing of full scale manufacturing of product not offered before.

Q. 3. What are the major sources of innovation in your company?
   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: The customers who are the users provide us the source of innovation.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we have cooperation with our suppliers for doing innovation and development of new products.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we don’t outsource, we manufacture the components ourselves.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.
Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

15

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: LEITWIND Spa – AG

Country: Italy Website: www.leitwind.com
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes, we are working on it. We are manufacturing wind-turbines with no gear-box. As some technical problems in wind turbines were associated with the gear-box so we thought of manufacturing wind turbines without them.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we are also working on NPD.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: Users, employees and the suppliers are sources of innovation at Leitwind.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Quite often we involve the suppliers in innovation and product development. We have experienced that the earlier integration of suppliers in the innovation process is even better.
Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we take pride if we can have the production at our own manufacturing plants. We do not outsource the manufacturing of components to suppliers.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: No, we don’t share knowledge of our final product and we market it ourselves.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: No we don’t.

Q. 10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Nexans

Country: Germany                               Website: [www.nexans.de](http://www.nexans.de)
Contact person: Britta Roller                Designation: Manager R&D
Contact no: +49 2166 2724 95                      Email: jutta.van_buehl@nexans.com
No. of employees: 5,977 (2009)                  Turnover:

Sales in 2009: 641.5 million Euros (2009)

**Q.1. Are you working with innovation?** (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

**Ans: Yes we are working with innovation**

**Q.2. Are you working with New Product Development (NPD)?** (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)
Ans: Yes we are working with New Product Development.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: The major source of innovation at Nexans is in-house i.e. it is within the company by the producer.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we do involve the suppliers in innovation and NPD.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes several components are manufactured by the suppliers.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes we transfer or share limited knowledge with strategic suppliers, details can not be disclosed. However, we can only tell you that we transfer the know-how, knowledge.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes we ask our suppliers to provide us components having such features that would increase the value and demand of our products. This is vital for survival in the tough competitive market.
Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: We make our final product without sharing knowledge with the suppliers and we have our own marketing team that has to market it.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes we have but we can’t give you the details about it.

Q. 10. What benefits do you see in involving suppliers in innovation and product development?

Ans: The significance of involving the suppliers in innovation and product development is manifold. It is a key to improved product quality, reduction of product cost and development time, access to suppliers’ technology and resources. In short, it increases the overall efficiency of the development process.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind
Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Nordex AG

Country: Germany                                Website: [www.nordex-online.com](http://www.nordex-online.com)

Contact person: Markus Marburger              Designation: Product Engineer

Contact no: +49 1724412597              Email: mmarburger@nordex-online.com

No. of employees: 2,243                        Turnover: (2008) 1,135.7 mn. Euro

**Q.1. Are you working with innovation?** (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

**Ans:** Yes we are working with innovation

**Q.2. Are you working with New Product Development (NPD)?** (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

**Ans:** Yes both NPD and Innovation. They are almost the same.

**Q. 3. What are the major sources of innovation in your company?**

a) From users

b) In-house (within the company by the producer)

c) From suppliers

d) Universities, consultants

e) Other

**ANS:** The major sources of innovation come from the users, in-house (within the company by the producer) and from the suppliers.

**Q. 4. Do you involve suppliers in innovation and product development/New Product Development?**
Ans: Yes we do involve suppliers in innovation and product development and the example is our gear-box manufacturing.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we do outsource the production of wind turbine components to suppliers.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: As our suppliers have to build what we want them to build, we somehow automatically transfer knowledge about the component.

In Joint development, we are sharing our knowledge as we want to have an optimized product at the end; of course our suppliers will probably not have full insight in our experience and we not in his experience, but details are shared and so far transferred.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Both.

