





The Puschwitz wind farm in Germany consists of ten V80-2.0 MW turbines.

Management's environmental statement

Vestas has introduced environmental and occupational health and safety management systems as they are considered significant tools that allow the company to implement improvements to the benefit of customers, shareholders, employees, other stakeholders and the environment.

Similarly, the management tools optimise the possibilities for Vestas' global operations. In addition, Vestas considers it natural to communicate the message of consideration for the environment and occupational health and safety aspects regarding the development, manufacture, sale, erection, service and maintenance of environmentally friendly wind power plants – i.e. wind turbines – through the annual environmental statement.

The following environmental statement is the third published by Vestas. The purpose of the environmental statement is to report and document environmental and occupational health and safety aspects at Vestas Wind Systems A/S and selected subsidiaries.

Previously, the Vestas environmental statement has been limited to the Danish sites under Vestas Wind Systems A/S. The environmental statement for 2002, however, will cover not only the Danish sites but also Vestas' Swedish subsidiary – Vestasvind Svenska AB – and the following Danish subsidiaries: Vestas - Scandinavian Wind Technology A/S,

Vestas - Danish Wind Technology A/S and Vestas - International Wind Technology A/S. The following sites are thus covered by the 2002 environmental statement:

- The Tower Factory – Varde, Denmark
- The Machining Factory – Lem, Denmark
- The Controller Factory – Lem, Denmark
- The Assembly Factory – Viborg, Denmark
- The Assembly Factory – Ringkøbing, Denmark¹⁾
- Blade Factories I and II – Lem, Denmark
- The Repair Department – Skjern, Denmark
- The Blade Factory – Nakskov, Denmark
- The Service and Production Development Department – Videbæk, Denmark
- Vestasvind Svenska AB, Sweden

Objectives

Vestas has highlighted waste, energy, absence due to illness, industrial injuries and environmental improvements of the product as the most significant aspects as regards the environment and occupational health and safety.

On account of the quantitative scope of the volume of waste and energy consumption, these are considered the most significant environmental aspects at Vestas. Objectives have therefore been set for the reduction of both energy consumption and the volume of waste generated. All sites have set concrete improvement targets for at least one of these environmental areas.

¹⁾ The subsidiaries Vestas - Scandinavian Wind Technology A/S, Vestas - Danish Wind Technology A/S and Vestas - International Wind Technology A/S are included in the data statement under the Ringkøbing site.

The emphasis placed on absence due to illness and industrial injuries highlights the fact that Vestas considers employees to be the most important factor in the company's work to maintain its position as the leading manufacturer of wind turbines in the world. In the same way as for the environmental areas – waste and energy – all the sites have set concrete targets for the reduction of absence due to illness and industrial injuries.

Environmental improvement of the product should be seen as a long-term desire to reduce impact on the external environment and to improve the working environment. Vestas wishes to reach this objective by continuously developing more efficient wind turbines and by incorporating environmental and occupational health and safety considerations in the development of the turbines themselves.

Results in 2002

In keeping with its statement of intent, Vestas has worked consciously to spread the environmental and occupational health and safety management systems within the Group. The three Danish subsidiaries – Vestas - Scandinavian Wind Technology A/S, Vestas - Danish Wind Technology A/S and Vestas - International Wind Technology A/S – were all certified according to the ISO 14001 and OHSAS 18001 standards during the past year. In addition, the Italian subsidiary – IWT - Italian Wind Technology S.r.l. – was certified according to the ISO 14001 standard.

Throughout 2002, Vestas achieved positive results in the areas of the environment and occupational health and safety. For example, the closely targeted work aimed at reducing the incidence of industrial injuries paid off, with the overall incidence of accidents falling by 9 per cent compared to 2001.

Similarly, in 2002 Vestas completed the CAF project ²⁾, a project that focused on identifying the causes of epoxy allergy and proposing preventative initiatives in this regard. An internal working group has been set up in order to ensure continuation of the work to utilise the invaluable knowledge and experience gained through the CAF project.

Vestas has previously stated its intention to work towards EMAS registration. In 2002, however, Vestas decided that it would no longer work towards registration of this type. Instead, Vestas will prioritise the aim of ensuring that all companies within the Vestas Group receive certification according to the ISO 14001 (environmental) and OHSAS 18001 (occupational health and safety) standards. The reason for this decision is that an EMAS registration is a European environmental management standard while ISO 14001 is a global standard. In addition, the requirements for ISO 14001 and EMAS certification are not significantly different.

In 2003, Vestas will continue to work towards obtaining certification for both environmental and occupational health and safety management systems. Overall, Vestas will work to consolidate the various management systems so that everyone within the Group can enjoy the benefits of these systems in their everyday work.

Vestas' policy for the Environmental and Occupational Health and Safety is:	Vestas implements this policy by:
<ul style="list-style-type: none"> • to ensure continuous improvements within the fields of the environment and occupational health and safety • to devote the necessary care in relation to the environment and occupational health and safety as regards development, manufacture, service procedures and disposal • to include consideration for employees and surroundings in the planning and performance of Vestas' activities • to ensure an open-minded and honest communication with the employees and interested parties • to optimise the utilisation of resources • to exert influence on suppliers so that they deliver environmentally safe products and service activities • to ensure that, as a minimum, Vestas' activities comply with national legislation concerning environment and occupational health and safety. 	<ul style="list-style-type: none"> • maintaining a certifiable management system in relation to the environment and occupational health and safety • including consideration for the environment and occupational health and safety in the development of products and processes • communicating knowledge about the environment, occupational health and safety and improvement of health to the employees and interested parties through training and information • preparing an annual environmental statement • measuring and documenting Vestas' influence on the employees and the surroundings • focusing on raw material management, substitution and optimisation of processes.

²⁾ Working Environment and Change Management Centre – a centre under the Industrial Medical Clinic in Herning, Denmark



Vestas gives the highest priority to employee safety. Therefore, the use of appropriate safety equipment is always in focus.

