

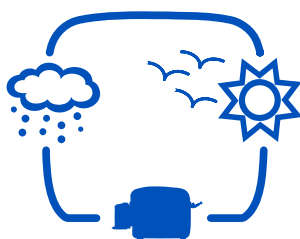


Environmental Statement 2009

Danfoss Compressors GmbH
Flensburg Site

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Volker Zacchi, Environmental Manager & Environmental Representative

Introduction

The public interests in environmental protection and environmental policy vary with current political trends. But one topic has intensively concerned us over the last years – Energy Saving. The reasons are on the one hand our care for the environment and the climate and on the other hand rapid increasing energy costs. At the time this environmental statement had been written the energy and fuel costs had declined significantly but the next increase is preprogrammed.

We have set up a comprehensive Energy saving conception together with Danfoss Solutions end of 2007 / beginning of 2008. This has been realized during the year 2008. In 2009 we have mainly planned training activities and the intensive control of our energy consumption development – beside some smaller technical projects .

We expect savings of 15 – 20% in total compared to the baseline of 2007. This includes savings within the area of electricity, heat supply and additionally fuel oils, water and other utilities.

Danfoss is of course strongly affected by the difficult economic situation we are in since mid of 2008 and continuing in 2009. The direct consequence is a reduced investment level and this leads to the stop or postponement of environmental projects, too.

Nevertheless we stick to our energy saving project and have already started concrete plans to shut down our boilerhouse in 2010. By this we would stop the combustion of heavy fuel oil.

We will continue unabated our efforts towards conservation of resources and prevention of negative environmental impacts. Environmental protection means to us always: special environmental projects, a multitude of small and large improvements, and promotion of the environmental awareness throughout all company levels. For these efforts we have twice received the Environmental Prize awarded by the Studien- und Fördergesellschaft der Schleswig-Holsteinischen Wirtschaft e.V., the Studies and Promotion Society of the Schleswig Holstein Economy. This prestigious prize was awarded for our continuous activities in the field of environmental protection and dedicated involvement of our employees.

Our environmental performance and goals presented in this environmental statement should primarily enhance the environment, however, in the end our employees, the surroundings of our site and of course our customers benefit from this effort. In this statement we give you an overview of the results and achievements of our work and show you in which fields we intend to improve our environmental performance.

The presentation of our environmental figures has been adapted with regard to the severe changes at the Flensburg site. Due to the relocation of larger production areas to our site in Slovakia (2005-2007) and the nosedive of the order situation (2008) the comparison of data from 2007 and 2008 with former years has only limited significance. Additionally the energy saving program has clearly shown that we have a base-load in many areas of energy consumption or waste amounts – independent from the respective produced number of compressors. We took that into account in our updated presentation.



Now we wish you to take much pleasure in studying our environmental statement.

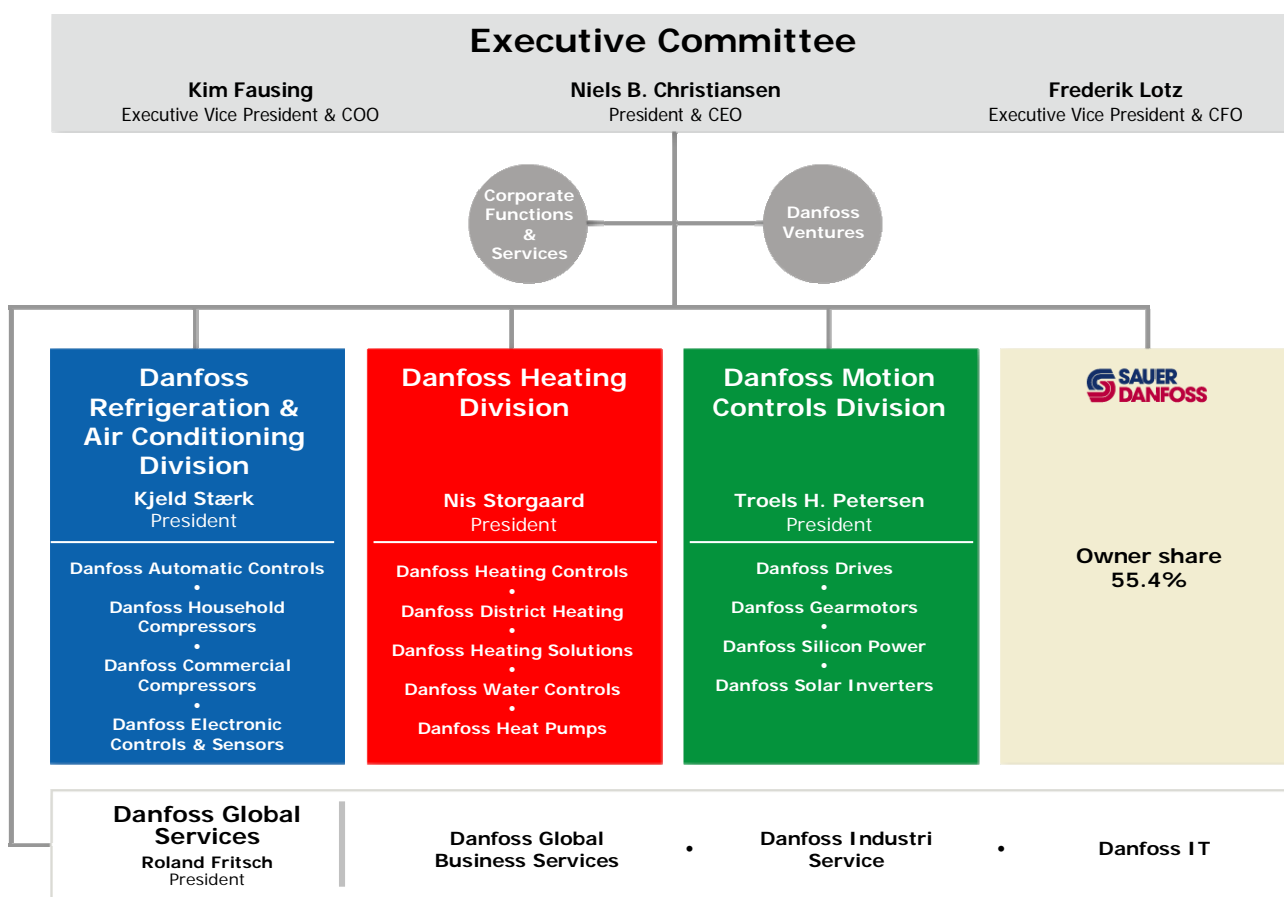
Management Board
Flensburg, March 2009

1. Company profile – description of the organisation

Danfoss Compressors GmbH in Flensburg is a business unit within the globally operating Danfoss Group headquartered in Nordborg, Denmark.

At the end of 2008, Danfoss Group employed around 22,500 people at many production sites and in sales companies worldwide. The turnover in 2007 was about 3.0 billion Euros.

Danfoss is organisationally divided into three product divisions. The so-called *red division* produces components for heating (e.g. thermostats) and water systems (e.g. valves). The *green division* comprises electronic components for drive systems and motion controls such as frequency converters or geared motors. The *blue division* provides all products of the Danfoss Group which are designed for refrigeration and air conditioning. Among these products are compressors produced by Danfoss Compressors GmbH. Danfoss Compressors is one of the global leading manufacturers of technologically advanced high quality compressors with low energy consumption and reduced noise emissions.



