



Denmarks future as leading
centre of competence within
the field of wind power

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Preface

In May 2006, the Danish government presented a report on the furtherance of environmentally effective technology. Nine initiatives are presented in the report of which one is partnerships for innovation. The role of the partnerships is to strengthen public-private cooperation between the state, businesses, knowledge institutions and venture capital to accelerate innovation-processes within a number of areas of technology.

One of the specifically proposed innovation-partnerships is a partnership for the wind power plants of the future. The partnership is based on the existing Danish Research Consortium for Wind Power that was established, in 2002, by a number of research institutions within the field of wind power. However, the new partnership has a stronger business affiliation than the previous consortium.

The partnership has been named Megavind and has the following collaborating partners:

- Vestas Wind Systems A/S
- Siemens Wind Power A/S
- DONG Energy A/S
- The Technical University of Denmark
- Risoe National Laboratory, The Technical University of Denmark
- Aalborg University
- Energinet.dk
- The Danish Energy Authority

Megavind has developed the present report with the intention of assessing the challenges we are faced with if Denmark is to maintain its position as an internationally leading centre of competence within the field of wind power.

Furthermore, with the report, the partnership Megavind also wishes to point out specific initiatives within testing, demonstration, innovation and research as well as presenting recommendations for a strengthened effort within education that can take part in developing Denmark as an internationally leading centre of competence within the field of wind power.

In this way, Megavind is the catalyst and initiator of a strengthened testing, demonstration and research strategy within the field of wind power in Denmark. The partnership acts as a sparring partner to the entire industry in regards to strengthening the collective Danish innovation and research environment within wind power. Megavind's recommendations will function as reference for the coming years' strategic research within wind power, thus becoming the valid research strategy for wind power in Denmark. The recommendations found in the report are based on collected material, etc. as well as knowledge and inspiration gathered through interviews with 25 representatives from the wind power industry.

What is more, the report has been reviewed in the industrial group of the Megavind partnership. The following companies are collaborating in the industrial group: Vestas Wind Systems A/S, Gamesa Wind Engineering A/S, LM Glasfiber A/S, ABB A/S, DNV, BALLUFF and Force Technology.

The Danish Wind Industry Association acts as secretariat for the partnership Megavind, and ECON has assisted in the development of the present report.

Outline

Denmark is a leading centre of competence within the field of wind power. The industry employs more than 21,000 people in Denmark and had a turnover of DKK 48.5 bn on a global level in 2006. The numbers speak for themselves – the Danish wind power industry is a great success.

During recent years, however, a significant technological and market-wise system change has taken place that is posing a major challenge to this leading position. The collective wind power industry and the political system must assume a proactive position towards this system change to ensure that Denmark will maintain and strengthen its position.

The partnership Megavind was established on a government-initiative to promote environmentally effective technology through innovation and research. Through its appointed steering committee, the partnership Megavind represents the entire wind power industry. Megavind is the catalyst and initiator of a strengthened testing, demonstration and research strategy within the field of wind power in Denmark. In this way, the partnership acts as a sparring partner to the entire industry in regards to strengthening the collective Danish innovation and research environment within the field of wind power in Denmark.

Chapter 1

The basis for the partnership's work is that Denmark must maintain its leading position on the global market and continue to be a leading centre of competence within the field of wind power. Therefore, the partnership takes the following vision and ambition as its starting point:

Megavind's **vision** is that Denmark must continue to be the world's leading centre of competence within the field of wind power.

It is Megavind's **ambition** that Denmark must provide the most effective wind power – wind power plants – that ensure the best possible integration of wind power in the accumulated energy system so that Denmark, also in the future, can provide wind power technology to energy systems with a very large proportion of wind power.

In this report, Megavind presents a number of specific suggestions and recommendations that can play a decisive role in fulfilling this vision. The recommendations are not only substantiated by the challenges that the wind power industry is faced with. They are also the result of a will to assume a leading role in the development of favourable framework conditions for innovation and research within the field of wind power technology.

Chapter 2 – 5

As a basis for the recommendations, Megavind has developed an analysis of the Danish centre of competence within the field of wind power. The analysis consists of three parts. Chapter 2 is concerned with the change of system which the wind power industry is in the midst of. Strengths and weaknesses of the accumulated centre of competence are disclosed in chapter 3, while the structural challenges within research, education and innovation are analysed in chapter 4.