As Vestas makes high demands on environmental and occupational health and safety aspects internally within the Group, it is only natural that the company should consider environmental aspects on an equal footing with cost and quality when selecting suppliers for the Group. That is why Vestas' environmental requirements involve a general expectation for suppliers to comply with existing legislation and to act in an environmentally responsible manner. At the same time, it should be stressed that Vestas recommends that suppliers obtain certification according to recognised standards for quality, the environment and occupational health and safety.

At the end of 2002, there were no outstanding issues between Vestas and the authorities as regards environmental and occupational health and safety aspects.

Changes in the report for 2002

A significant change has been made in relation to the environmental statement for 2001. Descriptions of the sites are published on the Vestas Web site – www.vestas.com – under the heading "Environment". They are also available as hard copy data sheets.

Employee involvement

Vestas works consciously to involve employees in environmental and occupational health and safety matters. The

methods mentioned in this section can be divided into three areas and should be seen as examples of employee involvement:

- Identification of environmental and occupational health and safety aspects
- Communication of environmental and occupational health and safety aspects
- Training in environmental and occupational health and safety aspects

Identification of environmental and occupational health and safety aspects

One of the focus areas has been the reporting of "near misses" where the attitudes of individual employees to potential accident risks are being dealt with. Vestas intends to increase the focus on near misses in the future.

In this context, the definition of a near miss is: "an incident that does not result in personal injury, but which may have caused material damage and could conceivably have led to personal injury."

Near misses are reported and processed in exactly the same way as actual injuries. This means that the relevant reports contain information about what actually happened as well as suggestions for preventative measures.

As each employee is first and foremost his or her own safety representative, every employee has responsibility for reporting occupational health and safety risks. The registration of near misses is thus a tool for employees to report risks.

The intention behind identifying, preventing and reporting observed injury risks is to prevent these risks from escalating into actual industrial injuries.

Safety audits are carried out in all production departments at least once every three months. These take the form of selected employees inspecting departments on the basis of a range of points on a checklist.

By carrying out safety audits, Vestas hopes to be able to prevent industrial injuries and to encourage employees continuously to improve safety in their respective departments.

Communication

The maxim at Vestas is "safety first". Vestas has therefore introduced a number of specific initiatives in 2002 to increase focus on safety.

For example, "the Safety Ranger" has been introduced in the various factories. "The Safety Ranger" is a figure which, in text and images, presents the most recent industrial injury that required reporting. At the same time, the presentation states how many days have elapsed since the most recent industrial injury.

The purpose of this figure is to allow all employees to see where an injury has occurred on the site. Employees can also read how the injury happened and what measures have been implemented to stop a similar injury happening again.

Another initiative takes the form of target follow-up charts which detail progress with regard to the stated environmental and occupational health and safety targets. Target follow-up charts are used at all levels within the Vestas organisation. They include everything from notices in the factories and presentations at main safety committee meetings to examinations by the management group and the board. By using these charts, all employees have the opportunity to follow and influence work concerning specific targets for specific sites.

Training

As waste is one of the aspects Vestas considers most important, all employees receive training in how to pre-separate



The "Safety Ranger" uses text and images to present the most recent reportable industrial injury.

waste at source, which thus becomes the responsibility of the individual employee.

In addition to this, people at each factory receive training in how to deal with environmental accidents. Moreover, a number of employees in each department are trained in first aid and fire-fighting. Vestas employees are thus prepared to deal with various types of accidents. During 2002, all sites tested their preparedness through a range of drills.

In addition to the more general training mentioned above, Vestas runs a number of more specialised training courses. These include the offshore safety course for service technicians, special training courses for employees who work with epoxy products, and courses in packing and shipping dangerous goods.

Environmental and occupational health and safety management

At Vestas, responsibility for the environment and occupational health and safety is placed decentrally with the individual sites. As regards the environment, responsibility follows the line organisation, while responsibility for occupational health and safety is built up around the safety organisation.



An energy management project was implemented at the tower factory in Varde, Denmark. The project has provided Vestas with valuable experience as regards energy-saving initiatives.

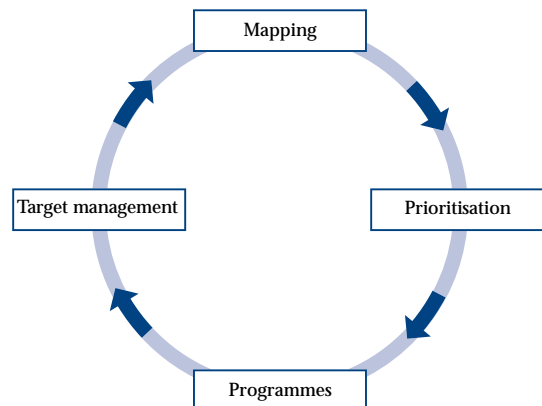
In both cases, however, prime responsibility for the environment and occupational health and safety at the sites rests with the site managers. Each site has its own environmental support team that helps to deal with tasks in the fields of the environment and occupational health and safety. The managers of the different sites regularly meet with their environmental support personnel. At these meetings, the parties discuss current and future tasks – including target achievement – concerning the environment and occupational health and safety.

In order to ensure that all Vestas sites operate with the same standards, the Vestas management has laid down a Group-wide policy for the environment and occupational health and safety, as well as a set of common objectives.

The Group Quality & Environmental Department at Vestas co-ordinates environmental and occupational health and safety work throughout the organisation. The head of this department reports directly to the Group's Director of Operations.

For each site, Vestas has drawn up an annual cycle for mapping, prioritisation, programmes and target management. For each of these modules, meetings are held with foremen and safety representatives from all departments.

The environmental mapping is a survey of Vestas' environmental and occupational health and safety aspects. The process is carried out through a collaboration between the Group Quality & Environmental Department, employees and decision-makers within the organisation.



The figure illustrates the annual environmental and occupational health and safety cycle which contains the following elements: mapping, prioritisation, programmes and target management. This cycle is a fundamental tool for the achievement of continuous improvements in the fields of the environment and occupational health and safety.

Prioritisation of the mapped environmental and occupational health and safety aspects is carried out on the bases of the Group's environmental and occupational health and safety policies, applicable legislation, injuries/accidents and internal regulations.