2009-01-19

Position of the business unit Danfoss Compressors within the structure of the Danfoss Group

The headquarters of the Danfoss Household Compressors business unit is located at the Flensburg site. Danfoss Household Compressors with production facilities in Slovenia and Slovakia as well as the new erected site in China belongs besides other business units to the *blue division* (see above).

The unit Household Compressors has four sites employing approx. 3,000 people. This unit produced around 10 million compressors in 2008. The plants in Slovenia and Slovakia are certified the same as the headquarters in Flensburg according to ISO 14001:2004 standard. Furthermore, since the end of 1999 the headquarters in Flensburg is validated according to EMAS and listed in the EU register of EMAS organisations.

EMAS is EU Eco-Management and Audit Scheme, established to evaluate and improve the environmental performance of industrial organisations as well as to provide relevant information to the public. The latter is achieved by release of an environmental statement. If the organisation has met EMAS requirements, the statement will be validated by accredited environmental verifiers and the company will be registered under EMAS.

This environmental statement describes only the headquarters and its activities in Flensburg. This site is an organisational unit which is verified by an independent environmental inspector according to EMAS requirements.

For meanwhile 50 years, the Danfoss Compressors GmbH has its domicile in Flensburg, high up in the North of Germany directly on the Baltic Sea and the Danish border. At the end of 2008, Danfoss - as one of the largest employers in this region - employed approx. 900 people in Flensburg.

The part of the site are the main work in Mads-Clausen-Straße and the hired premises in a large warehouse with 5.000 m², so called "stock 2000" in Husumer Straße. This external warehouse is organisationally integrated in the scheme of the main work, department of logistics. Additionally, at the end of 2003 the assembly of electrical equipment for our compressors was relocated from the main work to this location.

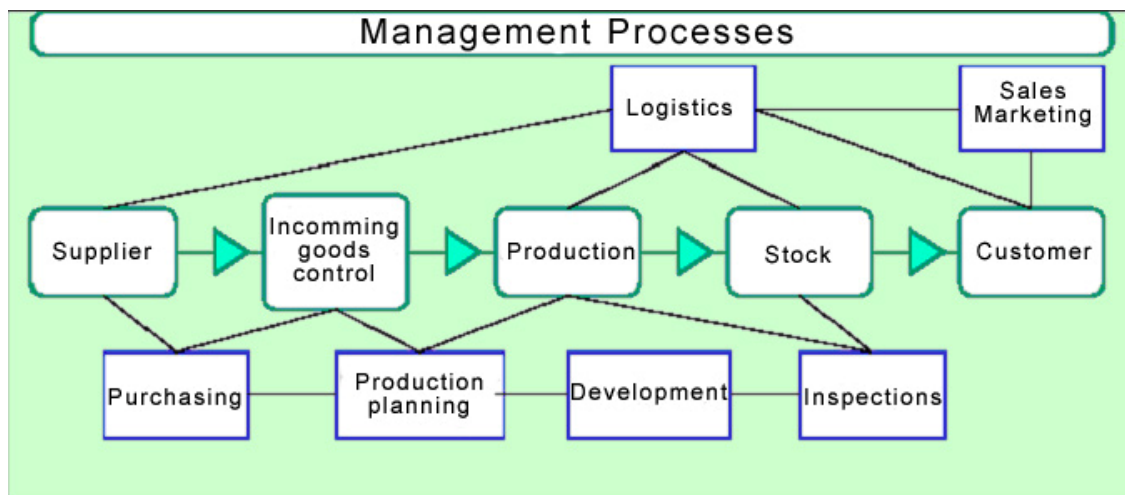
The main work is located in the northern part of Flensburg on the edge of a mixed zone – residential area and small-scale industrial estate - not far from Flensburg Fjord. The total area will measure approx. 13 hectares almost the half of which are built-up or sealed. The part of the factory are three production halls as well as diverse outbuildings such as warehouse, one hall for loading and unloading, one boiler house, one wastewater treatment facility and one factory canteen. Furthermore there are roads, paths, car parks and storage spaces. The areas not being sealed are covered with green parks, bushes and trees.



aerial view of the factory in Flensburg - 2006

Besides the Head Office, the main work accommodates all business related departments of the Household Compressors – from production, technical development and engineering through personnel department, finance, quality to purchasing, distribution and logistics.

Process Overview



Danfoss Compressors develop and manufacture hermetic compressors and condensing units for refrigeration. Predominantly, these components are used in household refrigerators and freezers but also in commercial applications, for instance in soft drinks vending machines.



products - assortment

The main components of our products are made of steel, cast iron, sintered metal, copper, aluminium, compressor oils, plastics and glass. The accessories consist of electrical equipment and assembly parts. A LCA (Life Cycle Analysis) performed on two compressors showed that the most significant environmental aspect of our products is the energy consumption during operation.

Consequently our development activities are concentrated on energy savings. New projects concentrate also on material savings at the compressor production.

The most recent generation is using carbon dioxide - CO₂ - as refrigerant. This greenhouse gas has its good aspects when being put inside a compressor. CO₂ has an approximately 1,300 fold lower global warming potential as conventional refrigerants, e.g. fluorinated hydrocarbons (R134a). It offers therefore the opportunity to reduce the contribution of refrigerant emissions to the greenhouse effect significantly. Moreover its heat capacity is around 2.5 times and its refrigerating capacity around 5 times higher than R134a.

Later, when disposing our compressors the materials being used are almost completely reusable ensuring an environmentally friendly disposal according to the Electrical and Electronic Equipment Act.

The core production processes are conventional metal processing and assembly. The metal processing include the so called pre-production of individual components made of steel, cast iron and sinter, as well as the manufacture of housings and other components made in a punching shop. The assembly covers the actual mounting of the compressors but also the assembly of condensing units and electrical equipment.



Assembly Compressors



Assembly Condensing Units



Assembly Electrical Equipment

The main environmentally relevant processes are the generation of process heat caused by the combustion of heavy fuel oil in the boiler house, the paint finishing facilities operating on cathodic painting using water-based paints, processes of mechanical surface treatment and degreasing generating, among other thing, oil-containing waste water and waste water deriving from phosphating processes.

2. Environmental Policy

Our environmental policy is aimed:

1. **to prevent** (at the outset)
2. **to reduce** (wherever possible)
3. otherwise **to eliminate** (in an environmentally sound manner)

the negative impacts upon environment arising from our activities.

- The implementation of environmental legislations is a matter of course for us. We aim to fall short of guidelines and applicable limits.
- We seek to continuously improve the environmental protection. In order to be able to take appropriate measures, together with our employees we regularly analyse and evaluate our environmental impacts. We aim to reduce these by means of the best available technology so far as it makes sense and is economically justifiable.
- We consider the environmental impacts of new or modified products and processes from development through production to operation and disposal.
- When selecting suppliers and contractors, their environmental attitude and behaviour is a parameter, too. We place the same environmental demands on our contractors operating at our site as we confirm to.
- We seek to reduce the risk of environmentally harmful accidents or their impacts by means of appropriate emergency preparedness measures.
- We seek to cooperate closely with appropriate authorities in order to prevent environmental damage or loss and to ensure the implementation of environmental guidelines.
- We participate in open and positive dialogue with business partners and the outside world about the results of our environmental situation. For this purpose we regularly report data regarding our environmental performance and environmental projects.
- We are working on the basis of an integrated system for environmental management, occupational health and safety, and quality management. We inform and train our employees in terms of this system and its application.*

The environmental policy of the Danfoss Compressors GmbH is orientated on the superior environmental policy of the Danfoss Group which is also published and is available free of charge.

