

# Environmental Statement

This section of the Annual Report 2000 constitutes Vestas' Environmental Statement for the company's sites in Denmark. The statement has been drawn up in accordance with the requirements listed in the EMAS Regulation. In August 2000, Vestas' sites in Denmark received certification according to the ISO 14001 international environmental standard from Germanischer Lloyd Certification GmbH (note 1). The certificate was presented to the company on 22 August 2000.

## The purpose of the Environmental Statement

Vestas believes that it is natural to show consideration for the environment and to be able to document initiatives taken in this area. The purpose of the annual environmental statement is thus to document that Vestas is actively working to improve its environmental activities.

Vestas has chosen to include all its Danish sites in the environmental statement, although legislation only requires the company to present an environmental statement from four of them.

The next environmental statement will be published in March 2002.

## Statement of intent

Whereas the annual report applies to the entire Vestas Group – i.e. its facilities both in Denmark and abroad – the environmental statement applies exclusively to Vestas Wind Systems A/S in Denmark. Vestas' long-term target is to achieve EMAS registration, which is why this environmental statement has been drawn up in line with EMAS requirements. In

this way, the present environmental statement can be considered Vestas' statement of environmental intent.

Even though the Group's subsidiaries and associated companies have not received certification in accordance with the ISO 14001 standard, these parts of the Group are also committed to reducing environmental impact and ensuring the safety and well-being of their employees. Vestas considers it natural to continue to expand its environmental initiatives to ensure that its subsidiaries also receive certification according to the ISO 14001 standard.

## Employee involvement

Employee involvement is essential to the successful implementation and performance of environmental management. That is why Vestas has introduced a comprehensive training programme and continuously involves employees at all levels. The commitment of the individual employee helps to create and guarantee the overall result. Vestas' employee involvement programme is described in detail on the following pages.

*Note 1: The ISO 14001 certification applies to the following Vestas sites: the tower factory in Varde, the machine and controller factory in Lem, the assembly factory in Viborg, the assembly factory in Ringkøbing, the blade factory in Lem (including the department in Spjald), the blade factory in Nakskov, and the service and mould construction department in Videbæk.*

## **Vestas' Environmental and Occupational Health and Safety Policy**

Vestas' Environmental and Occupational Health and Safety Policy is concise and easy to follow, which is essential if all employees are to be able to use it in their everyday work. This policy is run in parallel with all the other policies that Vestas follows, and is evaluated to ensure that it is up-to-date and in line with other Vestas strategies.

*Vestas' policy for the Environment and Occupational Health and Safety is:*

- to ensure continuous improvement in the areas of the environment and occupational health and safety
- to take the necessary care in relation to the environment and occupational health and safety during development, manufacture and service procedures
- to include consideration for employees and surroundings in the planning and performance of Vestas' activities
- to ensure open and honest communication with employees and interested parties
- to optimise the exploitation of materials, energy and other resources
- to measure and document Vestas' influences on employees and surroundings
- to ensure that, as a minimum, Vestas' activities comply with national legislation concerning environment and occupational health and safety.

*Vestas implements this policy by:*

- establishing targets for the environment and occupational health and safety
- preparing and carrying out programmes for protecting the environment and improving occupational health and safety
- maintaining a certifiable management system in relation to the environment and occupational health and safety
- communicating knowledge about the environment and occupational health and safety to employees and interested parties through education and information
- including consideration for the environment and occupational health and safety in the development of products and processes
- systematising data collection and reporting
- continuously monitoring and providing information about legislation concerning the environment and occupational health and safety.



# The Environmental Management System - Structure

At Vestas, the environmental management system is built up in such a way as to cover both the external environment and occupational health and safety. Vestas accords equal priority to both, even though occupational health and safety is not covered by the international environmental standard ISO 14001, under which Vestas received certification from Germanischer Lloyd Certification GmbH on 22 August 2000.

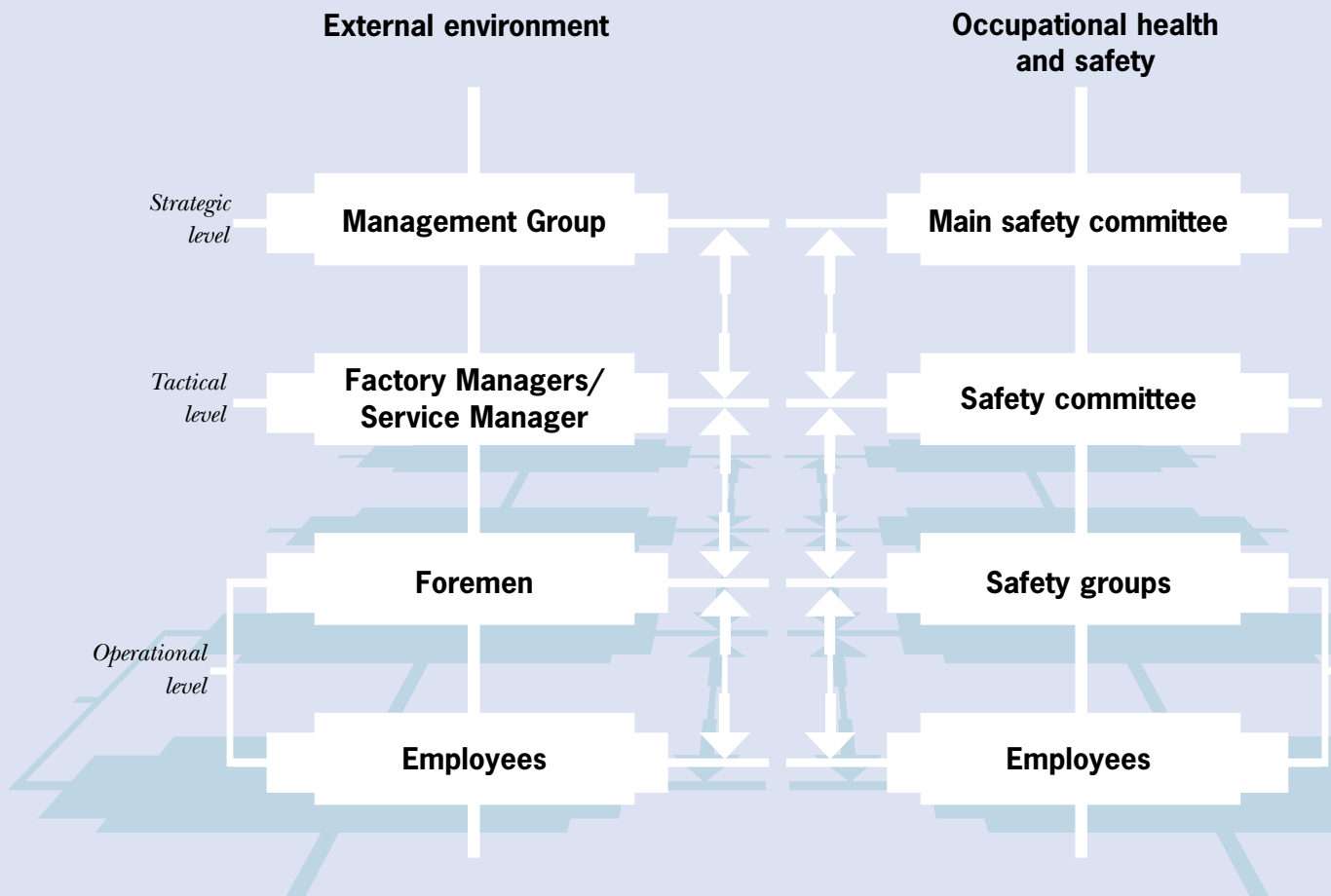
The ISO 14001 certification applies to the following Vestas sites:

- the tower factory in Varde
- the machine and controller factory in Lem
- the assembly factory in Viborg
- the assembly factory in Ringkøbing
- the blade factory in Lem (including the department in Spjald)
- the blade factory in Nakskov
- the service and mould construction department in Videbæk

## Organisation

The overall structure of Vestas consists of a line organisation and a safety organisation, and the environmental management system follows the same principle. The line organisation deals with tasks concerning the external environment, while the safety organisation takes care of tasks concerning occupational health and safety.

The structure of the environmental management system ensures that the training of employees and the implementation of environmental programmes are run by the foremen and factory managers at the individual sites. The quality and environment department co-ordinates and disseminates relevant information, and also acts as the problem-solver, providing support at all levels with regard to both the external environment and occupational health and safety.



*Vestas' environmental management system involves a continuous exchange of information between the strategic, tactical and operational levels, which all participate actively in the environmental management work.*

*The environmental management system fulfils all the requirements laid down in the ISO 14001 standard, Danish legislation in this area and Vestas' own high standards.*

# The Environmental Management System - Elements

## 1. Mapping

The environmental mapping process is an extremely thorough examination of Vestas' environmental aspects and impacts, and of the company's environmental initiatives. The purpose of this environmental mapping is to provide a complete overview of the environmental aspects of Vestas' sites on the basis of a comprehensive list. Environmental mapping is carried out at least once every two years for all sites. Over and above this, mapping is carried out whenever major changes or new sites are introduced.

*The figure shows the principal elements in the environmental management system used by Vestas Wind Systems A/S in Denmark.*

## 5. Reporting

Continuous internal data reporting documents the extent to which Vestas achieves its targets. Internal audits are used to monitor environmental programmes and dates – and to follow up on unsatisfactory conditions. External audits are carried out annually by the certifying organisation.