The environmental and occupational health and safety management systems are integrated into Vestas' existing decision-making processes and are therefore accorded the same weight as all other investments and capacity costs. In this way, environmental and occupational health and safety management at Vestas takes up positions concordant with, and structured in the same way as, all other Vestas activities.

Performance

During 2002, Vestas completed a range of principal activities. The chart below details these activities and lists the

principal activities Vestas expects to complete in 2003. The principal activities are divided into three categories: system, the environment and occupational health and safety.

Principal activities 2002	Achieved	Principal activities 2003
<p>System</p> <p>ISO 14001 certification of IWT - Italian Wind Technology S.r.l. The activities at IWT - Italian Wind Technology S.r.l. comprise the manufacture of blades, assembly of nacelles, sales and service. IWT - Italian Wind Technology S.r.l. received ISO 14001 certification on 13 May 2002. The management system was set up and implemented in six months. In order to safeguard the establishment, implementation and maintenance of the system, IWT - Italian Wind Technology S.r.l. has taken on an environmental engineer.</p> <p>Implementation of energy management at the tower factory in Varde, Denmark In autumn 2001, the tower factory in Varde started an energy management project. The project was completed in December 2002 with the finalisation of an energy management system in accordance with the DS 2403 standard. This project has provided Vestas with a wealth of experience as regards energy-saving initiatives for production processes.</p> <p>Danish subsidiaries certified according to the ISO 14001 and OHSAS 18001 standards On 15 July 2002, Vestas Wind System A/S' three Danish subsidiaries - Vestas - Scandinavian Wind Technology A/S, Vestas - Danish Wind Technology A/S and Vestas - International Wind Technology A/S - received certification according to the ISO 14001 and OHSAS 18001 standards. Vestas' environmental and occupational health and safety certificates thus cover all activities - from sales, development and production to erection, service and maintenance of wind turbines.</p>	<p>✓</p> <p>✓</p> <p>✓</p>	<p>System</p> <p>Certification of selected subsidiaries in accordance with the ISO 14001 and OHSAS 18001 standards. In 2003, work will continue on the introduction of certified environmental and occupational health and safety management systems into subsidiaries of Vestas Wind Systems A/S.</p> <p>Material blacklist for Vestas Vestas intends to prepare lists of banned and unwanted substances and materials to ensure that unwanted products currently in use are phased out of the Vestas environment. These lists are also to ensure that Vestas no longer accepts unwanted products. The lists are to be used when developing new wind turbines, for example.</p>
<p>Environment</p> <p>Recycling of Prepreg When prepreg material is cut for wind turbine blades, a volume of prepreg waste is naturally generated. Thus far, this waste had to be sent for disposal through incineration or landfill. In collaboration with a buyer, the company has succeeded in reusing prepreg waste as the raw material for high-strength construction panels. The long-term aim is to ensure the recycling of all prepreg waste from Vestas.</p>	<p>✓</p>	<p>Environment</p> <p>Recycling options for waste In 2003, Vestas will continue to work to identify recycling options for waste.</p> <p>Environmental minimum standard for turbine sites worldwide In order to ensure that turbine projects are carried out according to a uniform environmental standard and to show customers clearly which activities are always carried out at turbine sites, Vestas intends to work in 2003 to prepare an environmental minimum standard for turbine sites worldwide.</p>
<p>Occupational health and safety</p> <p>The CAF project The CAF project was started with the purpose of examining conditions concerning epoxy allergy at the blade factories in Lem, Denmark. The project has contributed to heightening employee awareness about occupational health and safety with regard to blade production. The first results have already become apparent: the number of incidences of epoxy allergy has been reduced considerably.</p> <p>Introduction of health interviews within Vestas Wind Systems A/S A system of health interviews was introduced to ensure the best possible working conditions for all Vestas employees. The system encompasses a range of different interviews, including well-being interviews. The purpose of these interviews is to identify what Vestas can do for individual employees to help reduce absence due to illness.</p> <p>Offshore safety training In 2002, Vestas erected and commissioned the largest offshore wind farm in the world to date. The farm is located at the Horns Reef site in the North Sea. Prior to starting work offshore, all the technicians and other personnel involved received thorough training in offshore safety.</p>	<p>✓</p> <p>✓</p> <p>✓</p>	<p>Occupational health and safety</p> <p>Continued application of CAF results within Vestas Wind Systems A/S In order to ensure that all departments of Vestas Wind Systems A/S that come into contact with epoxy materials benefit from the experience gained from the CAF project, a project group has been set up to disseminate this experience in 2003.</p> <p>Analysis of industrial injuries at the machine factory in Lem, Denmark In 2003, a project run in collaboration with the local Industrial Medical Clinic will be completed. The purpose of this project is to optimise the registration of accidents and near misses, and to improve safety culture with a view to reducing the number of industrial injuries at the machining factory.</p>

From manufacture to recycling – the environment and occupational health and safety for a Vestas wind turbine

For more than 20 years, Vestas has been installing wind turbines that generate sustainable, environmentally beneficial energy throughout the world.

At the same time, Vestas has worked concertedly to make both environmental considerations and occupational health and safety an integrated part of its products in all phases, from manufacture to decommissioning.

Generally speaking, the environmental impact of a completed wind turbine can be divided up into its visual impression and emission of noise. The visual impression is completely subjective – the turbines engender positive responses in some people, while others consider them a blot on the landscape. Vestas strives to accommodate customer requirements while simultaneously attempting to ensure that the turbines have as neutral an effect on their surroundings as possible.

As regards noise, ongoing development projects are targeted at finding geometries and solutions intended to minimise noise emissions, as Vestas is well aware that people living close to the turbines bear the brunt of their impact. In Denmark, for example, the maximum permitted noise level for wind turbines erected on sites in the immediate vicinity of residences is 45 dB(A). By way of comparison, a Vestas V80-2.0 MW turbine with a noise setting of 101 dB(A) positioned on a 100-metre tower generates a noise level of 40.2 dB(A) at a distance of 350 metres from the turbine tower. This is roughly equivalent to the level of background noise in a library.

The following sections describe some of the most important activities and measures Vestas strives to incorporate in its work to minimise environmental and occupational health and safety impact.