Suppliers offer their special products and we'll check whether an integration helps to improve our product; or

We have defined particular needs and are asking our suppliers whether they can assist us and develop/modify products in order to support us.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: We market our product ourselves.
We share knowledge in the sense of giving feedback to our supplier, i.e. whether his proposed solution is working or whether modifications are required, but he will not have insight in our final product in detail but only in the part he is supplying.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: We have cooperation with suppliers, contractors, joint ventures, R&D alliances in China and USA.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Suppliers integration into innovation and product development can help to give us access to the knowledge of know-how and the knowledge of the competitors.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Northern Power Systems
Country: USA                                          Website: [www.northernpower.com](http://www.northernpower.com)

Contact person: Allan Antkowiak   Designation: Manager Production – Europe

Contact no: +41 443073733                     Email: aantkowiak@northernpower.com

No. of employees: 106                     Turnover: confidential

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

Ans: Yes we are working with innovation as you have defined.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we are working with NPD according to your definition.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: The users are the major source of innovation at Northern Power Systems.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we do involve the suppliers in innovation and new product development. Because of their experience we value their suggestions.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we don’t.
Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
Questionnaire for interview

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We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: PowerWind GmbH

Country: Germany Website: www.powerwind-energy.com

Contact person: Fabian Rollert Designation: Product Development Manager

Contact no: +49 407410670 Email: info@powerwind.de

No. of employees: 130+ Turnover:

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes innovation is an important key for success. “Innovation enables us to find solutions for problems and it also increases the value of our products. How much successful we can be in meeting the demands of the competitive market depends on how efficiently we can improve our products through innovation.”

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: NPD, yes we are working with it.
Q. 3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) Other

ANS: The sources of innovation are mainly two for our company. Innovation comes from in-house (within the company) and from the suppliers.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes suppliers are integral part of our innovation and product development process.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes, so many components are manufactured by the suppliers and we just assemble into making the final product.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes, we do share the knowledge that is necessary for the production of any component; it can be any knowledge for example designs. We are compelled to transfer specific knowledge because we need to get the components that match our model. But we can do this without transferring detailed engineering information.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes suppliers provide us with special features in the components that they manufacture because this helps in increasing the value of the product.
Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: No we don’t share the knowledge about the final product with any body and we market the final product by our own.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: No we do not have such alliances etc.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: The benefits are so many for example tailor made solutions/ products.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

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We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Innovation, yes we are working with this.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we are also working with the development of new products.

Q.3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: customers, suppliers, own employees, universities and market trends are the sources of innovation for us.

Q.4. Do you involve suppliers in innovation and product development/New Product Development?
Ans: Yes we value their good advice as they have a lot of experience.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we are not doing that at Relight Srl.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: REpower systems AG

Country: Germany                                      Website: [www.repower.de](http://www.repower.de)
Contact person: Rostislav Beslimov           Designation: Production Manager
Contact no: +49 1732523473                        Email: rostislav.beslimov@repower.de
No. of employees: 530+                           Turnover: € 1,220,548.7 (in tsd. EUR )

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes as everybody in this industry is mostly doing, because this is a young industry.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: No, we work to improve the existing products only.

Q. 3. What are the major sources of innovation in your company?

   a) From users
b) In-house (within the company by the producer)

c) From suppliers

d) Universities, consultants

e) Other

ANS: In-house, consultants and suppliers are the main sources of innovation.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: No we don’t involve suppliers in the actual process of innovation; however, we might accept useful ideas and suggestions from them.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No we do not outsource to the suppliers any components to be manufactured.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?
Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: ResQ-Cresto

Country: Denmark  
Website: www.cresto.se/dk

Contact person: Patrik Malterling  
Designation: Sales/ Marketing Manager

Contact no: +45 43 909 000  
Email: patrik@cresto.se

No. of employees:  
Turnover:
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes we understand that in order to be in the competition race we must be able to innovate.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: No, we define NPD differently. We view NPD as Product renewal, often development of already existing products.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: Users, suppliers, in-house and consultants; all of them contribute in this perspective.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Only limited involvement of taking suggestions and ideas from the suppliers is welcome.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: No, manufacturing of components is not outsourced at our company.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?
Ans: Not Applicable.

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q.8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q.9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Siemens Windpower A/S
Country: Germany / Denmark
Website: www.siemens.com/wind
Contact person: Morten B. Vindbjerg
Designation: Product Manager
Contact no: +45 30375640
Email: morten.vindbjerg@siemens.com
No. of employees: 5,500
Turnover: € 33,915 million

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes, to find the answer to shorter life cycles innovation is a must.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes New Product Development also is vital in order to differentiate and compete well. Our in-house engineers are responsible for the development of new products and they do this with the assistance of Research & Development department.