## 6. External reporting

Communication concerning environmental matters is intended for public authorities, customers and other interested parties.

## 4. Targets and follow-up

The environmental management system is integrated into Vestas' existing financial management system, and is therefore accorded the same weight as all other investments and capacity expenses. Budget input is provided on the basis of the environmental targets, allowing the management team to follow up on the budgets continuously. In this way, environmental management at Vestas takes up a position concordant with, and structured in the same way as, all other Vestas activities.

## 2. Environmental priorities

On the basis of legislative requirements and environmental and business considerations, Vestas considers important environmental aspects to include energy, waste, industrial injuries and environmental improvements of the products. Environmental priorities are the responsibility of key employees and decision-makers at operational, tactical and strategic levels. This approach ensures that input from all levels and departments is always taken into consideration. The results gained from the environmental mapping are thus used as a tool in connection with the environmental priorities.

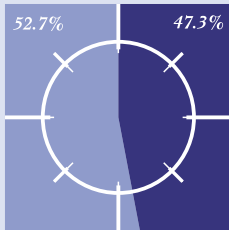
## 3. Environmental programmes

Via the company intranet, all Vestas employees have access to both the overall policy for the environment and occupational health and safety, and details of concrete environmental programmes. Environmental programmes clearly state what activity is to be implemented to achieve the targets defined. Environmental programmes are implemented at three levels: at foreman level, at factory manager level, and at group management level.

# Status and future

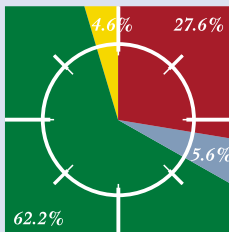
The figures below show the totals for energy, waste and industrial injuries for Vestas Wind Systems A/S in Denmark. Additional information is presented in the notes on pages 78 - 82.

○ Total energy consumption 54,863 MWh



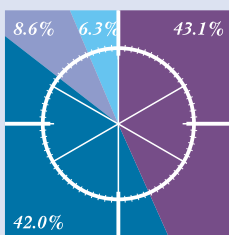
● Spatial heating 25,941 MWh  
● Processes 28,922 MWh

○ Total waste 10,631 tons (including scrap metal)



● Combustible 2,938 tons  
● Landfill 589 tons  
● Recycling 6,616 tons  
● Hazardous waste 488 tons

○ Distribution of industrial injuries in relation to length of absence. Total 174.



● 1 - 3 days - 75 injuries  
● 4 - 14 days - 73 injuries  
● > 14 days - 15 injuries  
● > 5 weeks - 11 injuries  
● Long-term absence - 0 injuries  
○ Fatality - 0 injuries

There are no outstanding issues between any of Vestas' sites and the Directorate of Labour Inspection or other supervisory authorities. In addition, an emergency plan has been drawn up for each site to ensure an efficient response in the event of an accident. Employees have been involved in the preparation of all these plans in order to make the processes as transparent and efficient as possible. Vestas has chosen to concentrate in particular on energy, waste, industrial injuries and environmental improvement of its products.

## Employee involvement

Vestas considers the most important environmental challenge of 2001 to be training the large number of new employees and shaping their attitude to environmental matters. All employees complete a course in selective waste collection, and also receive general information about Vestas' standpoint on the environment. With regard to waste, Vestas also trains what are known as "super-users" to ensure that the necessary expertise in the handling of dangerous waste is represented at operational level. Super-users also make it possible to carry out efficient one-to-one, on-the-job training. In addition, employee representatives are involved in the preparation of concrete environmental programmes.

## Life cycle assessment

In the future, Vestas plans to draw up life cycle assessments for its products. The company considers this initiative to be very much in line with its other environmental work. In order to document the impact a product has on the environment, it is necessary to trace it "from cradle to grave". Therefore, as early as the development phase, it is essential to establish how to dispose of the product in an environmentally responsible manner at the end of its service life.

To support this approach, Vestas will be working to prepare an environmental declaration for every wind turbine model the company manufactures.

The Danish wind turbine industry has previ-

ously drawn up a general energy balance sheet for Danish 600 kW turbines. The calculations showed that the "energy repayment time" is approximately three months (note 2). This means that after three months of operation, the turbine will have generated the same amount of energy as is required for its manufacture, operation and disposal. In other words, after this three-month period, the energy generated by the turbine over the remainder of its 20-year service life is pure energy gain.

## Occupational Health and Safety

In 2001, Vestas will be working to obtain certification according to the British OHSAS 18001 standard – a standard that applies to occupational health and safety. Vestas considers OHSAS 18001 to be a natural extension of its present environmental certification. A wind turbine is a complex product, and the safety risk is an important aspect. That is why Vestas has always been very concerned with occupational health and safety – and it is in Vestas' interest to be able to document its results as regards both the occupational health and safety and the environment in general. As OHSAS 18001 shares many basic elements with ISO 14001, Vestas has already completed a considerable amount of the work required to achieve certification according to the new standard.

## Illness

Vestas' interest in absence due to illness among its employees is not simply a matter of control – it is also an expression of the company's commitment to its social responsibility. Vestas therefore wishes to take active steps to ensure the well-being of its employees. Vestas is currently considering initiatives to help works managers to conduct interviews with employees concerning their well-being. The purpose of these interviews is to identify the opportunities available to the employee in question, and to find appropriate help if necessary.

Note 2: Source: "Vindkraft", 3 December 1995, pp 2 - 7.

## CO<sub>2</sub>-neutral energy

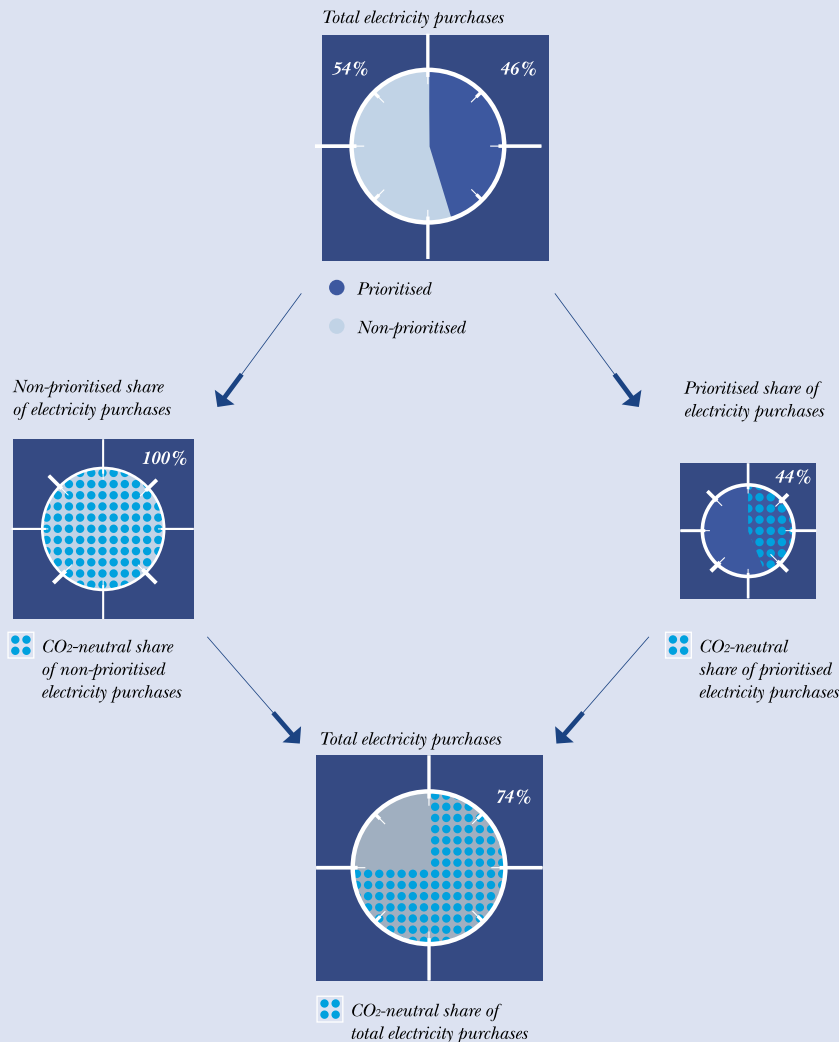
As a result of the liberalisation of the Danish electricity market, Vestas has entered into an agreement that involves the company, in 2001, purchasing what is known as the “non-prioritised share” of electricity consumption from renewable sources of energy.

The existing regulations do not allow Vestas to use CO<sub>2</sub>-neutral energy to cover all its electricity requirements, as legislation requires Danish

consumers to purchase a given share, known in the trade as “the prioritised share”.

In 2001, CO<sub>2</sub>-neutral energy is expected to account for approximately 44 per cent of the prioritised share of electricity. In all, this means that the CO<sub>2</sub>-neutral share of Vestas’ electricity purchase in 2001 is expected to total around 74 per cent. To this is added Vestas’ consumption of energy generated by its own wind turbines, which are located near the sites in Lem, Denmark.