Turbine manufacture

The Danish production facilities under Vestas Wind Systems A/S are all certified according to the ISO 9001, ISO 14001 and OHSAS 18001 standards. This contributes to ensuring that work is carried out systematically on quality, the environment and occupational health and safety.

Waste is sorted at source at all the Danish sites. In 2002, this meant that it proved possible to recycle 6,917 tons of waste. However, this does not mean that Vestas sees this



Activities at the Vestas facility in Campbeltown, Scotland, include the assembly of nacelles.

result as an excuse to rest on its laurels. The Group continues to investigate new options for increasing the reusable fraction.

The factories have introduced a handbook for environmental and occupational health and safety matters. This handbook deals with subjects such as training, identification and prioritisation of environmental and occupational health and safety aspects, waste management, dangerous goods, emergency plans, safety information, data registration and observation of applicable legislation. This contributes to establishing routines which, in spite of the appreciable growth of the company, will make it possible to maintain the current high standards as regards the environment and occupational health and safety.

Follow-up work is carried out continuously to ensure that the procedures and guidelines laid down in the environmental and occupational health and safety management systems are followed. This work includes the holding of internal audits, which are carried out every year at all sites. These internal audits are typically performed by teams comprising employees from the production and the Group Quality and Environmental department.

In addition, an external audit is carried out once a year. This is performed by Germanischer Lloyd Certification GmbH to check that Vestas continues to live up to the requirements laid down in the ISO 9001, ISO 14001 and OHSAS 18001 standards.



Approximately 10 years ago, Vestas started to restructure its production processes. As a result, polyester-based production has been replaced by cleaner technology.

Vestas considers continuous improvement to be the cornerstone of its environmental and occupational health and safety management system, while abiding by applicable environmental and occupational health and safety legislation is considered a minimum requirement. Before significant new substances or materials are introduced, these are subject to a product evaluation process that covers both their technical properties and their impact on the environment and occupational health and safety. The environmental and occupational health and safety assessment typically involves an examination of the component parts of the product to identify any potentially problematic substances. If it is considered necessary, a more detailed analysis of the product is carried out. For example, it may be subjected to de-gassing tests combined with actual work hygiene measurements.

Historically, Vestas has succeeded in making appreciable improvements to the environmental and occupational health and safety aspects of blade manufacture. Approximately ten years ago, the company started to restructure the production processes to replace polyester-based production methods with cleaner technology, which principally involves the use of epoxy composites. This move helped to make possible appreciable reductions of emissions from organic solvents, thus appreciably reducing impact on both the environment and occupational health and safety.

Erecting and servicing turbines

When erecting new turbines, the typical procedure is for the customer to take responsibility for establishing the foundations and the access routes to the construction site, while Vestas takes care of all other aspects of the project. This division of responsibility also applies to environmental and occupational health and safety management on site.

Vestas' service activities in Denmark, Italy and Sweden are certified according to the ISO 14001 standard. In addition, the Danish service department is certified according to the OHSAS 18001 standard. In recognition of the fact that not all countries apply the same regulations as regards the environment and occupational health and safety, Vestas' work routines and methods have been drawn up on the basis of Danish regulations. Internationally, the work routines and methods are adapted to the extent necessary to ensure observance of local rules and regulations.

The size of the latest generation of wind turbine nacelles, towers and blades has placed new demands on logistics. In connection with the erection of new turbines, it is no longer simply a matter of looking at the energy consumption required for transport, the transport itself is now in focus, too. In general, Vestas does not perform the transport itself, but engages external hauliers for this task. However, it should be stressed that Vestas makes sure only to work with external hauliers approved for such transport



In order to erect the offshore turbines at Horns Reef as quickly as possible, Vestas utilised a technique that required only four lifts to complete the installation.

assignments and that ultimate responsibility for the transport work itself rests with the haulier in question.

Erecting wind turbines is precision work, which is why it must be carried out under strictly controlled conditions. Vestas therefore makes a range of requirements on its sub-suppliers so as to prevent environmental accidents and industrial injuries. This is one of the reasons why Vestas always makes sure that the necessary training has been given and that clear lines have been laid down regarding division of responsibility. In addition, the company always demands that the equipment used (cranes, lifting equipment, securing devices, etc.) abide by the relevant requirements from the authorities. For example, safety courses focusing on offshore work were held with great success in connection with the Horns Reef project.

The initiatives themselves naturally contribute to producing the desired results, although employee attitudes to safety constitute another very important factor. For service assignments, the technicians normally work in teams of 2-3. The work is often performed far from the usual safe surroundings. As a result, these employees possess a high level of self-discipline and are very aware of how important it is that the work be carried out in a safe, responsible manner.

Service technicians often work in difficult, cramped conditions and they often need to manipulate tools and materials in the turbine. It is therefore important to take these conditions into account during the concept work on new turbine designs. Every effort is made to incorporate the service technicians' experience and knowledge into the development work.

Decommissioning turbines

The turbine owner is responsible for its decommissioning and disposal. Vestas is naturally willing to place its knowledge and expertise at the disposal of the owner to ensure that the turbine is dismantled in a responsible manner. In the few cases in which Vestas is asked to decommission a turbine, Vestas makes sure that the work is carried out responsibly, showing due consideration to the environment and occupational health and safety.