The overall conclusion of the analysis is that the Danish wind power industry is faced with overwhelming challenges. Today Denmark has a quite unique position on the global market that, to a large degree, rests on a strong industrial environment. This industrial environment is built on a foundation consisting of a significant effort within research and education,

as well as an innovative developmentally focused environment which is influenced by cooperation and knowledge-sharing with an ambition to find new technological development tracks within the field of wind power.

Nevertheless, the analysis shows that today this foundation has been weakened to a great extent. The factors that are going to shape the industrial environment and jobs of the future are under pressure. Education and recruitment, cooperation within the industry as well as new technological tracks within the industry are three central parameters that all are weakened in the Danish wind power industry.

In regards to research, the analysis shows that the Danish research-environment has a leading position within a number of areas, but also here, there are great challenges to be met. In step with the rapid development of the international markets, many international research- and university environments are, to a large degree, focusing their efforts on wind power. This puts a lot of pressure on the Danish knowledge centres to hold on to the most talented researchers and students.

In order to accommodate these challenges and maintain Denmark's leading position as a competitive centre of competence within the field of wind power, an extraordinary effort must be put in.

Chapter 6

On the basis of this realisation, Megavind has formulated a strategy with specific recommendations to strengthen the accumulated Danish centre of competence (se figure 1.1).

The basis of the recommendations is strengthening the cooperation between the wind power industry's own research and innovation and the research that takes place at universities, etc.

The accumulated strategy for testing and demonstration

Previously, innovation and demonstration has, to a large degree, been one-dimensional focusing on the testing of wind turbines. Megavind wishes to create innovative thinking in regards to validation, testing and demonstration within wind power technology and the integration of wind power into the entire energy system. Therefore, Megavind recommends creating an accumulated strategy for testing and demonstration of:

- Components and turbine parts
- Wind turbines and wind farms
- Wind power plants in the energy system

It is of vital importance that the testing- and demonstration facilities cover the whole value-chain from component to power plant and from end-user to systems manager. Concurrently, the initiatives must interact with the Danish core-competencies within research.

In order to create the cohesive strategy for the three dimensions of testing and demonstration, Megavind will assume a central and coordinative role and, first-off, develop sub-strategies for each of the three dimensions.