Our environmental policy has been customised for the site in Flensburg.

* Data for our employees regarding the subject environmental protection are available from following sources:

- Environmental Manager & Environmental Representative: Volker Zacchi
- Environmental representatives being appointed in different production departments
- Danfoss Intranet with data regarding the management system
- Internal Danfoss Network with the environmental information pool containing numerous information about environmental data, environmental projects and environmental policy.

Ideas and suggestions concerning improvement of the company's environmental protection can be submitted through the existing suggestion scheme. The environmental representatives will be involved in the environmental planning and projects.

3. Management System

The integrated management system covering the fields quality, occupational health and safety and environment is our most important tool to meet the requirements of EMAS II and those of ISO 14001:2004 standard.

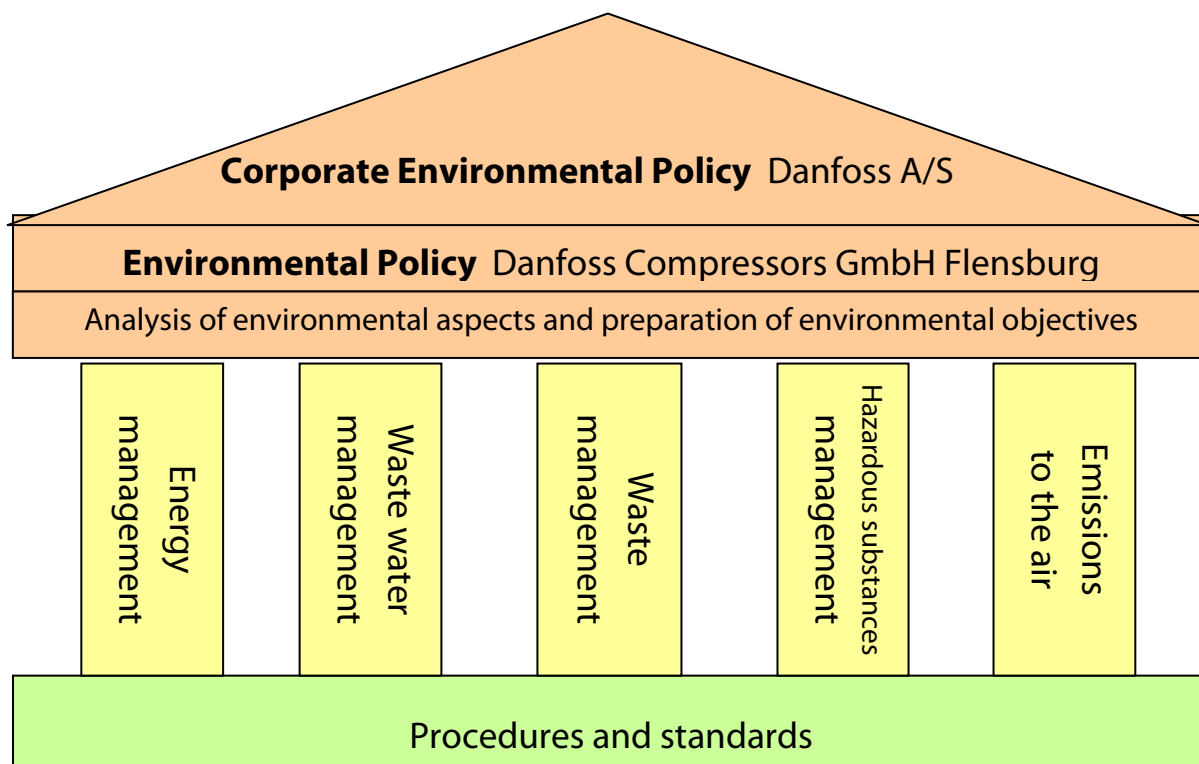
The key message of the management system is the fact that our actions are carried out according to the closed regulatory circuit “planning – implementing – analysing – acting”.



The basic requirements of the quality standard ISO 9001:2000, environmental managements system ISO 14001:2004 and those of the eco-audit regulation EMAS II are documented in our manual for quality, occupational health and safety, and environment.

Our documentation additionally contains diverse procedure instructions regarding this integrated management system which, for instance, address general subjects such as waste disposal but also specific subjects such as e.g. implementation of chemical products.

The procedure of operational environmental issues at Danfoss Compressors looks like:



4. Compliance with statutory regulations

This section focuses on the regulations of environmental legislations concerning our factory in Flensburg. Due to the complexity, only the most significant regulations can be presented:

1. Emission control legislation:

- The combustion plant for heavy fuel oil used to generate process heat is the only one installation which has to be subjected to permission according to the Emission Control Act.
- The TA Luft (Technical Instruction on Air Quality Control) which went into effect on 1. October 2002, has intensified the requirements for emission limit values of the firing plant for heavy fuel oil. The customisation of old installations has to be carried out in two steps within a period from October 2007 to October 2012.
- The last emission measurement, required to be performed every 3 years, has been made in March 2006. The limit values were not exceeded. The next measurement will take place in April 2009. Danfoss has been exempted from report emission statement for 2004.
- The requirements of the 3. BImSchV (Federal Emission Control Ordinance) relating to the reduction of sulphur content in heavy fuel oil down to <1,0% have been met.
- The two painting facilities, according to the BImSchG (Federal Emission Control Act), are not among the installations which have to be subjected to permission. The requirements of 31. BImSchV (limitation of emissions of volatile organic compounds) are no longer applicable as they have been met since 2007 by a change-over of our paint to a paint with significantly lower solvent content.
- The requirements of the TA Lärm (Technical Instructions on Noise Pollution Abatement) concerning noise emissions outside the factory buildings have been met.

2. Water legislation:

- Industrial wastewater is purified in company's own wastewater treatment facility and routed to the local wastewater treatment plant through an indirect discharge. A valid permission is provided (Apr. 2002).
- The industrial wastewater is predominantly produced in surface treatment processes such as washing, phosphating and painting processes applied for different compressor components and finished compressors. The industrial wastewater contains substances such as oils, hydrocarbons, tensides, amines, phosphates, salts and some heavy metals. In addition, there are cooling lubricant emulsions which are also treated in the wastewater treatment facility. All requirements concerning the limit values have been met according to the permission within the period under review.
- The requirements set by the self monitoring regulation have been fulfilled. Additionally an accredited laboratory takes regularly waste water samples and analyses the relevant parameters like heavy metal fraction. An electronic waste water database is available.
- The requirements set by the VAWS, plant regulation, concerning storage and internal transport of hazardous substances (e.g. collection pans and transportation locks for hazardous substance containers) have been fulfilled.