Q.3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) Other
ANS: Our R&D is specialised department with employees that have expertise in their field of work. We derive innovation from the in-house.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes, the suppliers are enjoying a significant place in innovation and product development at Siemens.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we believe that an efficient outsourcing of turbine components to suppliers can play a decisive role in the success of the company.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes, but not with all suppliers, transferring knowledge is very much dependent on the relationship with supplier. We cannot give you the specific details about the kind of knowledge that could be transferred.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes we try to get special products with unique features from our suppliers because it helps in increasing the value of our wind turbines.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: We do not share the knowledge of the final product. We have our own marketing for our products that we manufacture.
Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes, we do have contractors, suppliers, joint ventures R&D alliances etc in different countries and they work together in coordination to conduct research and development etc. for Siemens.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Suppliers are much specialised with the ability to create value in their specific niche/component. Working together with suppliers will facilitate a faster and more customer-value oriented product development.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

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**Questionnaire for interview**

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: SUMEC (Phonowind)

Country: Czech Republic. Website: [www.phonowind.com](http://www.phonowind.com)

Contact person: Jezso Tomas Designation: Director Hungary
**Q.1. Are you working with innovation?** (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

**Ans: Yes we are working with innovation**

**Q.2. Are you working with New Product Development (NPD)?** (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

**Ans: Yes we are.**

**Q. 3. What are the major sources of innovation in your company?**

- a) From users
- b) In-house (within the company by the producer)
- c) From suppliers
- d) Universities, consultants
- e) Other

**ANS: The major sources of innovation are the universities and the consultants.**

**Q. 4. Do you involve suppliers in innovation and product development/New Product Development?**

**Ans: Yes we do involve the suppliers in innovation and new product development by taking into consideration their experience.**

**Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.**

**Ans: No we don’t outsource the wind turbine components to suppliers.**
Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Not Applicable.

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Not Applicable.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Not Applicable.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Not Applicable.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Not Applicable.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
Questionnaire for interview

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: SUZLON Wind Energy A/S
Country: Denmark
Website: www.suzlon.com
Contact person: Lone Korsgaard
Designation: Product Manager
Contact no: +45 29361323
Email: lone.korsgaard@suzlon.com
No. of employees: 14000+
Turnover: 17,277 crores of rupees (Indian)

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes we are doing what you have defined.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Also yes to NPD. I would like to add here that we do not distinguish between innovation and new product development.

Q. 3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
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Page

e) Other

ANS: Our sources of innovation are mainly our customers and also our competitors.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: We cannot ignore the suppliers. They are so important because of the specific knowledge and experience that they have.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we are outsourcing many of the wind turbine components to the suppliers as we are not expert in manufacturing all the components.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes we believe in cooperation and because suppliers are integral part of the product development and manufacturing, we are transferring the related knowledge about product components to our strategic suppliers.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Suppliers are extending their full cooperation in this regards and try to provide us with components that have specialised functions.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: No we don’t share that knowledge. We are marketing all our final products by ourselves.
Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes we have contractors, suppliers, subsidiaries, R&D alliances etc. in other countries that contribute in research and development, manufacturing, distribution etc. for SUZLON.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Benefit of knowledge from suppliers is the greatest advantage.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
Q.1. Are you working with innovation? (We define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes we are working with innovation and the proof is that we are giving new products in the market.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes, NPD is the same as innovation.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: The most important source of innovation is the In-house (within the company by the producer).

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes – agreements are entered with more relevant suppliers.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes – most components will be manufactured by suppliers.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?
Ans: We will in general not transfer related knowledge to the suppliers. Why should we do that? Most of the components are designed by us -- and also patented. They will be manufactured according to Sway specifications and drawings – being our property. There will also be NDAs in place between the suppliers and Sway. We can’t see any reason for the suppliers having the technical knowledge about our products or the engineering work – beyond transferring the knowledge to competitive companies!!

Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: For instance we are for our floating tower buying a standard, modified, turbine – and of course this component will increase the value of the complete product – since it’s a special product for the actual operational environment.

In general we are trying to buy standard products if we are not carrying out the engineering ourselves. In some cases we are (we have to!) developing the components in close co-operation with the manufacturer/supplier – but not based on the intention of a request of increasing the value.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: No – we are NOT sharing knowledge – beyond general public information – with our suppliers (and why we should?) They are getting paid for what they are delivering and our relationship with our suppliers is based on clear agreements.