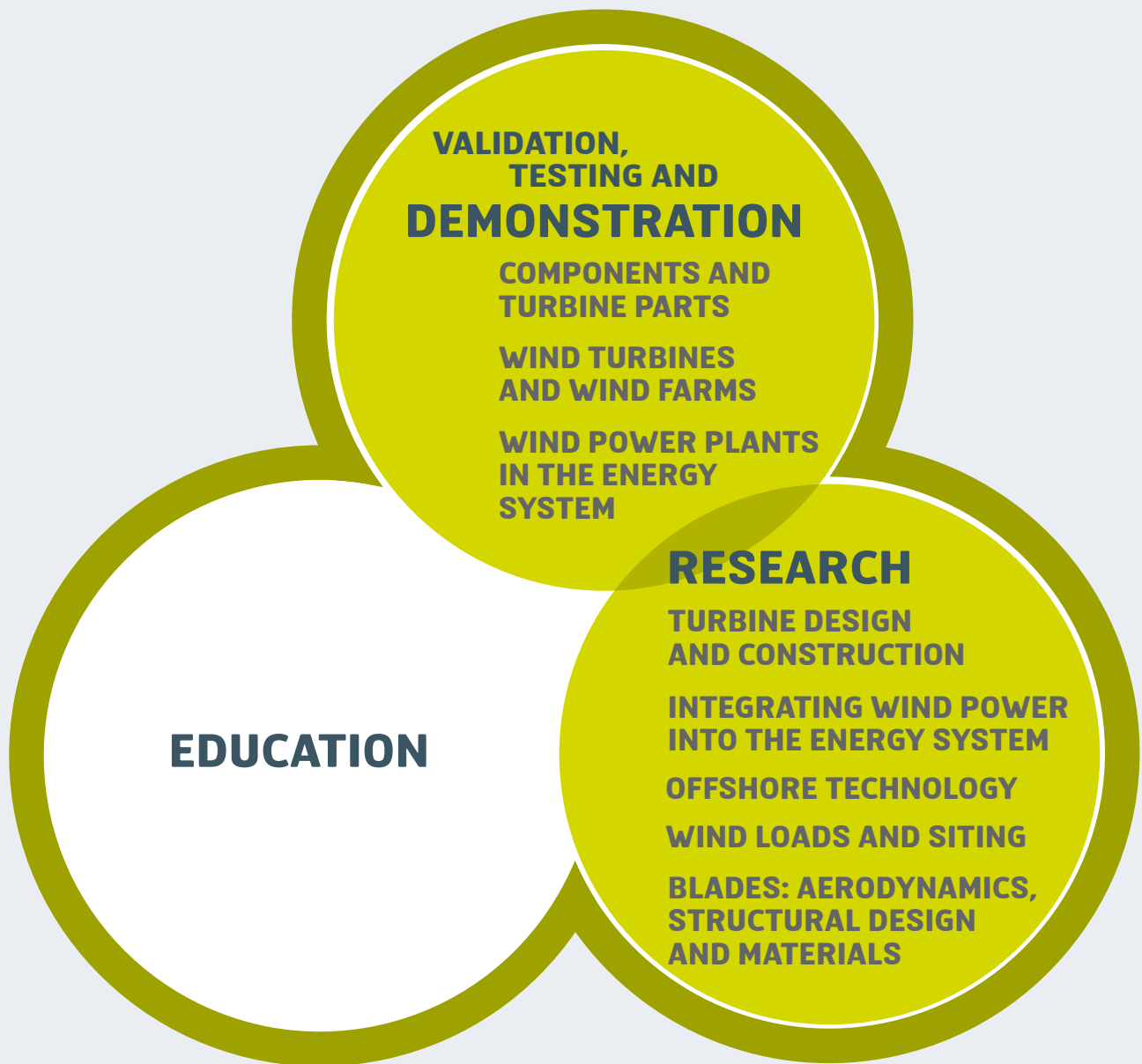


Figure 1.1

Megavind's accumulated strategy: A well functioning learning and innovation environment requires, among other things, that validation, testing and demonstration, research as well as education interact.

Strategic research effort

Megavind recommends that the long-term university-research and education in general should be strengthened by a specific prioritisation of the fundamental or generic technologies that are part of the development of wind turbines and wind power plants. The research effort must also be strengthened within the whole valuechain; from the development of components and turbine parts to the integration of wind power into the accumulated electricity supply system. Therefore, Megavind recommends that strategic research initiatives be taken within the following areas:

- Turbine design and construction
- Blades – aerodynamics, structural design and materials
- Wind loads and siting
- The integration of wind power into the energy system
- Offshore technology

Megavind will facilitate a development and strategy process for the five strategic research-areas including complete roadmaps and measurable criteria for every area. Using the existing research environments as a basis, Megavind will build on the efforts from previous research strategies. Furthermore, a concrete initiative will be taken to strengthen the research within offshore technology. In addition to this, the partnership will take the first step towards improving the framework conditions for the cooperation between research institutions and industry through common guidelines for the judicial frames of the cooperation (IPR).

Time schedule for Megavind's work autumn 2007 and spring 2008

Strategy for validation, testing and demonstration	
September 2007	Components and turbine parts
December 2007	Wind turbines and wind farms
March 2008	Wind power plants in the energy system
Research initiatives	
March 2008	Five strategic research areas
	Judicial frames of research projects

Only through an accumulated strategic effort can the Danish wind power industry maintain its leading global position. For this reason, the implementation of Megavind's recommendations is an important step towards realising the Danish government's vision of Denmark as a leading renewable energy-nation.

This report also shows that it is about time. Certainly the wind power industry is the success-story of an industrial fairytale on a rapidly growing global market. However, if you let yourself become blinded by the fairytale – by the success – you are faced with the danger of slipping into a “bewitched sleep” meaning that Denmark might miss out on the chance to hold on to its position as an international centre of competence within the field of wind power.