## Forecast for Vestas’ electricity purchases 2001



The figure illustrates the percentage distribution between prioritised and non-prioritised electricity purchases, as well as the share of CO<sub>2</sub>-neutral electricity of prioritised, non-prioritised and total purchases. According to the guidelines for this area, companies such as Vestas will not be permitted to choose their supplier of non-prioritised electricity until 2001. In 2000, the CO<sub>2</sub>-neutral share of the total electricity purchases accounted approximately 17%. The percentages for 2001 should be considered as a forecast.

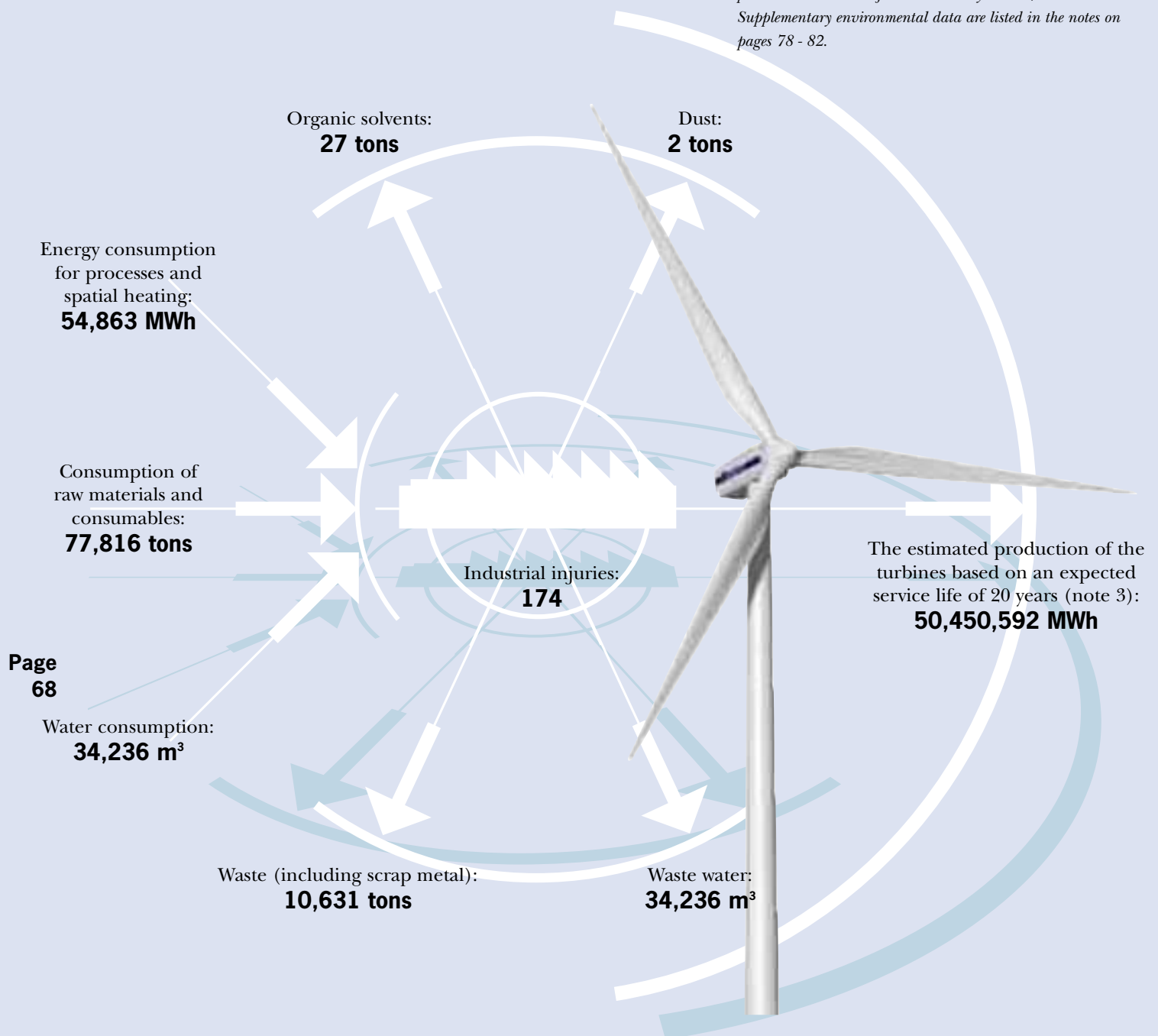


# Input/output

Vestas' environmental management system ensures the continuous collection of environmental data. These data are used in part as a management information tool, as the separate sites are regularly informed of their status in relation to their stated targets. The figure below illustrates the overall inflows and outflows for Vestas Wind Systems A/S in

Denmark. Instead of using the number of turbines produced to illustrate the outflow, Vestas has chosen to highlight the estimated energy production of the turbines during their expected 20-year service life. The data on which this figure is based are listed in the notes on pages 78 - 82.

*This figure shows the general environmental inflow and outflow for Vestas. It is not a life cycle assessment, but simply a model showing input and output in connection with the production activities of Vestas Wind Systems A/S in Denmark. Supplementary environmental data are listed in the notes on pages 78 - 82.*



*Note 3: This figure should be considered approximate, as it is a calculated value based on a capacity factor of 30% and an expected service life of 20 years. The figure has been calculated on the basis of nacelles manufactured in Denmark and Germany (Husum). The reason why nacelles assembled in Husum have been included is that the majority of the environmental impact for these turbines is generated on Danish sites (including production of blades and towers).*

# Company sites



## The Tower Factory in Varde

The tower factory in Varde is located between a residential area and Varde Ådal (The Varde River Valley), which has been designated an EU bird sanctuary. Naturally, finding a reasonable balance between industry and the countryside is quite a challenge. The activities of this factory primarily consist of sawing, welding and flame cutting metal components in connection with the manufacture of wind turbine towers. The factory also performs some CNC machining of metal elements. The everyday work of the factory has been largely shaped through close dialogue with neighbours and the authorities. Vestas has made no effort to conceal information about the noise levels at the factory, and this openness has both helped to support understanding and produced noticeable results.

### Environmental aspects

Up until 1999, Vestas concentrated on reducing the noise from stationary sources in the production department, such as compressors and ventilation systems. All transport to and from the site is regulated to keep traffic in the area to a minimum. Dust is generated by welding and flame cutting processes at the plant, where activities previously also included sand-blasting, metal-lising and spray-painting. However, following the closure of the surface treatment departments in 1999, emissions of dust and organic solvents from the site have been appreciably reduced. Calculations of emissions show that the site meets requirements from the authorities. As this plant consumes relatively large amounts of energy and generates relatively large volumes of scrap metal, both these aspects are considered to be significant environmental aspects. The incidence of industrial injuries at the plant is relatively high. The majority of these injuries are minor, but Vestas is nevertheless focusing on this area.

### Selected environmental activities in the past year

Vestas has introduced a Central Situation Control and Management (CTS) system at the factory in order to optimise the control of aspects such as lighting, heating, ventilation and doors. If an error occurs, the system sounds an alarm and simultaneously localises the error. In this way, it both saves energy and acts as a safety system. The system is also capable of controlling and registering the status of doors to ensure that they are not left open longer than necessary. This helps to minimise noise emissions from the production processes. The production department at the site has introduced pre-separation of waste at source, and an environmental area has been set up to deal with metal shavings, oil and chemicals. In 2000, Vestas started work to reduce noise emissions from mobile sources, and, in connection with the environmental approval procedure, prepared an environmental programme to reduce noise levels. The final phase of this plan will be completed before 1 August 2002. An example of the measures included in this environmental programme is the fact that all gas and diesel-powered trucks have been replaced by electric trucks.

### Targets 2001

**Energy:** Reduce energy consumption of compressed air by 25%.

**Noise:** Reduce external noise to the levels set by the environmental approval before 1 August 2002.

**Industrial injuries:** Reduce the incidence of industrial injuries by 10%.

**Absences due to illness, employees paid by the hour:** Reduce absences due to illness by 10%.

*Additional information about targets is listed on page 84.*

#### Address

Engdraget 20  
DK-6800 Varde

#### Cadastral number

No. 14<sup>2</sup> Varde Købstads  
Markjorder

#### Approvals from the authorities

- Environmental approval in accordance with paragraph 36, chapter 5 of the Environmental Protection Act, confirmed on 31 August 2000
- Waste water permit in accordance with chapter 4 of the Environmental Protection Act, confirmed on 31 August 2000

Supervisory authorities  
External environment:  
Municipality of Varde  
Occupational health and safety:  
The Directorate of Labour  
Inspection, County of Ribe

#### Company type

A6, cf. the Ministry of the  
Environment's statutory order  
no. 794 of 9 December 1991

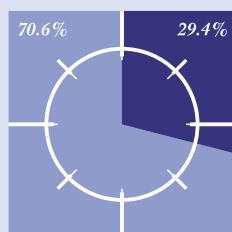
#### Number of employees

327 per 31 December 2000

#### Person responsible for the site

Jens A. Birn, Factory Manager

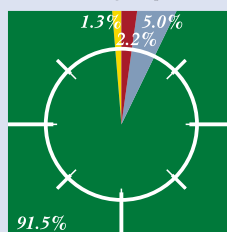
○ Total energy consumption  
7,867 MWh



● Spatial heating  
2,315 MWh

● Processes 5,552 MWh

○ Total waste 4,887 tons  
(including scrap metal)



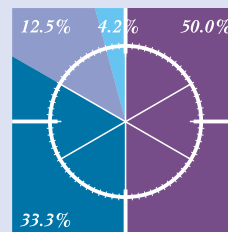
● Combustible 109 tons

● Landfill 245 tons

● Recycling 4,471 tons

● Hazardous waste 62 tons

○ Distribution of industrial  
injuries in relation to  
length of absence. Total 24.