We are doing the marketing ourselves, however, if we find it to the purpose, suppliers of the main components will be asked to contribute.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?
Ans: Sway has formal agreements with suppliers, consulting companies and R&D institutions outside Norway.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Many suppliers have top competence with their business sector and can be very contributing in the development of our products.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview

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We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: SWEG

Country: Egypt Website: www.elsewedyelectric.com

Contact person: Arne Wilhelm Designation: sales manager

Contact no: +20 222 623 411 Email: a.wilhelm@elsewedy.com
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)

Ans: Yes we are working with this phenomenon.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: No we are not working with NPD.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: For us the major sources of innovation are: users, universities and consultants.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we involve the suppliers in the process.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we do, because suppliers can provide us with products that are more specialised.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: No we don’t transfer knowledge to suppliers.
Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes it depends on case to case, we might ask for special product components that will help in improving our final product. Most of the components are, however, in accordance with our drawings/specifications and patented, and of course increasing the value of the assembled product. However - some suppliers have a high internal engineering-level, and consequently cooperation can be of relevance.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: We don’t share any knowledge. We market our products by ourselves.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: No we don’t.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Better Quality, increased value, cost effectiveness, time saving, risk free to name a few.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: UNISON Co, Ltd

Country: South Korea
Website: www.unison.co.kr

Contact person: R. Elslander
Designation: Manager Marketing

Contact no: +32 475778610
Email: reginald@elslander.com

No. of employees: 400

Total Assets in 2008: 443,538,986,639 (Korean Currency WON)
Total Liabilities in 2008: 312,020,996,296 (Korean Currency WON)
Sales in 2008: 100,768,909,705 (Korean Currency WON)
Gross Profit in 2008: 21,561,239,528 (Korean Currency WON)
Non Operating Revenues in 2008: 41,824,503,080 (Unit Currency Korean: Won)
Net Income in 2008: 10,309,767,498 (Korean Currency WON)

**Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it “)***

**Ans: Yes we are working with innovation.**
Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we work with New product Development and this includes manufacturing totally new products as well as improvement and modification of existing products.

Q. 3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) Other

ANS: Major sources of innovation for our company are In-house and the market trends.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we involve the suppliers in innovation right from the beginning till the end of the process.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we are having a lot of wind turbine components from our suppliers as we think that outsourcing is very useful in today’s world of specialisation.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: We are all in favour of cooperation between the company and the trusted suppliers and so we transfer the required knowledge to those who have long-term relations with the company. This detail is confidential.
Q.7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: We do ask our suppliers to provide special product components that will enable our product to acquire added value and will be differentiated in the market.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Yes we share the knowledge about our final product with our strategic suppliers. This will further enhance our relationship. We market our finished products by ourselves.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes we have a network that is functioning in different countries. Details can’t be given.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Added value to our products, access to knowledge and experience, enhanced quality, cost and time reduction are some of the many benefits of using suppliers in innovation and new product development.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

Questionnaire for interview
We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Vergnet SA

Country: France
Website: www.vergnet.fr

Contact person: Pascal Larsonneur
Designation: R&D Director Electric
Contact no: +33 (0) 238528749
Email: p.larsonneur@vergnet.fr

No. of employees: 
Turnover:

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes according to the definition above we are working with innovation.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: We are working with new product development because we understand that NPD is crucial for maintaining or growing the market share.

Q. 3. What are the major sources of innovation in your company?

a) From users
b) In-house (within the company by the producer)
c) From suppliers
d) Universities, consultants
e) Other

Ans: Our innovation comes from within the company.
Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: We do involve suppliers in innovation and product development.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: As we do not manufacture all wind turbine components ourselves, we outsource some to suppliers.