1 Recommendations

Megavind's vision is that the Danish wind power industry should be the world's leading centre of competence within the field of wind power. Moreover, the Danish wind power industry should develop the most effective and competitive wind power that is most well-integrated in the accumulated energy system.

On the basis of the analysis which maps out the strengths and weaknesses of the Danish centre of competence, Megavind has developed a number of recommendations on how to fulfil the vision. These recommendations are based on the three primary operational goals:

- To create **innovation in validation, testing and demonstration** within the field of wind power and the collaboration between wind power and other forms of energy. An innovation in testing and demonstration facilities that perceives wind power as a basis supplier of electricity in collaboration with conventional forms of energy and other forms of renewable energy.
- To launch **strategic research initiatives**, within five key areas in a collaboration between industry, universities and authorities, that are based on the challenges that are a result of the system change from wind turbine to wind power plant. Much emphasis will put on the fact that these strategic research initiatives must be goal-oriented and measurable.
- To support long-term educational activities that can strengthen the recruitment of qualified work power to the industry.

The specific recommendations and suggestions reflect the strengths of the wind power industry within the areas of research and industry. It is a vital premise that the initiatives contribute to creating a dynamic and development-oriented learning and innovation environment. If such an environment is created successfully, it would contribute to fulfilling the Danish government's goal of doubling the amount of renewable energy in the Danish energy supply by 2025 with wind as a central technology.

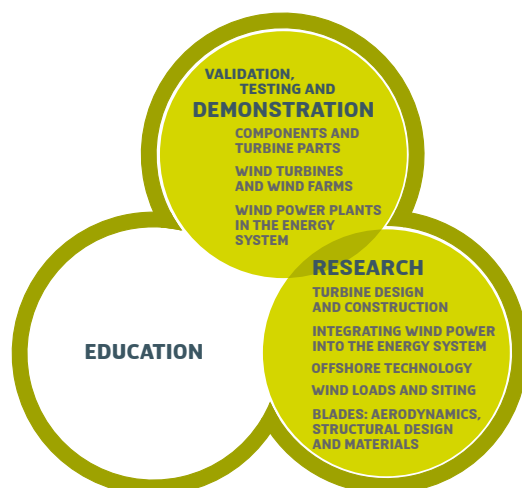


Figure 1.1

Megavind's accumulated strategy: A well functioning learning and innovation environment requires, among other things, that validation, testing and demonstration, research as well as education interact.

Megavind recommends innovation within the work involved with validation, testing and demonstration that reflects the entire chain of values. At the same time, Megavind recommends a strengthening of the long-term research as it is the foundation of developing new technological tracks and of central importance to the wind power industry's future competitive performance.

In addition to this, Megavind strongly requests strengthening the effort within the technological and natural science educations with a specific focus on energy-related issues (se text box 1.1).

Text box 1.1

Recommendation to universities and educational facilities

Megavind encourages universities and educational facilities to regularly offer basic educations with an introduction to energy and wind power related issues. This will have a considerably diverted efficiency in regards to increasing the students' technical/natural science interests on all levels; for the skilled, bachelors and master engineers as well as other technical/natural science educations.