● 1 - 3 days - 12 injuries

● 4 - 14 days - 8 injuries

● > 14 days - 3 injuries

● > 5 weeks - 1 injury

● Long-term absence - 0 injuries

○ Fatality - 0 injuries

*The figures show totals for energy, waste and industrial injuries for the tower factory in Varde.*



# The Machine and Controller Factory in Lem

In principle, this site consists of three different production departments. The machine factory carries out CNC machining processes, and manufactures beams for the blades as its secondary activity. The controller factory manufactures electrical control systems for the wind turbines. The site also comprises the quality and environment department and the development department.

## Environmental aspects

The large volumes of scrap metal resulting from the level of machining work performed at the factory constitute a significant environmental aspect. However, the waste produced during machining is recycled and used in an ordinary "metals circuit", thus becoming part of a standard flow.

The site discharges sanitary waste water and a small amount of water from the washing area. However, there is no continuous stream of waste water from the production processes themselves. The washing area was previously used for washing machine parts, which made it quite a challenge to abide by the Municipality of Ringkøbing's regulations concerning the oil content of waste water. Following a source tracing procedure, the plant has decided to collect the water used for this activity, and to dispose of it as hazardous waste. Measurements have been taken to document that the plant clearly conforms to the noise level conditions laid down in the environmental approval granted to the plant.

A minor amount of dust and other particle emissions are caused by welding, grinding and flame cutting, and a small volume of organic solvents are discharged from the cleaning processes used in beam production. Emissions have been measured, and these calculations document the fact that the plant abides by the

relevant regulations in the environmental approval.

## Selected environmental activities in the past year

The plant has introduced a selective waste collection system. One of the results of this initiative has been the establishment of a new covered area for the storage of metal waste. This method of handling metal waste reduces both costs and environmental impact, as it allows the plant to operate optimal recycling of both aluminium and cast iron.

The machine factory has installed a centralised system for the purification of coolants and lubricants, which has helped to reduce the plant's consumption of these media – thus producing both a financial and an environmental benefit. Whereas there only used to be filters on the machines themselves, the new system filters used coolants and lubricants centrally.

## Targets 2001

**Energy:** Introduce control of installations that consume energy with a view to saving energy.

**Waste:** Increase the share of reusable waste by 5%.

**Industrial injuries:** Reduce the incidence of industrial injuries by 5%.

**Absences due to illness, employees paid by the hour:** Reduce absences due to illness by 10%.

*Additional information about targets is listed on page 84.*



### Addresses

Smed Hansens Vej 27/  
Nylandsvej 35  
DK-6940 Lem

### Cadastral number

No. 38<sup>kt</sup>, 38<sup>bo</sup>, 124<sup>a</sup>, 124<sup>b</sup>, 125<sup>a</sup>,  
127<sup>a</sup> (Smed Hansens Vej 27)  
No. 38<sup>so</sup> (Nylandsvej 35)

Øster Lem by, Sdr. Lem

### Approvals from the authorities

#### The machine factory

- Environmental approval in accordance with paragraph 36, chapter 5 of the Environmental Protection Act, received 6 December 1996

- Waste water permit in accordance with chapter 4 of the Environmental Protection Act, received 6 December 1996

- Acceptance from the authorities of the most recent report received on 10 July 2000

#### The controller factory

- Acceptance from the authorities of the most recent report received on 21 July 2000

#### Supervisory authorities

External environment: The Municipality of Ringkøbing  
Occupational health and safety: The Directorate of Labour Inspection, County of Ringkøbing

#### Company type

**The machine factory**  
A6, cf. the Ministry of the Environment's statutory order no. 794 of 9 December 1991

**The controller factory:**  
A54, cf. the Ministry of the Environment's statutory order no. 367 of 10 May 1992

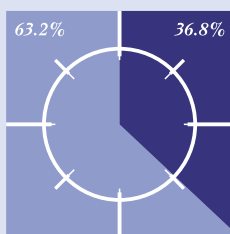
#### Number of employees

586 per 31 December 2000

**Person responsible for the site**  
Jens Karkov Jakobsen, Factory Manager

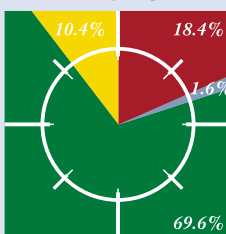
*The figures show totals for energy, waste and industrial injuries for the machine and controller factory in Lem.*

○ Total energy consumption  
7,574 MWh



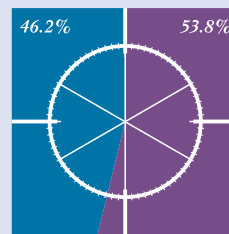
- Spatial heating 2,709 MWh
- Processes 4,784 MWh

○ Total waste 2,301 tons  
(including scrap metal)



- Combustible 423 tons
- Landfill 36 tons
- Recycling 1,602 tons
- Hazardous waste 240 tons

○ Distribution of industrial injuries in relation to length of absence. Total 13.



- 1 - 3 days - 7 injuries
- 4 - 14 days - 6 injuries
- > 14 days - 0 injuries
- > 5 weeks - 0 injuries
- Long-term absence - 0 injuries
- Fatality - 0 injuries

# Company sites



## The Assembly Factory in Viborg

The assembly factory in Viborg assembles nacelles for the Vestas V47-660 kW and the Vestas V52-850 kW wind turbines and manufactures fibreglass cabs and replacement blades. The location of the factory close to a private residential area has presented Vestas with quite a challenge in the areas of traffic and noise levels. The assembly activities involve a great many deliveries, and as space is limited outside the area, some of the traffic has to be moved onto the site.

In order to combat noise from mobile sources, Vestas has built earth banks around the storage area. This is a purely preventative measure, as Vestas observes all applicable noise level regulations at the plant.

### Environmental aspects

Vestas considers energy to be a significant environmental aspect. One of the reasons for this is that oil consumption for spatial heating at the plant is high.

As the plant works with fibreglass, hazardous waste is also considered a significant environmental aspect.

In connection with the manufacture of fibreglass cabs, the plant generates emissions of styrene and acetone, but these are kept below the maximum limits.

The waste water discharged from the factory is almost exclusively sanitary waste water. There is also a small volume of waste water from the washing of nacelles.

The number of industrial injuries at the plant is no higher than the average for the iron and metal industry in Denmark, but Vestas is nevertheless focusing on this area.

## Selected environmental activities in the past year

The plant has introduced pre-separation of waste at source in both the production and office areas, a move that is supported by closely-targeted training for all employees. In order to reduce oil consumption for heating, four of the plant's six oil-fired heaters have been converted to district heating.

To minimise discharges of oil and grease in connection with the washing of nacelles, the plant has been equipped with a special washing area running off into sand and oil traps.

An oil and chemical depot has also been set up to optimise the storage and handling of these materials. This reduces the risk of accidents.

### Targets 2001

**Energy:** Reduce oil consumption by 50% by converting to district heating.

**Waste:** Increase the share of reusable waste by 10%.

**Industrial injuries:** Reduce the incidence of industrial injuries by 10%.

**Absences due to illness, employees paid by the hour:** Reduce absences due to illness by 10%.

*Additional information about targets is listed on page 84.*

#### Address

Marsk Stigs Vej 4  
DK-8800 Viborg

#### Cadastral number

No. 65<sup>f</sup> and 119<sup>de</sup> Viborg  
Markjorder

#### Approvals from the authorities

- Application for environmental approval is currently being processed by the Municipality of Viborg (application submitted on 15 December 1999).

#### Supervisory authorities

External environment:  
The Municipality of Viborg  
Occupational health and safety:  
The Directorate of Labour  
Inspection, County of Viborg

#### Company type

D9, cf. the Ministry of the Environment's statutory order no. 807 of 25 October 1999

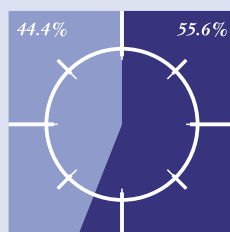
#### Number of employees

198 per 31 December 2000

#### Person responsible for the site

Ole Staal, Factory Manager

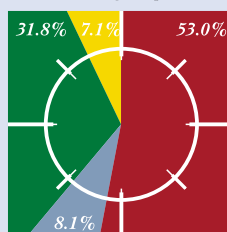
○ Total energy consumption  
3,530 MWh



● Spatial heating  
1,961 MWh

● Processes 1,569 MWh

○ Total waste: 198 tons  
(including scrap metal)



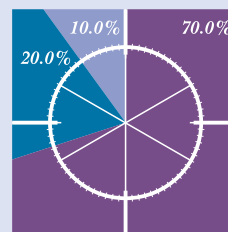
● Combustible 105 tons

● Landfill 16 tons

● Recycling 63 tons

● Hazardous waste 14 tons

○ Distribution of industrial injuries in relation to length of absence. Total 10.