3. Waste legislation:

- The disposal of all types of hazardous waste is provided by means of record of proper waste management. Certified professional disposal companies are generally charged with the waste disposal.
- The provision of waste for disposal is performed within factory premises in areas designated for this purpose.
- The environmental representative is appointed as representative for waste management. He keeps the register for records of proper waste management including all consignment notes (Begleitscheine) and handover certificates (Übernahmescheine), and he also prepares the annual waste survey.
- Since 30 June 2005, we ensure the conformity with the requirements of the EU Directive on the restriction of use of certain hazardous substances in electrical equipment and their disposal.

Compliance (continued):

4. Chemicals legislation:

- The requirements of the legislation on hazardous substances (proper labelling of hazardous substances as well as information and instruction of employees on the basis of user manual for hazardous substances; implementation of risk assessment) have been met.
- The hazardous substances register is kept as an electronic database incl. the internal approval of substances.
- New substances which (experimentally) should be implemented are subjected in advance to an inspection performed by environmental representative, safety engineer and company medical officer. The substance is allowed to be used under strict safety precautions only after its release.
- The requirements of the prohibition on special CFCs (refrigerants) have been met. Green House Gases controlled by the Kyoto Protocol such as e.g. refrigerants R 134a and R 404a are used in small amounts for development purposes (laboratories).
- The relevant requirements of the EU Directive No. 1907/2006 for the Registration, Evaluation and Approval of Chemicals (REACH) are being applied in collaboration of R&D together with procurement department.

5. Miscellaneous:

- End of 2007, we discovered that oil has leaked into the concrete and soil underneath one former machinery inside of one production hall. The affected area could be isolated to just under 200 m². There was no risk to the environment. This pollution has been removed completely in March 2008 by exchange of soil and concrete. A final report and approval of local authorities are available.
No further water, air or soil pollution have been identified at the company premises so far.
- There are no complaints filed against the company. Furthermore, there are no proceedings conducted in connection with violation of laws for the protection of the environment.
- The area, neighbouring the company's premises, towards the Ostseebad (wood, slope, bank, water) is referred to as so-called FFH area (Flora and Fauna Habitat protected area). This region is designated as Landscape Conservation Area and in parts covered by legal biotope protection according to Land Nature Protection Act. The basis is the EU FFH Directive which should create a European eco-network of nature protection areas ("Natura 2000").

This compliance is drawn up annually and is subjected to random tasting performed by environmental representative.

The general manager Mr Søholm is the responsible person acc. to emission control and waste legislation.



5. Environmental Performance – Figures, Data, Facts

Results 2008 (absolute figures)



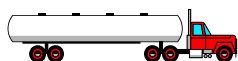
Production material

Iron	11,288 t
Copper	166 t
Aluminium	138 t
Plastics	394 t
Compressor oils	831 t



Energy

Electricity	18.7 mio. kWh
District heat	5.7 mio. kWh
Light fuel oil	94 t
Heavy fuel oil	1,015 t



Emissions to the air (calculated values¹⁾)

→ CO ₂	appr. 8,967 t
→ CO ₂	appr. 2,742 t
→ CO ₂	appr. 298 t
→ CO ₂	appr. 3,199 t
→ SO ₂	appr. 13.0 t
→ NO _x	appr. 6.2 t

CO₂ total appr. 15,206 t



VOC = volatile organic compounds

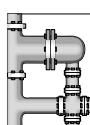
from paint etc. 1.42 t

Greenhouse gases acc. to Kyoto-Protocol:

R134a, R404a for test purposes 1.50 t



Fresh water 44,859 m³



Waste water

Process and cooling water incl. evaporation	17,755 m ³
Sanitary water	20,464 m ³
Industr. waste water	6,640 m ³

Waste water loads

→ COD (organ. load)	1,259 kg
→ Nickel	0.5 kg
→ Zinc	0.3 kg



Waste

hazardous, for disposal	0.74 t
hazardous, for recycling	887.9 t
non hazardous, disposal	3.8 t
non hazardous recycling	4,099.6 t

Examples for waste

residues from boiler cleaning	0.36 t
concrete and soil (remediation)	585.5 t
oil-containing solid waste	35.0 t
waste oil	99.4 t
wastewater sludge	96.4 t
insulating material (renovation)	2.1 t
commercial waste	82.7 t
metal scrap, general	3,574.3 t
packaging materials	324,0 t

1: conversion factors for emissions from electric power and district heat generation accord. to data released by the Stadtwerke Flensburg (from 2008); conversion factors for emissions from fuel oil accord. to standard of the Danfoss Group

Development of significant environmental data – part 1

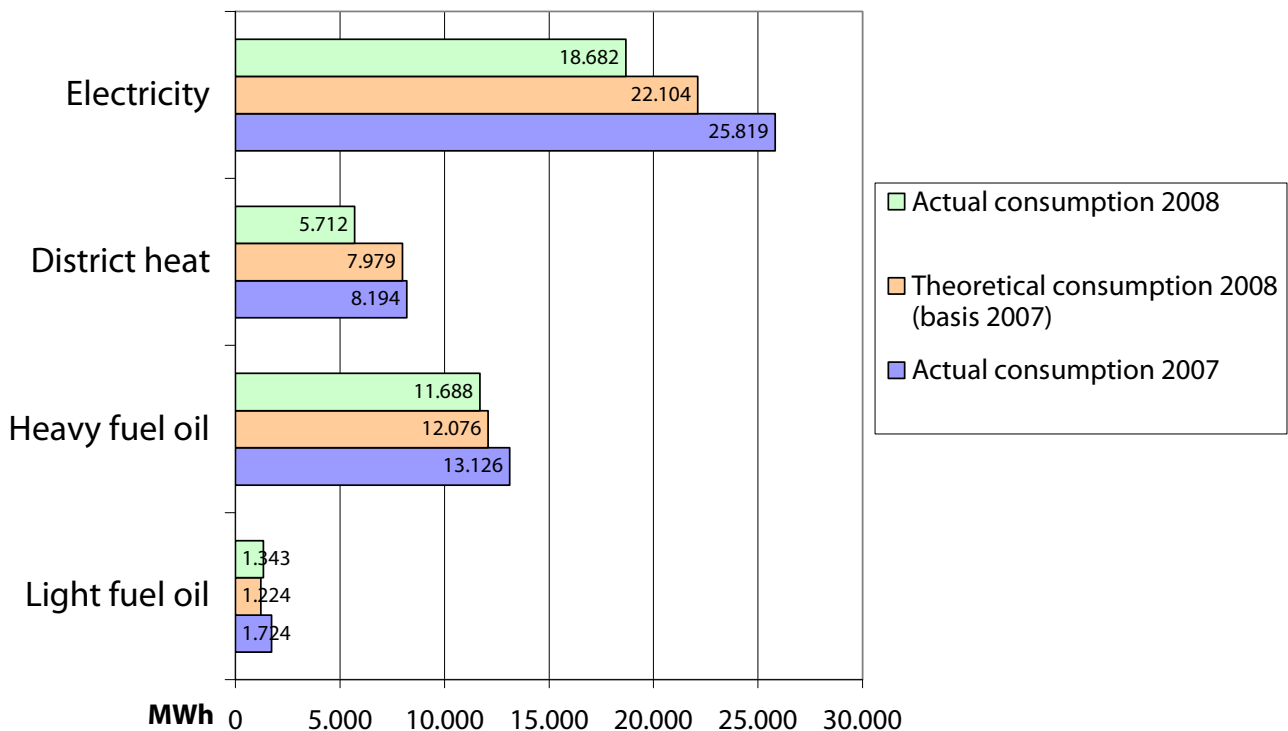
Utilities

Utilities or energy sources at Danfoss are:

- ❖ **Electricity** – usage in all areas of the site from production to laboratories and administration areas, from generation of compressed air and operation of welding devices or drying ovens to the lighting.
- ❖ **District heat** – usage for the heating of production halls and offices as well as for the heating of water in sanitary areas.
- ❖ **Heavy fuel oil** – combustion in a boilerhouse to generate process heat which is distributed in a second network in all production halls – in parallel to the district heating network. The process heat is used for operating surface treatment plants (e.g. washing, painting, phosphating).
- ❖ **Light fuel oil** – usage in the drying ovens at the painting plants.
- ❖ **Propane** – usage of smaller amounts as technical gas at the brazing ovens („oxygen barrier“).