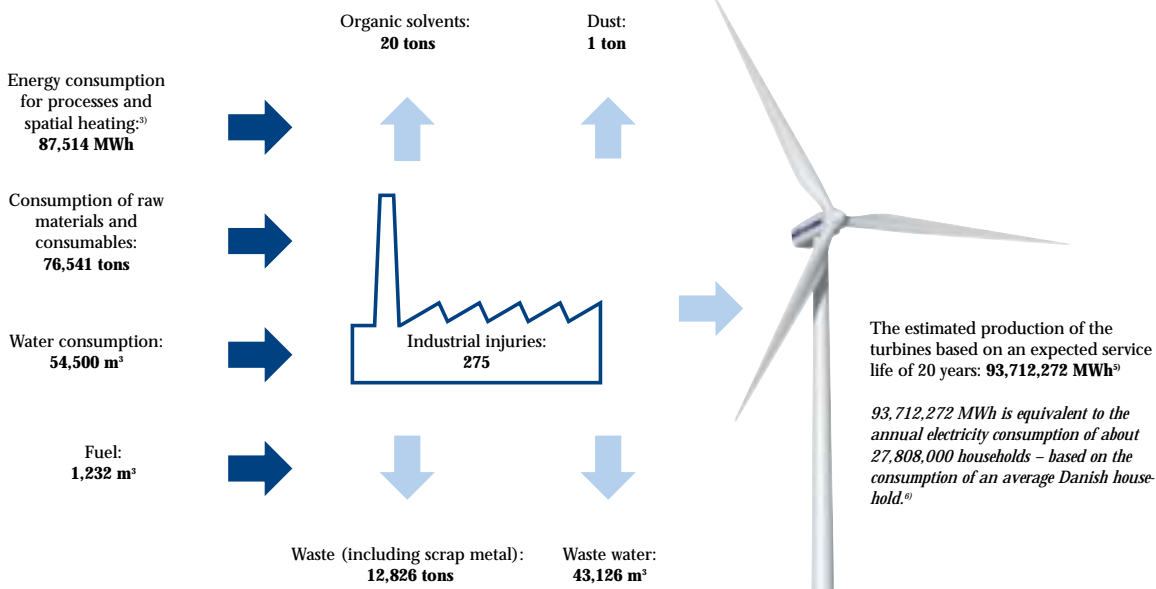
Vestas' fixed procedure includes emptying the turbine of oil and other environmentally hazardous substances before dismantling it. This approach minimises the risk of pollution by such substances. When Vestas dismantles a turbine, the company uses a crane rather than simply toppling the turbine to the ground, which increases the risk of personal injury and/or damage to the immediate environment.

As the turbine is owned by the customer, disposal of the dismantled turbine is also the responsibility of the customer. However, Vestas has calculated the options for recycling. Wind turbine towers consist primarily of steel, which can usually be completely recycled. Most of the nacelle is made of steel and other metals, which can also be recycled. The blades are mainly made up of composite materials which are disposed of as landfill at the end of their service life. Vestas continues to work to find recycling options for waste of this kind. In all, approximately 88 per cent (by weight) of a V80-2.0 MW turbine on a 100-metre tower can be recycled with existing technology.

Input/output 2002

The figure below illustrates the overall input and output for the sites included in the 2002 environmental statement. The output is shown as the total energy production of the turbines produced during their expected service life of 20 years. Detailed data about the sites are published online at www.vestas.com – under the heading “Environment”. They are also available as hard copy data sheets.

Production processes at Vestas produce some indirect environmental impact. The table below lists the most important types of impact and explains the effects these can cause. It also details the positive effects wind turbines help to generate.



Indirect impact	Impact characteristics
Emissions – consumption of energy, diesel oil and organic solvents results in emissions, primarily in the forms of CO ₂ , SO ₂ and VOC. Emissions generated by suppliers of raw materials also constitute indirect impact.	These emissions primarily contribute to the greenhouse effect (CO ₂ and VOC) and to acid rain (SO ₂).
Waste – waste generated through the production of wind turbines and through production by suppliers.	The generation of high-volume waste takes up landscape resources as a result of landfill. Hazardous waste is waste that must receive special treatment.
Waste water – waste water from Vestas sites is primarily sanitary waste water. Emissions from suppliers in the product chain are similarly considered an indirect impact.	Emissions of waste water cause nutrient salt load and eco-toxicity, for example.
Sustainable energy – on the positive side, wind turbines generate sustainable energy for customers throughout the world. The wind turbines manufactured thus contribute to reducing impact and load stemming from conventional sources of energy such as coal-fired power. The environmental advantages far outweigh the effects arising from both direct and indirect environmental impact caused by turbine production. ^{⁹)}	Efficient and competitive options to conventional energy production will help to reduce emissions that contribute to the greenhouse effect and acid rain. In addition, sustainable energy will help to reduce the creation of radioactive waste from the production of electricity.

³⁾ CO₂-neutral energy accounts for 73% of electricity consumption.

⁴⁾ Life cycle assessment carried out by Tech-wise A/S in collaboration with Vestas in 2001. Explanatory comments on the life cycle assessment are listed in report no. 01-488 “Livscyklusvurdering af vindmøller” (Life cycle assessment of wind turbines) published by Tech-wise A/S.

⁵⁾ The figure should be considered a guideline only, as it is an estimate calculated on the basis of the production in Denmark and Germany (Husum). The reason why nacelles assembled in Husum have been included is that the greater part of the environmental impact of these turbines is generated at Danish sites (including production of blades and towers).

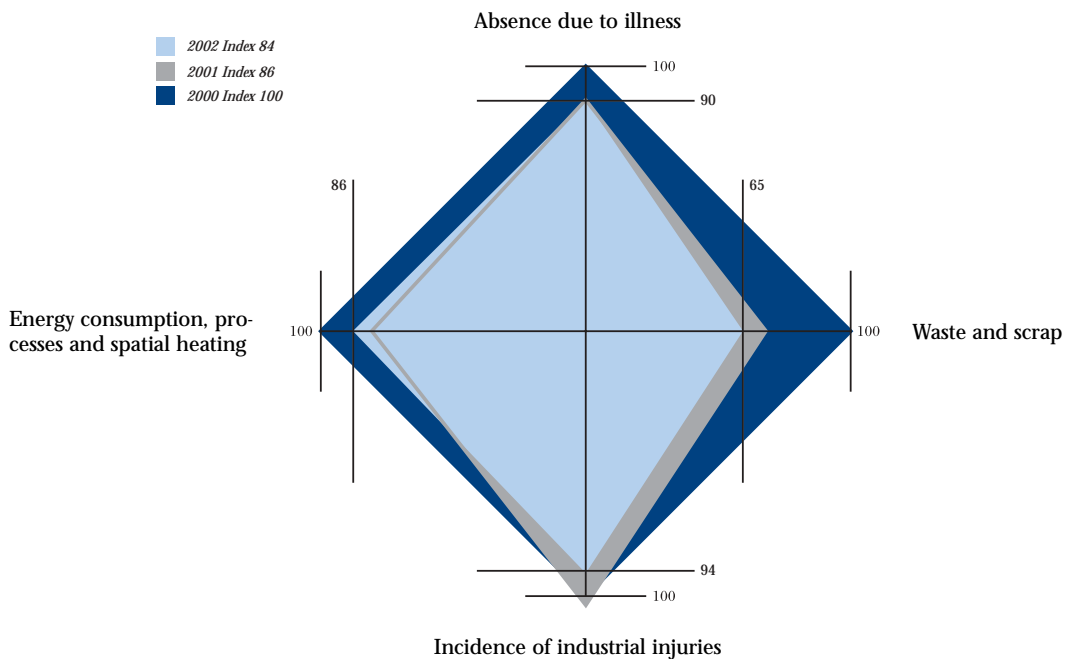
⁶⁾ “Energistatistik 2001” (Energy Statistics 2001), which is published by the Danish Energy Agency, defines an average Danish household as consisting of four people living in a 120 m² residence. Consumption for 2001 is listed as 3,370 kWh per year.