● 1 - 3 days - 7 injuries

● 4 - 14 days - 2 injuries

● > 14 days - 1 injury

● > 5 weeks - 0 injuries

● Long-term absence - 0 injuries

○ Fatality - 0 injuries

*The figures show totals for energy, waste and industrial injuries for the assembly factory in Viborg.*

# The Assembly Factory in Ringkøbing

The primary activity of this site is the assembly of nacelles for Vestas' Megawatt-class wind turbines. Vestas acquired the site in spring 1998 and started a comprehensive programme of renovation. The Group's head office was subsequently moved from Lem to the Ringkøbing harbour site. Production at the plant started at the end of 1998.

The plant is situated on the banks of Ringkøbing Fjord, and rainwater runs directly into the harbour. Vestas has therefore prepared an emergency plan that takes into account the possibility of environmental accidents. This plan contains a range of emergency measures, including the activation of a floating boom and the blocking of drains.

## Environmental aspects

Energy is an important environmental aspect, as Vestas' energy consumption indirectly affects the surrounding area – through emissions from the power station, for example. Vestas also considers waste to be an important environmental aspect and will therefore increase the proportion of waste sent for recycling by focusing on all processes and by continuing employee training programmes.

The activities carried out at the Ringkøbing site do not produce a constant stream of process waste water. The liquid discharges from the plant consist of sanitary waste water and a small volume of water from the newly established washing area, which is used for washing turbine cabins and the production department's fleet of vehicles.

The plant does not generate significant amounts of airborne emissions, and the regulating authority did not ask Vestas to carry out noise level measurements as the activities of the plant have been classified as "low noise".

## Selected environmental activities in the past year

Improvements in energy consumption have been made at the plant. These include the use of dehumidifiers instead of heating fans in the nacelle storage area. This has resulted in annual savings of approximately 20,000 kWh per nacelle stored.

The site pre-separates waste at source, and to minimise discharges of oil and grease in connection with the washing of trucks, etc. the plant has been equipped with a special washing area running off into sand and oil traps. The aim for 2000 was to prevent an increase in the number of industrial injuries despite an increase in the workforce. Unfortunately, this aim was not achieved. The level of industrial injuries at the plant is slightly higher than the average for the iron and metal industry in Denmark, which is why Vestas is focusing heavily on this area.

## Targets 2001

**Energy:** Save 25% of the natural gas consumption for heating in the new building.

**Waste:** Increase the share of reusable waste by 5%.

**Industrial injuries:** Reduce the incidence of industrial injuries by 10%.

**Absences due to illness, employees paid by the hour:** Reduce absences due to illness by 10%.

*Additional information about targets is listed on page 84.*



**Address**  
Smed Sørensen Vej 5  
DK-6950 Ringkøbing

**Cadastral number**  
No. 275<sup>p</sup>, 275<sup>e</sup>, 275<sup>f</sup>, 275<sup>g</sup>, 275<sup>h</sup>,  
275<sup>m</sup>, 275<sup>n</sup>, 275<sup>o</sup> and part of  
275<sup>s</sup>, Ringkøbing Bygrunde

**Approvals from the authorities**

- Acceptance from the authorities of the most recent report received on 9 November 1999
- Waste water permit received 1 November 2000

**Supervisory authorities**  
External environment:  
The Municipality of Ringkøbing  
Occupational health and safety:  
The Directorate of Labour  
Inspection, County of Ringkøbing

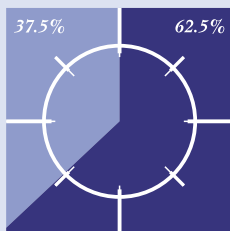
**Company type**  
A53, cf. the Ministry of the Environment's statutory order no. 367 of 10 May 1992

**Number of employees**  
362 per 31 December 2000

**Person responsible for the site**  
Jan Didriksen, Factory Manager

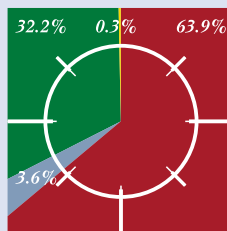
The figures show totals for energy, waste and industrial injuries for the assembly factory in Ringkøbing.

○ Total energy consumption 3,730 MWh



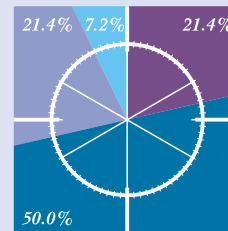
- Spatial heating 2,333 MWh
- Processes 1,397 MWh

○ Total waste 363 tons (including scrap metal)



- Combustible 232 tons
- Landfill 13 tons
- Recycling 117 tons
- Hazardous waste 1 tons

○ Distribution of industrial injuries in relation to length of absence. Total 14.



- 1 - 3 days - 3 injuries
- 4 - 14 days - 7 injuries
- > 15 days - 3 injuries
- > 5 weeks - 1 injury
- Long-term absence - 0 injuries
- Fatality - 0 injuries



# Company sites



## The Blade Factory in Lem

In 2000, the blade factory in Lem manufactured 23, 25 and 32-metre blades, as well as beams and assembly fittings for the blades. This site also includes the production development department and the repair departments based in Spjald and Skjern.

The blades are made of epoxy laminates (pre-preg) as opposed to the traditional method of polyester-based manufacture. This means that no styrene is discharged from the site.

The switch in production from polyester to epoxy-based blades has been implemented over the past ten years. The elimination of styrene discharges has contributed considerably to a reduction in total emissions of organic solvents. However, there has been one drawback to the change in production method, in that some employees have developed eczema caused by working with epoxy products. Vestas is monitoring this situation very closely.

occurred years ago and has nothing to do with Vestas' activities. Nonetheless, Vestas is paying for the operations necessary to clean up the area, which are being carried out in step with the extension of the buildings on the site.

### Selected environmental activities in the past year

The plant no longer uses products containing dichloromethane to prepare its moulds, and now uses only water-based release agents. Environmental considerations are a natural part of development work as regards both the design of production equipment and the choice of materials.

The plant has introduced selective waste collection in office areas, with the result that this policy is now followed in both the production and administration areas.

In collaboration with the Working Environment and Change Management Centre at the Industrial Medical Clinic in Herning, the blade factory is participating in a research project to examine occupational health and safety in relation to the culture of the site. One of the aims of this project is to map the causes of epoxy-eczema so as to make it possible to optimise prevention of this condition.

### Targets 2001

**Energy:** Reduce electricity consumption of compressed air by 10%.

**Waste:** Increase the share of reusable waste by 4%.

**Industrial injuries:** Reduce the incidence of industrial injuries by 10%.

**Absences due to illness, employees paid by the hour:** Reduce absences due to illness by 10%.

*Additional information about targets is listed on page 84.*

#### Address

Smed Hansens Vej 9 - 21  
DK-6940 Lem

#### Cadastral number

Nr. 134, 135, 136 and 138  
Øster Lem By, Sdr. Lem

#### Approvals from the authorities

- Environmental approval in accordance with paragraph 36, chapter 5 of the Environmental Protection Act, received 29 October 1999

- Waste water permit in accordance with chapter 4 of the Environmental Protection Act, received 29 October 1999

#### Supervisory authorities

External environment:  
The Municipality of Ringkøbing  
Occupational health and safety:  
The Directorate of Labour Inspection, County of Ringkøbing

#### Company type

D9, cf. the Ministry of the Environment's statutory order no. 794 of 9 December 1991

#### Number of employees

850 per 31 December 2000

#### Person responsible for the site

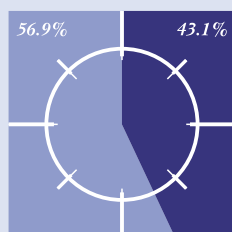
Bjarne Sandager Nielsen,  
Factory Manager

### Environmental aspects

Vestas focuses on using materials that create the least possible environmental impact. In particular, the company has concentrated on finding substitutes for the mould preparation media that are based on organic solvents. This work is intended to reduce emissions even further and to improve the occupational health and safety. Blades, beams and assembly fittings are manufactured in vacuum conditions, thus minimising emissions from the processes. This approach captures elements released during the hardening process in the finished material.

One layer of solvent-based coating is used in the treatment of the leading edges of the blades. Emission and immission calculations document that discharges from the plant are in line with requirements from the authorities. One part of the plant stands on polluted soil, and Vestas is well aware of this fact. The pollution, which consists of heavy metals and oils,

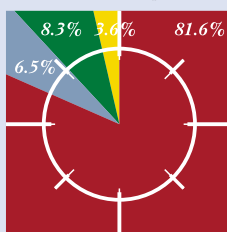
○ Total energy consumption  
15,318 MWh



● Spatial heating  
6,602 MWh

● Processes 8,716 MWh

○ Total waste 1,833 tons  
(including scrap metal)



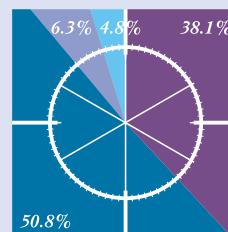
● Combustible 1,496 tons

● Landfill 119 tons

● Recycling 152 tons

● Hazardous waste 65 tons

○ Distribution of industrial injuries in relation to length of absence. Total 63.



● 1 - 3 days - 24 injuries

● 4 - 14 days - 32 injuries

● > 14 days - 4 injuries

● > 5 weeks - 3 injuries

● Long-term absence - 0 injuries

○ Fatality - 0 injuries

*The figures show totals for energy, waste and industrial injuries for the blade factory in Lem.*

# The Blade Factory in Nakskov

The blade factory in Nakskov is Vestas' newest site and manufactures 32 and 39-metre-long blades. Construction of the factory started on 1 July 1999 – and the first blades rolled off the production line before the end of that same year. The site was officially opened on 29 May 2000.