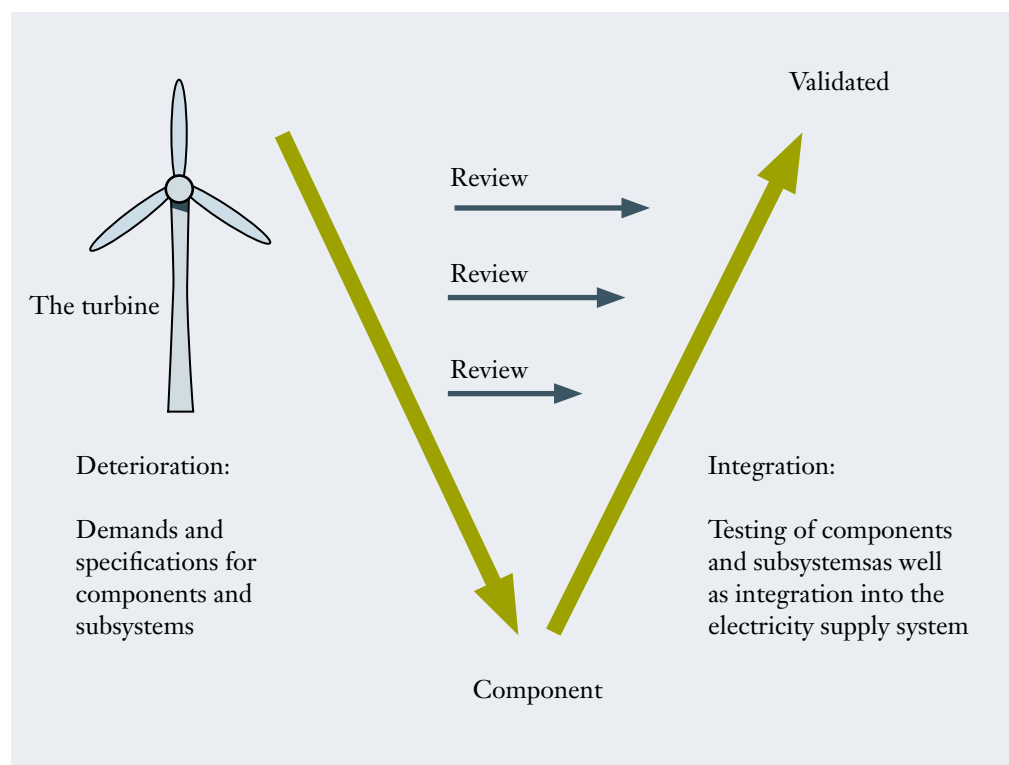
Megavind encourages universities to initiate a strategic educational cooperation with international universities that have core-competencies within areas which the Danish universities do not have core-competencies. This will strengthen the basis for recruitment into the wind power industry.

1.1 Validation, testing and demonstration

Components, wind turbines and wind power plants function in a very complex and dynamic collaboration under powerful influence from geophysical conditions. At the same time, the wind power plant must function one among many power plants in a coherent electricity supply system. The technological complexity is great, and even though science has developed tools for design and analysis there is still a great need for validation through testing and demonstration in order to test reliability, efficiency, service life, etc. of components and turbines and of the wind turbines as a wind power plant. Likewise, there is a great need for testing wind power plants' ability to become integrated into a cohesive electricity supply system.

Figure 1.2

The definition of the concept of validation



On the basis of the technological and functional challenges, Megavind suggests creating an international cooperation for the development of a cohesive strategy for testing and demonstration consisting of facilities within:

- Components and turbine parts
- Wind turbines and wind farms
- Wind power plants in the energy system

These testing and demonstration facilities embrace the entire chain of values from testing of components, turbines and wind farms to wind power plants (see figure 1.1). These facilities must fill out a need which the individual company cannot manage alone. To this must be added that new research-based knowledge must be an important basis for the development of new wind power technology and new methods of testing. In general, research plays a central part in regards to developing methods of validation, testing and demonstration of components, subsystems and the entire turbine.

All in all, such a new testing and demonstration strategy also holds the key to strengthening the Danish research and innovation environment.

Today the industry has facilities at its disposal for testing and demonstration of single-components or individual turbines. This is of great importance and it is also likely that the industry, out of commercial interests, can and will handle the immediate tests of new components and turbines by themselves.

In addition to this, there is a particular need for testing facilities that show how components and turbines function together in a wind power plant and in unison with the entire grid.

In this way, the overall basis for establishing a collective testing and demonstration strategy is that there is both a large need for, and a large challenge in testing components, turbine parts, turbines and wind power plants under the most realistic conditions.

Access to testing and demonstration facilities with a solid anchoring in the newest research is of vital importance for the development of effective wind power plants.

In the end, it is Megavind's hope that a collective strategy for validation, testing and demonstration will not only be a way of accommodating technological and functional challenges. The strategy will also be able to open new technological development tracks, strengthen the cooperation in the business and maybe even contribute to an increased access to quality in the technological and natural science educations. Moreover, a well-functioning cooperation with universities and GTS-institutes is central to achieving success.