The usage of all energy sources was analyzed in detail within the scope of the comprehensive energy saving program (EnSave™). A lot of meters are installed. They are read on a daily or weekly basis and the values are evaluated. Following these analyses we are now able to ascertain more precisely which amount of energy is necessary per produced compressor and how big is the baseload. This baseload is independent from the production utilization. To save energy it is therefore necessary to reduce the energy consumption per production unit as well as the baseload.

In the following we give you an overview comparing the actual consumption of 2007 with the theoretical consumption of 2008 (without EnSave™) and the actual consumption of 2008. The decrease in electricity consumption is around 15%, with district heat even appr. 28%. In total we managed to save around 13% of energy in all utilities.



Development of significant environmental data – part 2

Water

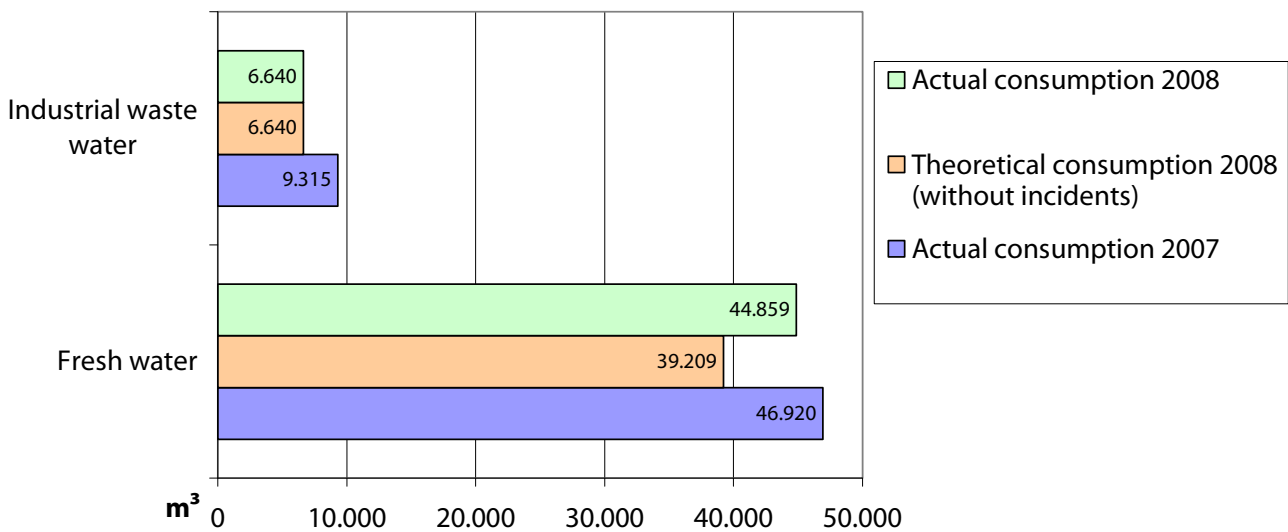
The usage of **fresh water** at Danfoss can be split in three segments:

- ❖ **Surface treatment** – usage of water in washing, painting and phosphating processes as well as usage in cooling lubricant emulsions.

Only this water drains off as **Industrial waste water** to the factory-owned waste water treatment plant. Here it is cleaned extensively before it is discharged to the municipal sewage works together with the other waste water from the whole site (indirect discharger).

- ❖ **Cooling water** – water is being cooled down in cooling towers with internal water circulation in order to provide some production facilities with cooling water.
- ❖ **Sanitary facilities** – water is being used for sanitary needs (washing hands, showering etc.) and as drinking water.

Within the framework of the energy saving program (EnSave™) we have analysed the water consumption, too. We have to notice that the water consumption 2008 is only 4% less than 2007. The decrease should have theoretically summed up to around 16%. An unnecessary consumption of cooling water at the brazing ovens has been detected lately in the context of an analysis of the propane consumption. This additional consumption 2008 summed up to > 4.000 m³ after all. Besides this we had to refill the factory-owned fire water pond after a fire drill (1.000 m³). Another additional consumption of appr. 400 m³ derived from a failure at one of our cooling towers.

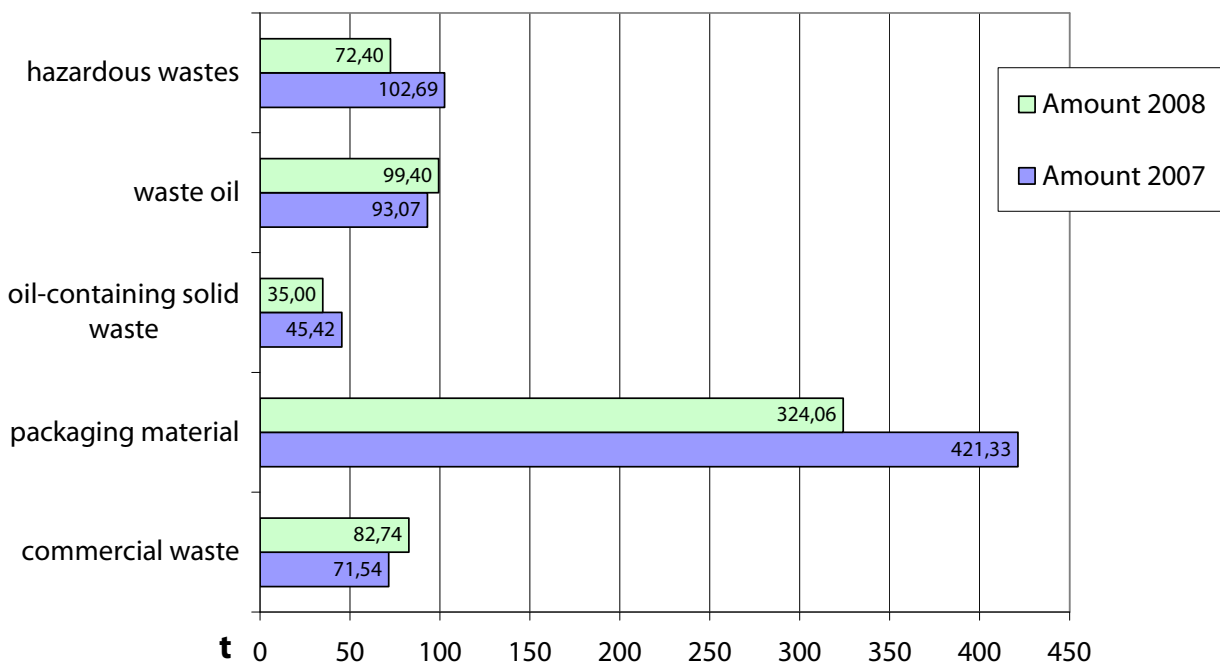


Development of significant environmental data – part 3

Wastes

Wastes are generated in different areas at Danfoss, whereas the main part lies in operations. In total there are around 40 – 50 different types of waste at Danfoss. The respective amounts can vary from several kilograms up to a lot of tons per year. In the following some examples are elaborated:

- ❖ **Commercial waste** – This waste mix accrues all over the plant. It is collected separately, both in production area and offices. The amount is normally related to the number of employees. In 2008 there was an extraordinary high amount of commercial waste despite a declining number of employees. The reasons were a lot of internal office moves where a lot of additional commercial waste derived.
- ❖ **Packaging material** – Among the packaging materials at Danfoss there are cardboard, wood, plastic foils and styrofoam. Wooden packaging has the highest weight proportion since many years. This is founded in the fact that many raw materials are procured globally. Unfortunately there are only few options to use returnable container.
- ❖ **Oil containing, solid wastes** – These wastes derive mainly from operations. The amounts are declining since a couple of years. This is not only founded in the usage of reusable cleaning cloths for more than 10 years but also in a significantly higher environmental awareness.
- ❖ **Waste oil** – This waste type is a little bit our 'sore spot'. Although we have run a lot of activities to avoid and reduce this waste oil there are still high amounts. The amount of just under 100 t in 2008 has to be qualified. Having finalized the relocation of some areas of production to Slovakia end of 2007 we could not use certain amounts of compressor oils which still were in our storage tanks. This oil amount of around 35 t was disposed. Therefore the amount of waste oil was actually 'only' 65 t, which still is more than one ton per week. Further efforts are required.
- ❖ **Hazardous wastes** – This category combines all hazardous wastes not mentioned above. This can be oil water sludges, leftovers from cleaning agents or solvents, packaging material with hazardous leftovers or electronic waste. The amount is normally not related to the production volume but more dependent on special activities. During the years the tendency is falling.



6. Environmental aspects –direct and indirect – and their impacts

This section lists all relevant environmental aspects we have determined. These aspects are classified in direct and indirect. Direct environmental aspects - such as e.g. consumption of fresh water – can be influenced directly by internal decisions. However, indirect aspects - such as e.g. selection of means of transport of our suppliers – can be influenced but only in some degree. Nevertheless, the transition can be smooth so that at this point we will not draw a sharp distinction between direct and indirect aspects. But much more crucial is the significance of these environmental aspects and how they have been determined.


All environmental aspects have been determined on the basis of the following criteria:



1. relevant requirements imposed by environmental legislation (cp. section 4 Compliance)
2. importance of concerns expressed by customers, employees or the public
3. potential of environmental hazard taking into account local and global impacts
4. scale and frequency of an environmental aspect and its impact, even in emergency situations
5. negative changes of environmental indices (see environmental data)



The evaluation is performed on the basis of data and information presented. The evaluation is carried out in three stages - from “very significant” to “not significant” according to our internally established method.


The significant environmental aspects often require an appropriate action providing new environmental objectives and targets. In following, aspects being highly relevant for our program are written *italic*. Some of them you might find reflected in our environmental objectives and targets.


Activity	Environmental aspect / impact
In general	
Use of the factory premises since 1956 in different extension stages	<ul style="list-style-type: none"> • There is no known environmental burden • At present, sealed area covers approx. 6.5 hectares • Very low noise pollution affecting local residents • Very low impact on neighbourhood caused by transport due to direct connection to the ring road.
Our most employees have a distance to travel to work of between one and fifty kilometres. 80% of them go by car, 11% cycle or go on foot, and 7% take public means of transport.	Impacts caused by traffic: <ul style="list-style-type: none"> • Air pollution through exhaust gases • Consumption of mineral oil resources • Noise pollution
Business trips of our employees by aircraft, car (or train); less due to the use of telephone and video conferences	<ul style="list-style-type: none"> • CO₂-emissions and other exhaust gases • Consumption of mineral oil resources • Noise pollution
Installation of our compressors at the customer premises, e.g. in cooling appliances and sale to end users	<ul style="list-style-type: none"> • <i>Energy consumption for compressors in the device at customers; global warming</i> • Waste generation from disposal of used compressors (diff. metals, traces of heavy metals such as lead; plastics, waste oil)
Emergency situations, environmental accidents	Considerable environmental impacts are likely to appear caused by: <ul style="list-style-type: none"> • <i>Discharge of substances hazardous for water</i> • <i>Fire and water for fire fighting</i> • Force majeure

Activity	Environmental aspect / impact
Material procurement	
Purchasing of raw or finished production materials made of cast iron, steel, copper, aluminium or plastic as well as purchasing of refrigerant oils	<ul style="list-style-type: none"> • Energy consumption during production of these materials; global warming • Consumption of not renewable raw materials • Waste generation from packaging materials
Purchasing of auxiliary and operating materials from tools, spare parts, electrical and mechanical components through office equipment, work clothes etc. to chemicals, cleaners and oils	<ul style="list-style-type: none"> • Energy consumption during production of these materials; global warming • Consumption of not renewable raw materials • Waste generation from packaging materials
Transportation of all materials to the Danfoss premises primarily via road	<ul style="list-style-type: none"> • Air pollution through exhaust gases • Consumption of mineral oil resources • Noise pollution
Storage of all materials for current consumption at the factory premises	<ul style="list-style-type: none"> • Storage of diverse oils, cleaners, acids and bases, paints etc. mostly with a low to middle water hazard potential
Administration	
<p>Administration and planning in all departments incl. technical development and engineering (office activities using paper, office equipment and energy)</p> 	<ul style="list-style-type: none"> • Energy consumption; global warming • Waste generation incl. hazardous waste (toners, ink cartridges, adhesives etc.)
Laboratories and technical development	
Diverse tests of sample compressor and compressors from current production lines using refrigerants such as R134a, R404a or R600a and refrigerant oils	<ul style="list-style-type: none"> • Small hazard to ozone layer due to little amounts of R134a and R404a • Generation of hazardous waste such as waste oil
Purity examinations of oils, lubricant controls as well as residue measurements performed on compressor components in laboratories using small amounts of chemicals and solvent agents such as ethyl alcohol, methanol, benzine	<ul style="list-style-type: none"> • Very small amounts of solvent fumes being released into the atmosphere through fume exhaust systems • Hazardous waste generation
Sample workshop for compressors and starters using refrigerant oils, adhesives, ethyl alcohol and paint spray	<ul style="list-style-type: none"> • Small amounts of solvent and soldering fumes being released into the atmosphere through fume exhaust systems • Hazardous waste generation