Vestas selected the Nakskov harbour site on the basis of the expectation that the market for offshore wind turbines will expand in the future. The advantage of this location is that it allows Vestas to transport its blades easily by sea. Nakskov was also chosen on account of the skilled workforce available in the area.

## Environmental aspects

Energy and waste are important environmental aspects, and particular emphasis was placed on these as early as the planning phase of the construction project.

From the very start, the blade factory in Nakskov used epoxy instead of polyester in the blade production process.

In the same way as the blade factory in Lem, the Nakskov plant does not use organic solvents in the production process itself. The organic release agents used previously have been replaced by water-based systems. Therefore, the only solvents which can be released into the surrounding environment are acetone and a few kinds of mould preparation agents.

Dust is washed from the blades in the finishing department, and some vehicles are occasionally washed in the site washing area, which runs off into sand and oil traps.

Sanitary waste water accounts for most of the total amount of waste water collected.

Vestas is focusing heavily on reducing the number of industrial injuries, as the number at the plant is currently above the average for the iron and metal industry in Denmark.

## Selected environmental activities in the past year

As the plant is newly built, Vestas was able to incorporate experience gained from the other sites – particularly the blade factory in Lem – from the very start. The new buildings include features that show optimal consideration for occupational health and safety. These include particularly good lighting, sound-proofing and space, including modern canteen and employee facilities. Vestas' aim for this plant is to create an occupational health and safety in which protective clothing, etc. is not required. Mould preparation agents containing dichloromethane have been replaced, and, as mentioned above, only water-based release agents are used. From the very first day, the production department of the plant has pre-separated waste at source. Likewise, from the start Vestas chose to implement a Central Situation Control and Management (CTS) system to ensure optimal control of energy consumption. To minimise discharges of oil and grease in connection with the washing of trucks, etc. the plant has been equipped with a special washing area running off into sand and oil traps.

## Targets 2001

**Energy:** Implement energy mapping.

**Waste:** Complete the project for pre-separating waste at source in the new factory department.

**Industrial injuries:** Reduce the incidence of industrial injuries by 30%.

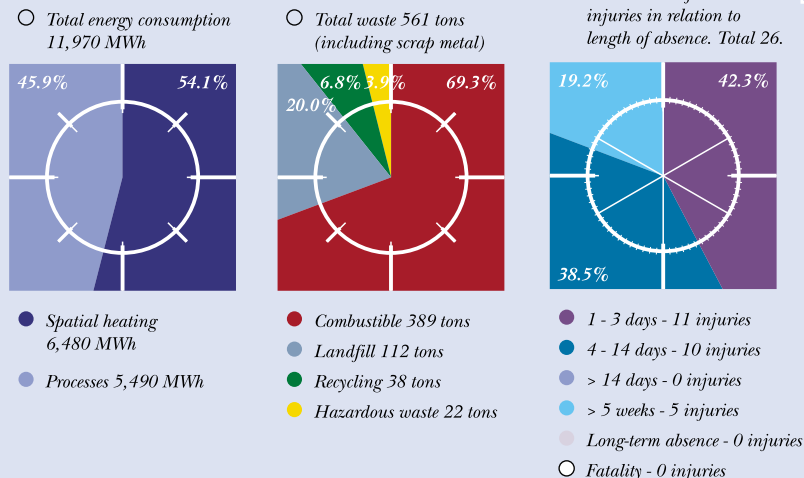
**Absences due to illness, employees paid by the hour:** Maintain the level of absence due to illness less than 4%.

*Additional information about targets is listed on page 84.*



**Address**  
Vingevej 1  
DK-4900 Nakskov  
**Cadastral number**  
No. 875<sup>a</sup> and 876 Nakskov  
Bygrunde and 1<sup>ac</sup> Stensø, Skt. Nikolaj  
**Approvals from the authorities**  
• Environmental approval in accordance with paragraph 36, chapter 5 of the Environmental Protection Act, received 21 October 1999  
• Waste water permit in accordance with chapter 4 of the Environmental Protection Act, received 21 October 1999  
**Supervisory authorities**  
External environment:  
The Municipality of Nakskov  
Occupational health and safety:  
The Directorate of Labour Inspection, County of Storstrøm  
**Company type**  
D9, cf. the Ministry of the Environment's statutory order no. 794 of 9 December 1991  
**Number of employees**  
370 per 31 December 2000  
**Person responsible for the site**  
Hans Jespersen, Factory Manager

*The figures show totals for energy, waste and industrial injuries of the blade factory in Nakskov.*





# Company sites

## The Service and Mould Construction Department in Videbæk

The service department erects and provides service for wind turbines in Denmark, and is responsible for pre-separation of waste at source at wind turbine sites.

The mould construction department manufactures tools for the manufacture of Vestas' blades, and uses epoxy materials for this purpose. Even though the mould construction department only accounts for a small part of the factory site, its existence means that Vestas is legally required to obtain environmental approval for the entire site.

### Environmental aspects

Since the mould construction department was transferred to Videbæk, the plant's energy consumption has risen, as the hardening process requires a relatively high room temperature. The plant currently uses oil for heating, but has carried out an energy mapping process and will be converting to a different form of energy. Vestas is also investigating the opportunity of using surplus heat from a nearby company. Another task facing Vestas is the optimisation of the system for pre-separating waste at source for the company's fitters who work at the wind turbine sites. The facilities available to the fitters will be improved to facilitate and increase the pre-separation of waste at source on site. In this regard, Vestas is also examining the opportunities for disposing of the waste locally so as to reduce the volume of waste that has to be transported to Videbæk. Types of waste classed as hazardous are stored in the environmental storage area, that has an anti-seepage floor. Spillages in this area will not pollute the external environment as a recovery well has been constructed.

Industrial injuries at and sick leave from the service department are both low, but as the figures for the mould construction department are higher, the safety rating of the site as a whole with regard to incidence of industrial injuries is close to the average for the iron and metal industry in Denmark.

### Selected environmental activities in the past year

The site has constructed a new environmental area for handling both the waste generated on site and that brought back from the wind turbine sites.

All employees have completed a course in pre-separating waste at source, which involved training in handling different types of waste such as plastic, cardboard, electronic components, scrap metal, waste oil, aerosol cans and oil filters. Vestas has also prepared an emergency plan that provides a clear overview of the location of electricity panels, flammable material, emergency exits and other information that may be important should an accident occur.

### Targets 2001

**Energy:** Reduce oil consumption by 25% by converting to bio fuel or natural gas, for example.

**Waste:** Structure waste handling in connection with service activities such as maintenance and repairs.

**Industrial injuries:** Reduce the incidence of industrial injuries by 5%.

**Absences due to illness, employees paid by the hour:** Reduce absence due to illness from the service department to less than 2%.

*Additional information about targets is listed on page 84.*

#### Address

Lyngvej 6  
DK-6920 Videbæk

#### Cadastral number

No. 5<sup>th</sup> Videbæk by, Videbæk

#### Approvals from the authorities

- Application for environmental approval is currently being processed by the Municipality of Videbæk (application submitted on 30 March 2000).

#### Supervisory authorities

External environment:  
The Municipality of Videbæk  
Occupational health and safety:  
The Directorate of Labour  
Inspection, County of  
Ringkøbing

#### Company type

D9, cf. the Ministry of the  
Environment's statutory order  
no. 807 of 25 October 1999

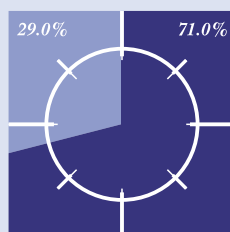
#### Number of employees

347 pr. 31. december 2000

#### Person responsible for the site

Hans Laurids Pedersen, Service  
Manager

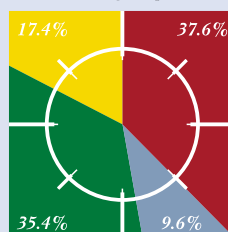
○ Total energy consumption  
4,874 MWh



● Spatial heating  
3,460 MWh

● Processes  
1,414 MWh

○ Total waste 489 tons  
(including scrap metal)



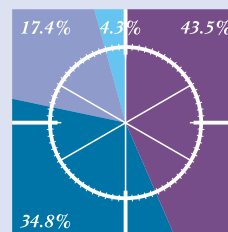
● Combustible  
184 tons

● Landfill  
47 tons

● Recycling  
173 tons

● Hazardous waste  
85 tons

○ Distribution of industrial  
injuries in relation to  
length of absence. Total 23.