The three dimensions of validation, testing and demonstration cover all participants in the collective centre of competence within the field of wind power. It can also be expected that the participants within the three areas predominantly have mutual technological interests. This centring around mutual technological interests can – hopefully – create a significant joint ownership within the industry. In order to procure a mutual basis for realising the strategy, Megavind will assume a central and coordinating role and firstly develop sub-strategies for every one of the three dimensions. The sub-strategies will be based on coordinating existing projects in such a way that the work which has already been done within the three areas will become the basis for Megavind's work.

1.1.1 Validation, testing and demonstration of components and turbine parts

Purpose:

To validate components and turbine parts under conditions that, in the best possible way, correspond to the influences, etc. that occur during regular operation of a wind power plant.

The ambition is that of a “maintenance-free turbine”.

Target group:

Suppliers of components and turbine parts as well as wind turbine manufacturers.

Contents:

Some components are developed and designed directly for wind turbines others are standard components. However, common for these parts is that they will be fitted into a machine that is in operation more or less all the time and therefore subject to extreme geophysical stress.

Mounting of large wind power plants, often in desolate regions or on the ocean, is the cause of great maintenance expenses, among other things, because the turbines are not very easily accessible. A reduction of the need for maintenance directly affects the price of wind power.

It is necessary to test components according to the conditions they will subject to in the turbine so one can gain a greater understanding of how components and machine parts react under such conditions. There is much to be gained if testing can be carried out prior to a mass production being launched. Research on material and the development of IKT-systems will contribute to better products and maintenance systems.

The testing facilities must be able to offer testing of both mechanical and electrical stress. Such facilities are expected to represent a particular value to the suppliers of the wind turbine manufacturers.

Organisation and resources:

Firstly, Megavind has commenced a mapping of the existing testing and demonstration facilities at research institutions and in the industry in order to assess the need for new testing facilities. A temporary mapping indicates that the industry itself can manage “regular testing”, however, testing in collaboration with other components and under extreme operating conditions is lacking. In coordination with Megavind, strategic work has commenced in order to create a centre of knowledge for innovation, documentation and demonstration of wind turbine components. A control committee and a work group have been appointed with Tage Dræbye as the project leader. The strategic work is expected to be concluded in September 2007.

1.1.2 Validation, testing and demonstration of wind turbines and wind farms

Purpose:

To establish testing and demonstration facilities that can test the entire turbine (0-series and prototypes).

The ambition is to develop the self-regulating intelligent turbine.

Target group:

Wind turbine manufacturers and operators of wind farms and wind power plants for example Dong Energy, Vattenfall, etc.

Contents:

It is necessary to expand the testing and demonstration facilities (test sights) to be able to test the entire turbine (0-series and prototypes).

An example could be technology that can read wind resources and convey this information to the turbine's control system. In this way, the quality of electricity will improve and the electricity supply system will, to a higher extent, be able to integrate wind power.

Here testing should include:

- The entire turbine design and the turbines' effect on each other
- The energy output

The testing and demonstration facilities must accommodate test possibilities for placement on land and offshore. In connection with future offshore-wind farms, there will be the possibility that a portion of these farms is dedicated to specific testing and demonstration facilities.

Organisation and resources:

In the joint strategy plan for testing and demonstration of wind power in Denmark, Megavind will assess the capacity and quality of the existing test-sights and offer suggestions that also will include the use of the eight localities which the government has pointed out for testing of demonstration turbines. There is a need for long-term strategic work within this area based on a coordination of the eight test-sights pointed out by the inter-ministerial work group for test turbines on land. This strategic work is expected to be finished before the end of 2007.

1.1.3 Validation, testing and demonstration of wind power plants in the energy system

Purpose:

To establish testing and demonstration facilities in order to test system-integration and collaboration with other forms of energy in the accumulated energy system.

The ambition is to develop the self-regulating wind power plant that can collaborate with other types of energy in an intelligent electricity supply system.

Target group:

Wind turbine manufacturers and operators of wind farms and wind power plants such as Dong Energy, Vattenfall, etc. as well as system managers such as Energinet.dk. Other participants in the collective energy system will also be a possibility.