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Yes when we are out sourcing we have to work hand in hand with our suppliers, therefore, we share necessary data with our suppliers. That knowledge that we share with our suppliers is confidential.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes our suppliers are experienced manufacturers of their components and they provide us with special products, as they are needed.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: No we don’t share any knowledge with the supplier but we market our final products.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?
Ans: Yes we have some R&D alliance in other countries but this is confidential to explain about them.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Resource share, knowledge sharing, cost reduction, financial benefits etc.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi

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Questionnaire for interview

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We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: Vestas Wind Systems A/S

Country: Denmark Website: www.vestas.com

Contact person: Henning Hansen Designation: Market Development Manager, Marketing

Contact no: +45 25130493 Email: heh@vestas.com

No. of employees: 20,693 (March 2010) Turnover: mEUR 6,636 (2009)
Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it”)

Ans: Yes we do work with innovation.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)

Ans: Yes we are also working with New Product Development. It is essential to know what the customers’ preferences are! In order to create the best products possible we must improve them so that they qualify to the specific concerns of our customers.

Q.3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

ANS: Users, Suppliers, Universities, consultants and own company employees are the sources of innovation at Vestas.

Q.4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Yes we are involving the suppliers for innovation and new product development.

Q.5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: Yes we are following the trend. We do outsource the wind turbine components to suppliers.
Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: Confidential information.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: Yes we are receiving product components with specialised features from our suppliers.

Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Yes we enjoy strong ties and close relationship with our suppliers. As we derive at the final product by mutual collaboration we trust to share the final product with our partners. We don’t want that our suppliers should feel alienated.

What we manufacture we market it by our own.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: Yes but confidential.

Q. 10. What benefits do you see in involving suppliers in innovation and product development?

Ans: Most important outcome for suppliers’ involvement in innovation and new product development is Quality and R&D.

Thanks for giving us your precious time for this interview

Regards,
Questionnaire for interview

We are postgraduate students of Marketing at Linnaeus University, Sweden and we are doing our final thesis on Supplier involvement in Innovation & Product Development in Wind Turbine Industry. We need your cooperation in answering the following 10 questions for interview.

Name of company: WinWinD

Country: Finland
Website: www.winwind.fi

Contact person: Pekka Virta
Designation: Senior Sourcing Manager

Contact no: +358 (0) 400521506
Email: pekka.virta@winwind.fi

No. of employees: 778 (2009)

Q.1. Are you working with innovation? (we define innovation as: “An innovation is a product or service with a bundle of features that is new in the market, or that is commercialized in some way that opens up new uses and consumer groups for it“)

Ans: We are always looking to enhanced customer value and innovation is part of it.

Q.2. Are you working with New Product Development (NPD)? (We define NPD as: “Preparation of full-scale manufacturing of a product not previously offered by the marketer.”)
Ans: Our engineering teams utilize global synergy and are always working on supporting current product and improving to make the product more efficient and cost effective to our end users.

Q. 3. What are the major sources of innovation in your company?

   a) From users
   b) In-house (within the company by the producer)
   c) From suppliers
   d) Universities, consultants
   e) Other

Ans; A combination of all of the above and quite a few more sources, some which cannot be disclosed, without a proper NDA.

Q. 4. Do you involve suppliers in innovation and product development/New Product Development?

Ans: Our suppliers are our partners and hold a stake in our mutual success, we are tied to the hip and it makes sense to involve them early on in the process.

Q. 5. Do you outsource the production of wind turbine components to suppliers? If yes, please answer questions 6-10 below.

Ans: YES

Q. 6. Do you transfer the related knowledge about product component to suppliers? If yes, please specify what kind of knowledge you transfer to suppliers?

Ans: This is a question which we cannot answer without an NDA.

Q. 7. When you innovate or develop new wind turbines, do suppliers provide special product components to increase the value of your products? Or to increase the value of your products, do you ask the suppliers to provide special product components?

Ans: It is a combination of both.
Q. 8. Do you share any knowledge about your final product with the supplier or do you make it within your company without sharing such knowledge? Do you market your product yourself?

Ans: Depending on the relationship, nature of the components and critical interface with other components, varying degrees of information is shared relating to the final product.

Q. 9. Do you have contractors, suppliers, subsidiaries, joint ventures, R&D alliance etc. in other countries that conduct research and development, product definition and design, procurement, manufacturing, distribution etc. for your company?

Ans: We are a Global company and we do source Globally, therefore we do have a combination of the above.

Q.10. What benefits do you see in involving suppliers in innovation and product development?

Ans: My response to Q4 answer this question I believe.

Thanks for giving us your precious time for this interview

Regards,

Aamer Khan & Ashfaq Lodhi