Activity	Environmental aspect / impact
Manufacturing of compressors	
<p>Pre-production of compressor components: Manufacture of raw material from cast iron and sinter iron by processes such as drilling, milling, grinding, honing etc. using machining oils and cooling lubricant emulsions</p> 	<ul style="list-style-type: none"> • Partial impact on the indoor air through cooling lubricant and oil mist • <i>Noise pollution on machines and in respective hall areas</i> • Occasionally there are oil leakages from the machines which are normally collected • Wastewater from cooling lubricant emulsions • Generation of oil-containing waste, swarf and cuttings • Storage of machining oils and cooling lubricant concentrates in tanks and containers at the factory premises (middle water hazard potential) • Consumption of mineral oil resources
<p>Washing of oily compressor components often using neutral cleaners; washing in washers with integrated selective cleaning with oil separator</p>	<ul style="list-style-type: none"> • Generation of oil-containing wastewater • Waste oil generation • Oil fumes being released into atmosphere through fume exhaust systems
<p>Coating of some compressor parts with anti-corrosion coating or with a manganese phosphate layer</p>	<ul style="list-style-type: none"> • Wastewater generation containing tensides, phosphates, amines and heavy metals such as nickel • Generation of hazardous waste such as manganese sludge
<p>Production of compressor housings made from strip steel in large presses (deep drawing) using drawing oils</p> 	<ul style="list-style-type: none"> • <i>High noise pollution at the presses and in the entire punching shop</i> • <i>Waste oil generation</i> • Impact on indoor air by oil fume • Intermittent oil leakages from the machines which are generally collected
<p>Washing of oily housings with hot washing suds in a washer with oil separator connected</p>	<ul style="list-style-type: none"> • Generation of oil-containing wastewater • Waste oil generation • Small amounts of oil fumes being released into atmosphere through fume exhaust systems
<p>Punching of diverse parts such as e.g. base plates</p>	<ul style="list-style-type: none"> • Noise pollution at small presses • Waste oil generation
<p>Flash removal and polishing of punching parts by vibratory grinding using cleaners and grindstones</p>	<ul style="list-style-type: none"> • <i>Noise pollution at drums</i> • Generation of oil-containing wastewater with tensides

Activity	Environmental aspect / impact
Manufacturing of motors on a small scale (prototypes and small batches): Packaging and welding of stator lamination packages	<ul style="list-style-type: none"> Noise pollution on the packaging machines Welding gases being released into the atmosphere through fume exhaust systems
Winding, shaping, bandaging and/or bonding of copper wire	<ul style="list-style-type: none"> Noise pollution on the winding machines Fumes of lubricants generated during bonding process
Diverse manual activities performed on motors	<ul style="list-style-type: none"> Contact with lubricants which may cause skin irritations, allergic reactions or airway irritations
Compressor assembling: Diverse welding processes performed on housings and attachment parts such as base plates and connectors 	<ul style="list-style-type: none"> Noise pollution on welding machines Energy consumption; global warming Welding gases being released into the atmosphere through fume exhaust systems
Assembling of compressor components such as blocks, motors, crankshafts, pistons, rotors, valve systems etc. using ester oil and flux materials for soldering 	<ul style="list-style-type: none"> Intermittent leakages of hydraulic oil from machines which are normally collected Leakages and oil fumes of ester oil Soldering gases being released into the atmosphere through fume exhaust systems
Drying of finished assembled housings in a drying furnace at a temperature of 160°C using electric heating	<ul style="list-style-type: none"> Slightly oil-containing, warm exhaust air being released into the atmosphere filtered or unfiltered through fume exhaust systems Energy consumption (reduced by heat recovery); global warming
Electrolytic immersion painting (water-based paint) of compressors incl. pre-treatment using water-based cleaners	<ul style="list-style-type: none"> Small amounts of solvent fumes from water-based paint, being released into the atmosphere through fume exhaust systems (2008: approx. 1.4 tonnes of solvents) Generation of wastewater containing tensides, phosphates and amines
Enamelling of paint onto the compressors in the drying furnaces at a temperature of 140°C using fuel oil burners	<ul style="list-style-type: none"> Storage of light fuel oil of up to 10 m³ in one tank at the factory premises (middle water hazard potential) Consumption of mineral oil resources
Filling the compressors with refrigerant oil in final assembly stage	<ul style="list-style-type: none"> Storage of refrigerant oil of up to 210 m³ in 10 tanks at the factory premises (low water hazard potential)

Activity	Environmental aspect / impact
Packaging and shipment	
Packaging and palletising of finished compressors onto special wooden pallets and wrapping with plastic tape 	<ul style="list-style-type: none"> • ± no environmental impact since the pallets are reusable (return to customer)
Packaging of finished compressors for special shipment or shipment of prototypes in special polystyrene packaging	<ul style="list-style-type: none"> • Waste generation at customer premises
Storage or delivery of some semi-finished and finished parts in/from the external warehouse "Stock 2000"; internal transportation with electric forklift, transportation to main work by lorry several times a day	<ul style="list-style-type: none"> • Air pollution through exhaust gases • Consumption of mineral oil resources • Low noise pollution levels (since there is a direct connection to the ring road)
Shipment of compressors to the customer from "Stock 2000" or from the main work by lorry, or later by train or ship	<ul style="list-style-type: none"> • Air pollution through exhaust gases • Consumption of mineral oil resources • Low noise pollution levels (since there is a direct connection to the ring road)
Manufacturing of condensing units and electrical equipment	
Assembling of condensing units with a refrigeration system and compressors using flux materials, silver and copper solder as well as adhesives	<ul style="list-style-type: none"> • Soldering fumes being released into the atmosphere through fume exhaust systems
Assembling of electrical compressor components; labelling of components; partly using solvent-containing printing ink in a encapsulated system or using a laser	<ul style="list-style-type: none"> • Small amounts of solvent-containing waste
Maintenance and servicing	
Maintenance and servicing in all production areas using lubricants, cleaners and similar auxiliary and operating materials	<ul style="list-style-type: none"> • Generation of hazardous waste • Incidental noise pollution • Incidental welding smoke or other fumes
Employment of different outsourcing companies and contractors operation at the factory premises performing repair, assembling and maintenance activities or other services	In the case, the specifications of Danfoss are not met, environmental impacts may appear due to: <ul style="list-style-type: none"> • Leakage of substances hazardous to water • Illegal waste disposal • Application of not approved substances