Contents:

There lies a great challenge in integrating wind power into the accumulated electricity supply system. A wind power plant must function just as well as a conventional power plant, however, the development has not reached that far yet. On the one hand, a wind power plant must be capable of controlling its own production by forecasting its production as precisely as possible and being able to regulate/control short-term production. On the other hand, a wind power plant must also be capable of regulating

itself in proportion to the accumulated energy consumption in collaboration with other forms of energy.

In this area there is a distinct need to carry out tests that can develop effective control methods in order to integrate wind power into the grid. Validation, testing and demonstration within this area includes both the collaboration with other forms of energy as well as other ways of using wind power (heat or transport, alternatively through storage).

Here it will also be relevant to carry out model-calculations that can disclose what influence economic and price structures have on the integration of wind power.

Organisation and resources:

In the collective strategy plan for testing and demonstration of wind power in Denmark, Megavind will elaborate on this area of effort. This strategic work is expected to be done by the middle of February 2008.

1.2 Research

In the long run, the effort is directed towards basic research and an overall strengthening of the research effort within strategic key areas. This is a crucial factor in ensuring future technological development and innovation within the field of wind power.

First and foremost, the recommendations are aimed towards the research policy as well as universities' and GTS-institutes' strategy and plans of actions.

1.2.1 Strengthen research

Megavind recommends an overall strengthening of the technical universities' research through a specific prioritising of the fundamental or generic technologies that are part of the development of wind turbines and wind power plants. The long-term research must contribute to pointing out and developing the technological traces that will make up significant corner stones of the wind power industry's future competitiveness.

It is not possible for the research of the Danish universities and GTS-institutes to be at a world-class level within all of the wind turbine related areas. For this reason, it is important to focus the research effort within the Danish power positions, i.e. the strategic research areas. At the same time, however, it is important that the Danish research environment has a broad research preparedness in order to maintain competence and knowledge of the whole chain of values. On this basis, Megavind recommends:

- Strengthening research within the strategic research areas, including aerodynamics, electronic systems (software and electronics) and power technology (grids and power currents), meteorology (wind & sites), materials (nanotechnology and structural design of materials), offshore wind power, etc.
- That the Danish research and counselling environments seek cooperation with foreign universities. This should not only take place within the areas where Denmark has a strong position internationally but also within technology areas with a weaker position where there is a need for a broad research readiness.
- That the research within wind power develops cooperation with research within other forms of energy. The goal is to gain a greater knowledge of the possibilities and difficulties in the collaboration between wind and other forms of energy. This pertains to both the challenges and demands of the individual energy form and to the accumulated grid.
- That the research will be rooted in two powerful research centres; partly in the Technical University of Denmark and partly in a collaboration between Aalborg University and the University of Aarhus, as critical mass is a precondition for being in the world class and for being an attractive collaborator.

- Creating better frame conditions for research collaboration between universities and the industry through mutual guidelines for the judicial frames of the collaboration (IPR) as well as increased flexibility within the research programmes. Increased flexibility in regards to the research projects' time frame and demands on the number of participants could make it more attractive for small and medium businesses to participate.

1.2.2 Strategic research areas

The strategic research must contribute to the development of the fundamental technological solutions that make up the premises for maintaining the Danish leading position. This research effort covers key elements of the chain of values from development of components and turbine parts to the integration of wind power into the accumulated electricity supply system. In this way, the strategic research crosses over the three areas of effort for validation, testing and demonstration (see figure 6.1). Within the field of strategically orientated research, Megavind recommends that the research effort should be strengthened within the following areas:

1. How will the wind turbine become an effective and reliable machine?

Turbine design and construction of turbines in regards to:

- Continuous expansion of competence within blades, transmission systems, gears, brakes, support structures, effective electronics and the effects of geophysical conditions on the turbine
- Gaining more knowledge of the collaboration between the individual part of the turbine in order to enhance efficiency and reliability

2. How can wind be utilised most efficiently?

Blades – aerodynamics, structural design and materials with reference to:

- Developing lighter (cheaper) blades with high efficiency, reliability and durability
- Reducing the stress from the blades on the rest of the construction during both passive and active regulation
- Acoustic conditions and innovative designs

3. What is the optimal placement of the wind turbine – wind power plant?

Wind loads and siting with reference to:

- Gaining greater knowledge of wind profiles and wind resources as a result of terrain and atmospheric conditions
- To enhance the insight into the shelter effect of turbines in order to minimise production-losses and loads