Vestas' environmental and occupational health and safety index

In 2002, Vestas achieved a production increase which naturally means that the absolute data concerning the environment and occupational health and safety show an increase in relation to 2001. It is, however, more relevant and interesting to look at the indexed aspects, as these take fluctuations in production into account and thus provide a truer picture of the development of environmental and occupational health and safety aspects within the company.

The key figure that forms the basis for the indexing of environmental aspects is based on the production of wind turbines during the year at the factories covered by the environmental statement. In order to make allowance for the fact that different types of wind turbines affect environmental and occupational aspects to different extents, the key figure is defined as the expected energy production of the turbines from a service life of 20 years (output figure from the figure on page 97).

The figure below presents Vestas' environmental and occupational health and safety index. It illustrates the development in the most significant environmental and occupational health and safety aspects at Vestas. The base year is 2000 which thus constitutes index 100.



	2000	2001	2002
Energy:	54,863 MWh	76,782 MWh	87,514 MWh
Waste:	10,631 tons	13,089 tons	12,826 tons
Absence due to illness:	5.0%	4.5%	4.5%
Incidence of industrial injuries:	51.4	53.5	48.5

Each corner of the figure symbolises one of the important environmental and occupational health and safety aspects, and the length of the axes is defined by the individual index figures for energy, waste, industrial injuries and absence due to illness.

If an aspect develops negatively, this will be illustrated as the lengthening of an axis, while, conversely, improvement of any of the aspects will result in the relevant index figure moving closer to the centre of the co-ordinate system.

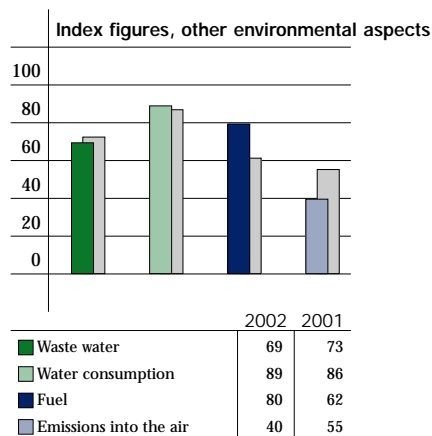
As mentioned previously, Vestas also considers product improvements to be one of the most important environmental aspects. Improvements are reflected in the efficiency of the turbines and, as a result, in the estimated production of the turbines manufactured (the output level in the figure on page 97). As the latter is used as a key figure in the indexing of volumes of energy and waste, improvements in the product are thus shown indirectly in the figure. In addition, using the estimated energy production of the finished turbines makes it possible to take changes in production into account.

Development in relation to 2001

All in all, Vestas' environmental and occupational health and safety index fell in 2002. This is primarily due to a positive development in the incidence of industrial injuries, although a reduction in the index figure for waste also made a positive contribution. In this context, it should be mentioned that the reduction in the index figure for waste is not exclusively attributable to improvements, as a part of it is due to the fact that a number of activities concerning flame-cutting at the tower factory in Varde have now been outsourced to sub-suppliers. At the same time, the consumption of raw materials has been optimised. These two aspects have led to a dramatic decrease in the volume of scrap metal from the tower factory.

This is also the reason why the total volume of waste sent for recycling has fallen. The increase in the volume of waste used as landfill is primarily due to the fact that the blade factories in Lem have disposed of an appreciable volume of waste that is not related to production in 2002.

It is particularly pleasing to see that the 2001 increase in the index figure for industrial injuries has been turned around and shows a decrease of 9 per cent for 2002. The results of the initiatives of the safety organisation and the concept of "safety first" are beginning to have an effect on the incidence of industrial injuries. Nevertheless, the reduction in this figure does not mean that Vestas is



The figure shows the development in index figures for other environmental aspects. The development in absolute figures is presented in the table on page 100.

satisfied, and major efforts will be made in 2003 to continue this trend.

Despite heavy focus, including the introduction of health interviews, the index figure for absence due to illness remains unchanged in relation to 2001. Vestas will continue to work to reduce absence due to illness in 2003.

The 2002 index figure for energy shows an increase. This is primarily due to the fact that the consumption of electricity and district heating at the blade factories in Lem has risen appreciably on account of the opening of 11,000 m² of new facilities for the manufacture of blades for MW-class turbines. The start-up of production activities resulted in a relatively high basic consumption – for spatial heating, for example – seen in relation to the additional production, as the facilities have not been operating at maximum capacity. Measured in absolute figures, however, energy consumption has fallen at the controller factory in Lem, the assembly factory in Viborg, and the tower factory in Varde. The consumption of heating oil has primarily fallen on account of the fact that the Videbæk site has converted to natural gas.

The fall in the index figure for emissions into the air is principally attributable to the fact that the leading and trailing edges of the blades are no longer coated with a solvent-based agent.

In connection with the establishment of the new production hall at the blade factories in Lem, additional air-moisturising installations were set up in 2002 – for reasons of quality and occupational health and safety. This is the reason why the index figure for water consumption has risen in relation to 2001.