● 1 - 3 days - 10 injuries

● 4 - 14 days - 8 injuries

● > 14 days - 4 injuries

● > 5 weeks - 1 injury

● Long-term absence - 0 injuries

● Fatality - 0 injuries

*The figure show totals for energy, waste and industrial injuries for the service and mould construction department in Videbæk.*

# Environmental notes

## Raw materials and consumables

Environmentally important raw materials and consumables per site

	The tower factory in Vardø	The machine and controller factory in Lem	The assembly factory in Viborg	The assembly factory in Ringkøbing	The blade factory in Lem <sup>1)</sup>	The service and mould construction department in Videbæk	Total	
Iron/steel (t)	55,317	2,042	94	12	3	1	30	57,499
Cast iron (t)	41	9,120	-	-	-	-	-	9,161
Aluminium (t)	36	1,005	2	8	1	-	2	1,054
Brass (t)	20	-	-	-	-	-	-	20
Copper (t)	210	-	-	-	-	-	-	210
Cables (t)	-	33	0 <sup>5)</sup>	799	28	6	6	872
Welding wire (t)	209	3	-	-	-	-	-	212
Powder for powder welding (t)	131	-	-	-	-	-	-	131
Oil products (1,000 litres) <sup>2)</sup>	61	38	103	152	-	-	5	359
Prepreg (t)	-	1,401	-	-	3,028	1,188	-	5,617
Adhesive and coating products (t) (epoxy and PUR)	-	5	30	-	790	168	33	1,026
Fibreglass (t)	-	48	72	-	688	67	13	888
Polymer materials (t) <sup>3)</sup>	-	22	29	-	383	111	4	549
Mould preparation agents (t) <sup>4)</sup>	-	< 1	-	-	2	1	< 1	3
Polyester materials (coat, base and hardener) (t)	-	-	182	-	-	-	-	182
Paint products (for coating blades) (t)	-	-	-	-	6	-	-	6
Acetone and thinner (t)	-	< 1	13	-	13	< 1	1	27

<sup>1)</sup> Including the departments in Spjald and Skjern.

<sup>2)</sup> This category comprises: gear oil, hydraulic oil, coolants and lubricants, lubricating oil and grease and oil-based anti-corrosion agents. See also the accounting principles used.

<sup>3)</sup> This category comprises: absorbent chips, peel-ply, vacuum foil, separating foil, PMI and PVC foam.

<sup>4)</sup> This category comprises: release agents, cleaning agents and sealants.

<sup>5)</sup> The cutting of cables used in Viborg is carried out at the assembly factory in Ringkøbing.

### The environmental accounting principles used to calculate consumption of important raw materials and consumables:

Raw materials are stated in the statement on the basis of consumption drawings from stocks to manufacturing in the first phase of manufacture as recorded in the company's ordinary registration systems and consumption calculated according to inventories used for the manufacture of moulds respectively.

Consumption is stated in the statement on the basis of supplier statements and own lists of quantities delivered in the financial year collected decentrally per site respectively.

Materiality is fixed on the basis of approvals by the authorities and the authorities' confirming statements concerning the environmental relevance of actual types of environmental data followed by a selection in relation to material quantities consumed compared with the activities carried out on the sites.

# Energy and water consumption

## Consumption of energy and water

	The tower factory in Varde	The machine and controller factory in Lem	The assembly factory in Viborg	The assembly factory in Ringkøbing	The blade factory in Lem <sup>1)</sup>	The blade factory in Nalskov	The service and mould construction department in Videbæk	Total
<b>Process energy</b>								
Electricity (MWh)	5,460	4,784	1,569	1,397	8,716	5,490	1,414	28,830
Gas (MWh)	92	-	-	-	-	-	-	92
<i>Total process energy (MWh)</i>	5,552	4,784	1,569	1,397	8,716	5,490	1,414	28,922
<b>Energy for heating rooms and water</b>								
Electricity (MWh) <sup>2)</sup>	170	367	26	206	932	138	86	1,925
Gas (MWh) <sup>3)</sup>	2,145	-	-	1,899	193	-	-	4,237
District Heating (MWh)	-	2,423	1,290	19	5,477	6,342	-	15,551
Oil (MWh) <sup>4)</sup>	-	-	645	209	-	-	3,374	4,228
<i>Total energy for heating rooms and water (MWh)</i>	2,315	2,790	1,961	2,333	6,602	6,480	3,460	25,941
<b>TOTAL (MWh)</b>	<b>7,867</b>	<b>7,574</b>	<b>3,530</b>	<b>3,730</b>	<b>15,318</b>	<b>11,970</b>	<b>4,874</b>	<b>54,863</b>
<b>Diesel oil (1,000 litres)<sup>5)</sup></b>	<b>41</b>	<b>34</b>	<b>20</b>	<b>113</b>	<b>110</b>	<b>18</b>	<b>489</b>	<b>825</b>
<b>Water (m<sup>3</sup>)</b>	<b>5,011</b>	<b>6,988</b>	<b>2,309</b>	<b>2,180</b>	<b>9,582</b>	<b>6,323</b>	<b>1,843</b>	<b>34,236</b>

<sup>1)</sup> Including the departments in Spjald and Skjern.

<sup>2)</sup> Calculated on the basis of the model used by the Danish Tax Authorities.

<sup>3)</sup> Calculated on the basis of the ratio: 1 Nm<sup>3</sup> = 11 kWh.

<sup>4)</sup> Calculated on the basis of the ratio: 1 litre = 9.89 kWh.

<sup>5)</sup> Diesel oil for service vehicles and internal transport.

### The environmental accounting principles used to calculate consumption of energy and water:

Electricity, gas, district heating and water are stated in the statement on the basis of quantities consumed according to direct meter readings relating to the activities on the seven sites with related administration.

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

Oil for heating has been stated in the statement on the basis of external purchases adjusted for stocks at the beginning and at the end. Diesel oil for transportation has been stated on the basis of supplier statements.

# Environmental notes

## Waste and scrap

Types of waste	The tower factory in Vardø	The machine and controller factory in Lem	The assembly factory in Viborg	The assembly factory in Ringkøbing	The blade factory in Lem <sup>1)</sup>	The service and mould construction department in Videbæk	Total	
● Combustible (t)	109	305	105	232	1,152	389	183	2,474
● Prepreg (t)	0	118	0	0	344	- <sup>2)</sup>	< 1	463
● Landfill (t)	245	36	16	13	119	112	47	589
● Paper and cardboard (t)	13	64	16	21	89	27	26	256
● Plastic (t)	1	6	7	3	35	0	< 1	53
● Electronic scrap (t)	0	0	0	1	0	0	2	3
● Scrap metal (t) <sup>3)</sup>	4,457	1,532	40	92	28	11	145	6,304
● Epoxy waste (t)	0	2	0	0	50	20	3	74
● Polyester waste (t)	0	0	4	0	0	0	0	4
● Isocyanate waste (t)	0	0	0	0	8	2	< 1	10
● Acetone waste (t)	0	< 1	8	0	4	< 1	< 1	13
● Oil emulsions (t)	59	222	< 1	0	0	0	14	296
● Oil products (t)	0	11	< 1	< 1	< 1	0	13	26
● Waste oil (t)	3	4	< 1	< 1	< 1	0	52	59
● Other types of hazardous waste (t) <sup>4)</sup>	< 1	1	< 1	< 1	3	< 1	2	7
<b>Totals, divided up into the four categories per site (tons):</b>								
● Combustible (t)	109	423	105	232	1,496	389	184	2,938
● Landfill (t)	245	36	16	13	119	112	47	589
● Waste for recycling (t)	4,471	1,602	63	117	152	38	173	6,616
● Hazardous waste (t)	62	240	14	1	65	22	85	488

<sup>1)</sup> Including the departments in Spjald and Skjern.

<sup>2)</sup> Included under combustible and landfill.

<sup>3)</sup> This category comprises scrap iron, aluminium, cables, copper and brass.

<sup>4)</sup> This category comprises strip lights, thyristors, condensers, brake pads, waste paint, spray cans and collected waste oil.

### The environmental accounting principles used to calculate volumes of waste and scrap metal:

Waste is stated in the statement on the basis of weight certificates received from the waste recipients for deliveries effected in the financial period, apart from a few types of waste which are assessed on the basis of subscription arrangement and load.

Materiality has been fixed on the basis of approvals from the authorities and confirming statements from supervising authorities concerning the environmental relevance of exact types of waste, followed by a selection in relation to material quantities delivered compared with the ordinary operating activities carried through on the sites.

In the statement waste according to types and quantities has been allocated to the sites on which the waste has been generated.

In the statement scrap is stated on the basis of weight certificates from the scrap dealers collected decentrally per site.

## Emission to the air

Emissions into the air		The tower factory in Vardø	The machine and controller factory in Lem	The assembly factory in Viborg	The assembly factory in Ringkøbing	The blade factory in Lem <sup>1)</sup>	The service and mould construction department in Nakskov	Total
Organic solvents (kg)	-	56	12,066	-	13,718	542	251	26,633
Dust (kg) <sup>2)</sup>	1,064	708	-	-	-	-	-	1,772

<sup>1)</sup> Including the departments in Spjald and Skjern.

<sup>2)</sup> Defined as other dust in line with the Danish Environmental Protection Agency's guideline no. 6, 1990.

## Waste water

There is no continuous discharge of process waste water from Vestas' sites in Denmark. The waste water discharges contain almost exclusively sanitary waste water. The only process waste water released is a small volume stemming from the washing areas and from the washing of blades. All washing areas are equipped with a sand trap and a coalescing oil trap.

The volume of waste water produced is considered to be identical to the company's water consumption. The water consumption figures (and, therefore, the waste water volumes) for the different sites are listed under the environmental notes concerning energy and water consumption. The diagram below illustrates the status of the individual sites.

Status of waste water measurements		The tower factory in Vardø	The machine and controller factory in Lem	The assembly factory in Viborg	The assembly factory in Ringkøbing	The blade factory in Lem	The service and mould construction department in Viborg
Requirements met	X <sup>3)</sup>	X <sup>1)</sup>		X <sup>5)</sup>	X <sup>2)</sup>		
Measurement not yet available			X <sup>4)</sup>			X	X <sup>4)</sup>

<sup>1)</sup> Measurements performed for oil/grease.