Activity	Environmental aspect / impact
Supply	
Obtaining electrical energy from Stadtwerke Flensburg (local utility company)	<ul style="list-style-type: none"> • Air pollution through carbon dioxide emissions with an intensity of 0.48 tonnes CO₂ / MWh (these are approx. 9,000 tonnes CO₂ from an energy consumption of 18,680 MWh in 2008)
Obtaining fresh water from Stadtwerke Flensburg for production, cooling, process water and sanitary facilities	<ul style="list-style-type: none"> • Consumption of clean drinking water used for production • Partially, a high consumption of fresh water on some facilities (grinding of valves, demineralisation systems)
Generation of process heat (hot water of 160°C) by combusting heavy fuel oil in a firing plant which heats all washing and painting facilities	<ul style="list-style-type: none"> • Air pollution through emissions such as carbon dioxide, sulphur dioxide and nitrogen oxides • Acid rain, soil acidification • Global warming • Storage of heavy fuel oil of up to 50 m³ in 1 tank at the factory premises (low water hazard potential)
Generation of compressed air of 6 and 18 bar by means of compressors in a separate noise-protected room	<ul style="list-style-type: none"> • Energy consumption; global warming • Generation of small amounts of oil-containing wastewater • High noise pollution in the compressor room
Cooling water generation in 3 cooling towers intended for cooling of the machines (one cooling tower out of operation)	<ul style="list-style-type: none"> • Small impact due to discharge of used cooling water; cycle cooling systems allow considerable savings of fresh water
Disposal	
<p>Acceptance and, if necessary, sorting of waste generated within the factory, preparation of waste in containers and in other recipients for collection carried out by disposal companies (generally certified professional waste disposal companies)</p> 	<ul style="list-style-type: none"> • Small impact due to storage of oil-containing and hazardous waste under roof or in closed containers in secured areas • Only approx. 0.5% of waste generated in 2008 has been disposed. By far the most proportion of waste is suitable for recycling. • Additionally there were approx. 550 t oil contaminated soil and concrete from the remediation activities in 2008
Multi-phase treatment of industrial wastewater from washing and painting facilities incl. used cooling lubricant emulsions purified in a wastewater facility	<p>Small impact due to:</p> <ul style="list-style-type: none"> • Additional, biological secondary clarification • Wastewater sludge is recycled externally • Purified wastewater flows to the local wastewater treatment plant, no internal recycling of the treated wastewater

7. Environmental goals and action program

In following we present our environmental program.

How was it determined?

Annually, we evaluate our environmental performance on the basis of following criteria:

- Which results have been reported from internal and external audits?
- Which changes and modifications in legal provisions will have an effect on our site? (section 4.)
- How our environmental data have been developing? (see section 5.)
- Which environmental aspects are especially relevant? (see section 6.)
- Which are the main interests of our employees and the public?
- Which environmental aspects cause high costs?

On the basis of this current environmental situation we recognise the need for action, determine potential environmental goals and decide which environmental objectives are reasonable and economically justifiable. Subsequently, these goals are incorporated in our environmental program.

Starting with a review on the year 2008:

Energy saving:

The EnSave program is planned for two years. The overall target are energy savings of 9,42 mio. kWh (all utilities) until end of 2009 compared to the base year 2007. In contrast to these savings the investments in the Flensburg site will sum up to around 1.5 mio. Euro in the years 2008/2009. This includes for example new compressors for producing compressed air, heat recovery installations and a lot of devices to control and regulate cooling water, heating, air-conditioning, ventilation and lighting according to the needs.

70 per cent of the savings will be realized by technical projects and investments. The other 30 per cent will be gained by highly energy-conscious behaving employees. The activities will be continued until end of 2009 – and pass into daily life from then on.

We are already half a year in advance. At the beginning of 2009 we have reached already around 5.86 mio. kWh or 350,000 Euro, which do not have to be consumed or payed any longer.

Besides this we have started mid of 2008 with concrete plans to turn off the existing boilerhouse until end of 2010. This would stop the combustion of heavy fuel oil. The boilerhouse supplies today all devices for surface treatment with process heat. In order to convert all these processes to the energy source district heating we will have to adapt some of the existing plants and to invest in some new plants. This would not only save a lot of energy (minus 6,000 MWh), but also avoid a lot of environmentally harmful SO₂- and NO_x-emissions to the air.

More informations to the review of 2008:

Noise protection:

A new labelling device with significantly fewer noise emissions (invest of about 30,000 €) has been installed within one assembly line.

The update of our noise register shows further need for action. But due to the difficult economic situation right now these activities cannot be started – at least if investments are necessary.

Reduction of freshwater consumption:

A machine for the grinding of small valves (stamping area) has been equipped with a recycling device for the washing water (invest of around 30,000 €). It has been brought into service end of 2008. This will lead to further water savings.

In the framework of the energy saving program we were able to identify and stop an unnecessary water consumption which was used for the cooling of brazing ovens – saving potential: ~ 4,000 m³.

In the following you will find our Environmental program:

Environmental targets for the timeline 2009 - 2010:

status:	project in planning phase	project in installation phase	project finished		
title	cause	• description / ⇒ target	timeframe	invest	status
Noise Protection	• There are still areas with high noise exposure (partly > 85 dBA)	• Casing of hydraulic units, machines and conveyors ⇒ Reduction of noise level by 3 dB(A) at minimum 5 measuring points	until end of 2010	?	• 2009 there is no investment capital available for this
Energy saving project (EnSave™)	• Increase of energy costs • High baseload • Lack of transparency in the area-related consumption and costs • CO ₂ – emissions to the air	• Roll out of the EnSave program (invest, monitoring, training and workshops) with Danfoss Solutions ⇒ Target acc. Verification & Planning Report (V&P) from Danfoss Solutions: minus 15 (- 20) % energy consumption (total) until end of 2009	until end of 2009	1,468,000 €	• Installation finished • Training programs • Assigned EnSave Team • Monitoring
Energy optimisation for compressors	• Customer requirements (energy classification of refrigerators) • Result of our LCA	• Ongoing projects in R&D ⇒ Reduction of the relative energy consumption on highly optimised compressors by minimum 2%	ongoing	?	• Ongoing projects in R&D
Future process heat generation	• Combustion of heavy fuel oil with emissions to the air of CO ₂ , SO ₂ and NO _x • Legal requirements will be more strict (TA Luft)	• Conception for heat supply with Stadtwerke Flensburg • Renovation of district heating network on the site premises 2009 (?) • Modernisation of surface treatment plants • Closedown of boilerhouse 2010 ⇒ Reduction and respectively avoidance of CO ₂ -, SO ₂ -, NO _x -emissions	until end of 2010	550,000 € invest Danfoss incl. investment grant from Stadtwerke Flensburg	• Conception and Investment need is determined • Clarification of availability of investment capital • Clarification of related contracts with Stadtwerke Flensburg
Reduction of freshwater consumption	• Partly high consumption at some devices	• Replacement of 3 devices for the generation of demineralized water by 1 central reverse osmosis device ⇒ Reduction freshwater amount by 5% (base 2008) until end 2010	until end of 2010	50,000 €	• 2009 there is no investment capital available for this

8. Environmental verifiers and validation certificate

The signing environmental verifier has examined and validated the environmental policies, environmental programme, environmental management system, environmental audit, environmental plant audit and the environmental statement for 2009 of

Danfoss Compressors GmbH at site Flensburg

in accordance with Regulation (EC) No 761/2001 (EMAS II) and Article 3 Paragraph 2 D and Appendix III of Regulation (EC) No 761/2001.

Additionally it is certified acc. to regulation about renewable energies (§ 41 EEG = Erneuerbare-Energien-Gesetz), that the collected data and facts on energy consumption and saving potentials as well as their evaluation have been checked. There have been no deviations assessed acc. to the requirements.



Volker Schmidt-Dahl
Environmental Verifier
DE-V-0128
Uhlenbusch 1
21435 Stelle

Stelle, 14 April 2009

The next Environmental Statement will be drawn up in March 2010 and examined by an independent environmental verifier. If all requirements are met, the Environmental Statement will be validated and subsequently published.

Volker Zacchi
Environmental Representative
Danfoss Compressors GmbH



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