The consumption of fuel has similarly increased from 2001 to 2002. In addition to increased activity, this is due to the fact that Vestasvind Svenska AB is included in the statement for the first time and to changes in accounting policy which mean that petrol consumption is now included in the statement in addition to diesel oil.

The reason for the rise in the consumption of oil products is that consumption at Vestasvind Svenska AB is included in the statement for 2002. In addition, the accounting policy has been changed to include the consumption of oil products used in turbine service procedures.

Data statement 2002

The statements below present the most significant environmental and occupational health and safety data that are systematically collected by Vestas Wind Systems A/S.

Environment	Total 2001	Total 2002
Raw materials and consumables (t)	74,448¹⁾	76,541
· Metals	59,665 ¹⁾	61,113
· Oil products	582 ¹⁾	803
· Composite materials	13,685	14,081
· Other products	516	544
Energy (MWh)	76,782	87,514
· Electricity	42,217	49,172 ²⁾
· Gas	5,850	6,342
· District heating	23,766	27,703
· Oil	4,949	4,297
Fuel (m³)	889	1,232
Water (m³)	49,881¹⁾	54,500
Waste and scrap (t)	13,089	12,826
· Combustion	3,534	3,538
· Landfill	1,921	2,371
· Recycling	7,634	6,917
Waste water (m³)	42,483¹⁾	42,446
Emissions of dust (t)	2	1
Emissions of organic solvents (t)	24	20
Volume of flue gases (normal 1000 m³)³⁾	N/A	9,816
Neighbour complaints (number)	N/A	4³⁾
Breaches of internal inspection conditions	N/A	0
Environmental accidents (number)	N/A	1³⁾

Occupational health and safety	Industry figures ⁴⁾	Total 2001	Total 2002
Injuries (number)⁵⁾	N/A	262	275
Incidence of injuries⁶⁾	48.7	53.5	48.5
Absence due to injuries⁷⁾	3.7	4.9	5.9
Absence due to illness, employees paid by the hour (%)	4.9	4.5	4.5
Absence due to illness, salaried employees (%)	1.8	N/A	1.7

¹⁾ The volume has been corrected in relation to the 2001 Environmental Statement on account of a correction to consumption at the tower factory in Varde.

²⁾ Flue gases are generated by gas and oil-fired installations that are primarily used for spatial heating.

³⁾ Details of environmental accidents and neighbour complaints – along with the corrective actions implemented – are listed under the descriptions of the separate sites.

⁴⁾ The sector figures relate to the iron and metal industry and are drawn from reports prepared by Dansk Arbejdsgiverforening, 2001 (The Danish Association of Employers).

⁵⁾ The statement covers industrial injuries that result in absence of more than one day in addition to the day on which the injury occurred.

⁶⁾ The incidence of injuries is defined as the number of industrial injuries per 1,000,000 working hours.

⁷⁾ Absence from injuries is defined as the number of hours' absence on account of injuries per 1,000 working hours.

⁸⁾ Of which, CO₂-neutral energy accounts for 73%.

Accounting policies

Accounting policies and measurement and statement methods applied are unchanged from 2001, except for consumption of raw materials and consumables for 2002 having been extended to include activities concerning servicing of wind turbines. Adjustments made to comparative data are disclosed in notes if they have influence on the achievement of targets or involve a significant change of the total environmental impact.

Raw materials and consumables

Raw materials are recognised in the statement on the basis of consumption drawings from stocks to manufacturing in the first phase of manufacture and to servicing of wind turbines, respectively, as recorded in the company's ordinary registration systems.

Consumables are recognised in the statement on the basis of supplier statements and own lists, respectively, of quantities delivered in the financial year collected decentrally per site.

Relevance has been determined on the basis of approvals by the authorities followed by a selection in relation to material quantities consumed compared with the activities carried out on the sites.

Energy and water consumption

Electricity, gas, district heating and water are recognised in the statement on the basis of quantities consumed according to direct meter readings per site with related administration.

The consumption of electricity comprises both electricity purchased externally and consumption of production from own wind turbines.

Oil for heating is recognised in the statement on the basis of external purchases adjusted for stocks at the beginning and at the end of the period. Fuel for transport has been recognised on the basis of supplier statements.

Waste and scrap

Waste is recognised in the statement on the basis of weight slips received from the waste recipients for deliveries effected in the financial period, apart from a few types of waste which are estimated on the basis of subscription arrangement and load. Scrap is recognised in the statement on the basis of weight slips from the scrap dealers collected decentrally per site.

Emission to air and waste water

Emissions of organic solvents have been calculated on the basis of quantities of mould preparation agents, coating materials and acetone purchased as well as information

from suppliers concerning evaporation during use in processes. Emission of dust is based on the discharge determined by the authorities which is to be included in the total dust emission calculations, estimated operating times of the individual plants and information from the suppliers as regards dimensions and filter efficiency.

Waste water is recognised as water consumption reduced by utilised measured water for humidification.

Materiality is determined on the basis of regulatory approvals and conditions.

The total volume of flue gases from incineration processes has been calculated based on the consumption of fuel oil and natural gas as well as measured or estimated oxygen percentage.

Neighbour complaints

Neighbour complaints are recognised in the statement as the number of complaints received resulting in operating or layout changes.

Internal inspection conditions exceeded

Internal inspection conditions exceeded are recognised in the statement as the conditions for which there is a measurement requirement and the measurement has shown the conditions being exceeded.

Environmental accidents

Environmental accidents are recognised in the statement as the accidents occurred which should be or have been reported to the authorities.

Occupational health and safety

Occupational health and safety are recognised for all activities under the organisational structure.

Industrial accidents are recognised in the statement on the basis of records of accidents resulting in more than one day of absence in addition to the day on which the injury has happened.

Absence due to accidents is defined as hours absent due to industrial accidents. The number of working hours and absence frequency due to accidents have been calculated on the basis of daily time cards registered in the payroll system.