4. How to introduce the highest possible amount of wind power into the energy system?

The integration of wind power into the energy system with reference to:

- Ensuring a better introduction of the individual turbine and wind park into the grid
- To facilitate a better introduction of large quantities of wind power into the grid including steering and regulation of the wind turbines so they can deliver a high level of power quality
- Developing system services so the wind turbines can act like conventional power plants

5. How do we take the next step offshore?

Offshore technology with reference to:

- Improving the economy from offshore turbines primarily through optimised concepts of infrastructure (foundations and transmission systems)
- Optimising dependability with new systems of fail-safe design, redundancy and fault tolerance

Megavind will develop an insurance strategy for these five research areas based on roadmaps and measurability. The strategic work will take into account large concrete projects that can take part in supporting the existing research environments. This strategic work is expected to be concluded by February 2008.

1.3 The next step

Megavind is the catalyst and initiator of strengthened testing, demonstration and research strategy within the field of wind power in Denmark. In this way, the partnership acts as a sparring partner to the entire industry in regards to strengthening the collective Danish innovation and research environment within the field of wind power. Megavind's recommendations will function as reference for the coming years' strategic research within wind power thus becoming the valid research strategy for wind power in Denmark.

In order to achieve coherence power and efficiency within the further effort, Megavind will facilitate a strategy development process in order to procure the organisational framework needed to put the recommendations into effect.

- The partnership Megavind will be a strategic partnership for the collective wind power industry.
- The partnership Meagvind assumes a strategic leadership position as a bridge builder between industrial (commercial), insurance-related and public interests.
- The partnership Megavind's strategic leadership is grounded on a mutual strategy plan for testing and demonstration of wind power in collaboration with the strategic research effort.

Testing and demonstration

The partnership Megavind recommends establishing a triple-tracked strategy for validation, testing and demonstration. The three areas are:

- Components and turbine parts
- Wind turbines and wind parks
- Wind power plants in the energy system

In the autumn of 2007 the partnership Megavind will develop specific sub-strategies for each of the three dimensions of testing and demonstration. These sub-strategies are the basis for establishing physical testing and demonstration facilities. The sub-strategies are there to ensure that the testing and demonstration facilities function efficiently and dynamically in regards to the industry and at the same time collaborate actively with the relevant research within each dimension of testing. Included in the sub-strategy for each individual dimension are specific goals of success, organisation and responsibility, time schedule, financing, etc. The form of organisation can be both that of a company and/or that of a public-private partnership. The partnership Megavind will be working actively to procure the necessary resource foundation for the activation of the three sub-strategies.

Research

Megavind recommends that the research should be strengthened especially within the five strategic areas of research.

- Turbine design and construction of turbines
- Blades – aerodynamics, structural design and materials
- Offshore technology
- Wind loads and siting
- Integration of wind power into the energy system
- Offshore technology

Megavind will facilitate a development and strategy process for the five strategic research-areas including complete roadmaps and measurable criteria for every area. Using the existing research environments as a basis, Megavind will build on the efforts from previous research strategies. Furthermore, the partnership will work towards establishing specific work groups that will take responsibility for strengthening the strategic areas.

From an industrial stand point, Denmark has a powerful position within offshore technology. However, this is still a relatively new research area. This means that other research environments are more well-developed than the offshore research areas. This research area is faced with particular research related and technological challenges. For this reason, Megavind will take a particular initiative for contributing to strengthening the research environment of offshore technology.

What is more, the partnership will make the first move towards improving the conditions for the cooperation between research institutions and industry through mutual guidelines for the cooperation's judicial frames (IPR). In addition to this, based on existing guidelines for research cooperation, Megavind will take the first step towards developing a number of overall recommendations for coordinating and improving these conditions.

Education

Education is a high priority within the entire industry, therefore, Megavind strongly requests that the industry focuses particularly on the rising need for qualified labour. This is relevant both in regards to the recruitment of students to educations that are relevant for the wind power and energy industry and in regards to an improvement of the existing educational offers.

However, it is necessary to prioritise Megavind's work effort, for this reason, the partnership will not make any specific efforts in regards to education in the first round.

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