<sup>2)</sup> Measurements performed for suspended matter and pH level. In addition, functional requirements have been fulfilled.

<sup>3)</sup> Measurements performed for oil/grease, Ni, Cr, Zn and pH level.

<sup>4)</sup> Vestas has not yet received the final conditions from the authorities.

<sup>5)</sup> Functional requirements. There are no requirements for measurements.

### The environmental accounting principles used to calculate emissions into the atmosphere:

Emissions from organic solvents have been calculated on the basis of quantities of mould preparation media, 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 plant and information from the suppliers as regards dimensions and filter efficiency.

Materiality is determined on the basis of approvals from the authorities.



# Environmental notes

## Noise

At the end of 2000, a breach of noise-level requirements was identified at the blade factory in Lem. This breach, of approximately 4 dB(A), was measured on company grounds in an area defined as an industrial area according to the regional plan. The probable source of the noise has been identified, and noise-reduction measures have been initiated. New measurements will be carried out at the start of 2001 to verify the fact that the site conforms to the applicable requirements. All other facilities observe the noise-level requirements laid down by the authorities. In cases in which the authorities have expressed concern, Vestas has provided measurements or calculations to document noise levels.

In connection with the environmental approval of the tower factory in Varde, an agreement was reached concerning reduction of the noise level generated by the facility. This agreement involves the implementation of a number of noise-reduction initiatives during the period up to August 2002. These include measures to reduce noise levels from both stationary and mobile sources. The agreement, which was reached on the basis of close dialogue with neighbours of the plant and the authorities, requires Vestas to reduce noise levels in accordance with the action plan presented in the conditions for the environmental approval of 31 August 2000 for Vestas Varde.

## Occupational health and safety

Industrial injuries and absence due to illness

	The tower factory in Varde	The machine and controller factory in Lem	The assembly factory in Viborg	The assembly factory in Ringhøbing	The blade factory in Lem <sup>1)</sup>	The blade factory in Lem <sup>1)</sup>	The service department in Nakskov	The production and development department <sup>2)</sup>	Other departments <sup>3)</sup>	Total
<b>Length of absence due to industrial injuries</b>										
● 1 - 3 days	12	7	7	3	24	11	5	5	1	75
● 4 - 14 days	8	6	2	7	32	10	4	4	0	73
● > 14 days	3	0	1	3	4	0	3	1	0	15
● > 5 weeks	1	0	0	1	3	5	1	0	0	11
● Long-term	0	0	0	0	0	0	0	0	0	0
○ Fatality	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	24	13	10	14	63	26	13	10	1	174
Incidence of injuries <sup>4)</sup>	56.3	25.5	52.5	59.7	58.7	70.1	28.0	153.5	20.8	51.4
Absence due to injuries <sup>5)</sup>	9.2	3.1	1.7	7.4	7.0	6.3	2.1	5.5	0.3	5.5
Absence due to illness <sup>6)</sup>	4.8	6.3	4.5	6.0	6.3	2.9	2.1	6.2	2.2	5,0
<b>Figures for the sector</b>										
Incidence of injuries <sup>7)</sup>	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5
Absence due to injuries <sup>7)</sup>	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4,2
Absence due to illness <sup>8)</sup>	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5,1

<sup>1)</sup> Including the departments in Spjald and Skjern and the blade factory activities at the machine factory in Lem.

<sup>2)</sup> Including mould construction in Videbæk.

<sup>3)</sup> Other departments – refers to employees paid by the hour employed in various staff functions.

<sup>4)</sup> Incidence of injuries expresses the number of reportable industrial injuries per 1,000,000 working hours.

<sup>5)</sup> Absence due to injuries refers to the number of hours of absence due to injuries per 1,000 working hours. Absence due to non-reportable industrial injuries is also included in these figures.

<sup>6)</sup> Absence due to illness is defined as the number of hours of absence due to illness per 100 working hours. The figures only refer to workers paid by the hour.

<sup>7)</sup> Source for figures for the sector: "Industrial injuries 1999" – published by The Danish Employers' Confederation – average for the iron and metal industry.

<sup>8)</sup> Source for the figures for the sector for absence due to illness: average for workers in the iron and metal industry (1999), published by The Danish Employers' Confederation.

### The environmental accounting principles used to evaluate occupational health and safety:

Occupational health and safety have been stated for all activities under the administrative structure and comprise employees categorised as employees paid by the hour. The number of industrial and classification of time of absence have been stated in the statement on the basis of reports to the Directorate of Labour Inspection made decentrally per site.

Absence due to illness has been defined as hours absent due to illness, exclusive of absence caused by industrial injuries, maternity leave and child's first day of illness. Number of working hours and absence frequency due to industrial injuries and illness respectively have been calculated on the basis of daily time cards registered in the payroll systems.

# Auditors' Opinion

As agreed with management, we have performed a review of the Environmental Report of Vestas Wind Systems A/S for 2000. An opinion on an environmental report is based on a voluntary agreement between the reporting entity and the auditor rendering the opinion.

## Objective and Scope of the Review Agreed Upon

We have planned and performed our review in accordance with generally accepted auditing practices and with a view to rendering an opinion on the following matters, as agreed with management:

- whether the information and statements presented in the Environmental Report have been documented and stated in accordance with the guidelines described under environmental accounting policies and correlate with the entity's activities for the accounting period.
- whether the internal control system, including monitoring and reporting procedures, has been structured in an appropriate manner.

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 selected accounting policies and correlation with the entity's activities for the period. Furthermore, we have evaluated the internal control system with a view to establishing its appropriateness. Our review did not include an opinion as to whether the data and information stated represent the key issues of Vestas Wind Systems A/S.

The scope of the review agreed upon is not as extensive as that of an audit and, accordingly, does not provide the user of the report with the same level of assurance in respect of the propriety and completeness of the compilation and the presentation of the information provided in the Environmental Report. An audit would have to be based upon generally accepted principles for the compilation and presentation of an environmental report, which have not yet been established.

## Findings of the Review Agreed Upon

In our opinion, the information and statements presented in the Environmental Report for 2000 have been documented and stated in accordance with the guidelines described under environmental accounting policies and correlate with the entity's activities for the accounting period.

Furthermore, in our opinion, the internal control system, including the monitoring and reporting procedures applied, has generally been structured in an appropriate manner to support reliable information in the Environmental Report for 2000.

Page  
83

Herning, 28 March 2001

### PricewaterhouseCoopers

Niels Jørgen Lodahl  
*State Authorised  
Public Accountant*

Birgitte Mogensen  
*State Authorised  
Public Accountant*

# Conversion factors, definitions and glossary

## Conversion factors

1 GW	1000 MW
1 MWh	1000 kWh
1 Nm <sup>3</sup> natural gas	11 kWh
1 litre of fuel oil	9.89 kWh

## Comments on the targets for 2001

### Target for energy:

The percentage reductions should be viewed in relation to consumption in 2000, and are based on an unchanged level of activity.

### Target for industrial injuries:

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

### Target for sick leave:

The absentee rate is defined as the number of absentee hours per 100 working hours. The targets for 2001 only deal with absence due to illness among employees paid by the hour.

### Target for waste:

Neither scrap metal nor wood (which is sold off to employees) is included in the calculation of the percentages.

## Glossary

### Assembly fitting:

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

### Beam:

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

### 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.

### Coalescing oil trap:

A more efficient type of oil trap than conventional models.

### Condenser:

Electronic component that can contain oil.

### CO<sub>2</sub>-neutral energy:

Energy generated without causing net emissions of CO<sub>2</sub>.

### Dichloromethane:

An organic solvent.

### 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 materials that the product contains. In this context, Life Cycle Assessment (LCA) will be included as a tool.

### Mould cleaning agents:

A group of auxiliary agents used to clean the surface of moulding tools in connection with their repair and maintenance.

### Mould preparation agents:

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

### Mould sealants:

A group of auxiliary agents used in connection with the repair of moulding tools.

### Nacelle:

The turbine housing at the top of the tower.

### Non-prioritised electricity:

Also known as market electricity or the "free share". This concept refers to the volume of electricity which, in line with the guidelines for the liberalisation of the electricity market, can be purchased on the open market. In 2000, the non-prioritised share accounted for 60 per cent of total consumption in Denmark.

According to the guidelines for this area, companies such as Vestas cannot choose their supplier of non-prioritised electricity until 2001.

### 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).

### Prioritised electricity:

Electricity generated by privately owned wind turbines, decentralised CHP plants and selected centralised CHP plants. Only a part of this energy is therefore CO<sub>2</sub>-neutral. A political decision has determined that prioritised electricity is to be distributed proportionally to all electricity consumers. In 2000, the prioritised share accounted for 40 per cent of total consumption in Denmark.

### Release agents:

A group of auxiliary agents regularly applied to mould tools to facilitate the removal of finished products from the moulds.

### Sanitary waste water:

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

### Styrene:

Organic solvent released in connection with the manufacture of polyester-based fibreglass components.

### Suspended matter:

An expression for the volume of particles (dry matter) contained in the liquid phase.

### The EMAS regulation:

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

### Thyristor:

Electronic component that contains beryllium.

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