Absence due to illness is defined as hours absent due to illness, exclusive of absence caused by industrial accidents, maternity leave and child's first day of illness. Absence frequency due to illness has been calculated by means of registrations in the payroll system based on daily time cards (employees paid by the hour) and absence records (salaried employees), respectively.

Auditor's report

To the Shareholders of Vestas Wind Systems A/S:

Vestas Wind Systems A/S has entered into an agreement with PricewaterhouseCoopers for submission of a report on its Environmental statement with the overall objective of verifying the reliability of the data presented and the information provided in the Environmental statement.

The Environmental statement is the responsibility of Vestas Wind Systems A/S' Management. Our responsibility is to submit a report on the statement based on our work.

The scope and objectives of the statement as well as the priority of environmental aspects have been determined by Vestas Wind Systems A/S' Management and described on pages 88-89 of the Environmental statement.

Basis of Conclusion

We have planned and performed our work in accordance with Danish and International Auditing Standards (RS/ISA 100) with the agreed objectives of:

- checking with a high level of assurance whether the data stated on pages 88-101 of the Environmental statement correlate with the activities of the sites for the accounting period and have been documented and stated in accordance with the guidelines stated under environmental accounting policies;
- assessing whether the internal control system, including monitoring and reporting procedures, has been planned appropriately to support reliable information in the Environmental statement for 2002.

Our work has included, based on an assessment of materiality and risk, accounting analyses, inquiries, testing of data and underlying documentation, including verification of compliance with the accounting policies described and of correlation with the activities of the sites for the period.

Furthermore, we have, on a test basis, assessed the internal control system with a view to its propriety, focusing on the efficiency of the monitoring and reporting procedures applied to support the achievement of the targets for 2002 established in 2001.

In our opinion, the work performed provides an adequate basis for the following conclusion.

Conclusion

Based on the work performed by us, we hereby state that, in our opinion, the data stated on pages 88-101 of the Environmental statement for 2002 correlate with the activities of the site for the accounting period and have been documented and stated in accordance with the guidelines stated under environmental accounting policies applied.

Furthermore, in our opinion, the internal control system, including monitoring and reporting procedures, has been planned appropriately to support reliable information in the Environmental statement for 2002.

Herning, 12 March 2003

PricewaterhouseCoopers

Niels Jørgen Lodahl
*State Authorised
Public Accountant*

Birgitte Mogensen
*State Authorised
Public Accountant*

Conversion factors and glossary

Conversion factors

1 GW	1,000 MW
1 MWh	1,000 kWh
1 Nm ³ natural gas	11 kWh
1 litre of fuel oil	9.89 kWh

Glossary

Absence due to illness:

The absentee rate is defined as the number of absentee hours per 100 working hours. The targets for 2002 only deal with absence due to illness among employees paid by the hour.

Assembly fitting:

The "root" end of the blade (made of prepreg).

Average consumption of a Danish household:

Energi Statistik 2001 (Energy Statistics 2001), which is published by the Danish Energy Agency, defines an average Danish household as consisting of four people living in a 120 m² residence. Consumption for 2001 is listed as 3,370 kWh per year.

Capacity factor:

An expression for the number of hours that the turbine operates at full capacity during a year.

CNC processing:

Computer Numerical Control. An expression used for computer controlled processing.

CO₂-neutral energy:

Energy generated without causing net emissions of CO₂.

Emit:

Discharge into the immediate surroundings.

Environmental improvements of the product:

Relates to the product in the form of more energy-efficient turbines and environmental evaluation of the substances and materials that the product contains. In this context, Life Cycle Assessment (LCA) will be included as a tool.

Estimated turbine production:

The value is calculated on the basis of an expected service life of 20 years and a capacity factor of 30%. The figure should be considered a guideline only, as it is an estimate calculated on the basis of the production in Denmark and Germany (Husum). The reason why nacelles assembled in Husum have been included is that the greater part of the environmental impact of these turbines is generated at Danish sites (including production of blades and towers).

Flue gas:

Combustion gas from gas and oil-fired installations.

Internal inspection conditions:

Conditions laid down by the supervisory authority for the measurement of noise, odours, waste water and emissions into the air.

LCA:

An LCA (Life Cycle Assessment) is a report on the environmental impact generated by a specific product through-out its lifetime (the cradle to grave principle). The life cycle assessment for the Vestas V80-2.0 MW turbine has been prepared using the UMIP method (UMIP = development of environmentally friendly industrial products), which is based on ISO 14040. The life cycle assessment mentioned above has not been verified by a third party.

Mould preparation agents:

Umbrella term for the following groups of auxiliary agents: mould cleaning agents, mould sealants and release agents.

Nacelle:

The turbine housing at the top of the tower.

OHSAS 18001:

Standard for Occupational Health and Safety management (OHSAS = Occupational Health & Safety Assessment Series).

Prepreg:

Epoxy laminate consisting of fibreglass impregnated with epoxy (the material is hardened and is therefore classed as a dry material).

Safety audit:

Systematic examination of a department or machine with the purpose of constantly checking for and repairing any errors and defects that may affect safety.

Sanitary waste water:

Waste water from baths, kitchen use, ordinary cleaning, etc.

Spar:

Blade component that determines the strength and rigidity of the blade (made of prepreg).

The EMAS regulation:

The EU regulation for environmental management and environmental audits (EMAS = Eco Management and Audit Scheme).

Unwanted substances and materials:

Substances and materials covered by *Effektlister 2000* ("Effect List 2000" – guideline no. 6/2000 from the Danish Environmental Protection Agency) and *Listen over uønskede stoffer* ("List of unwanted substances" – guideline no. 9/2000 from the Danish Environmental Protection Agency) as well as substances and materials that Vestas unilaterally wishes to stop using on account of their potential impact on the environment and/or occupational health and safety.

VOC:

Expression relating to organic solvents (Volatile Organic Compounds).





Vestas has delivered a number of V52-850 kW turbines to Norway. The combination of wind power and hydroelectric power is ideal. The reservoirs of the hydroelectric power plants are applied as "buffers" in the power production and function thus as storage for excess power from the wind power plant. With good wind resources and a mature hydroelectric industry, Vestas expects Norway to become a large market for wind power in the long term.

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