



Environmental Report 2011
Environment and Health & Safety

General information

Name and address

Aalborg Portland A/S
Nordic Cement
Rørdalsvej 44
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9100 Aalborg
Denmark
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E-mail: cement@aalborgportland.com
Internet: www.aalborgportland.dk

Environmental supervisory authority

Danish Ministry of the Environment,
Environmental Protection Agency Aarhus

Industrial sector

Raw materials processing

Main activity

Production of cement for domestic and export markets

List item

B 101. Cement plants (i) (s)

Company reg. no.

14 24 44 41

Production unit no.

1.002.952.999

NACE code

23.51 – Production of cement.

Land register title nos.

1a, 1k, 1l, 1m, 1n, 1p, 1o Rørdal, 9a, Ø. Sundby and 9a, 10g, 11a, 16i, 17l, 21h, Uttrup under Aalborg Jorde

Significant secondary activities

K212. Facilities for storing, transshipment, repackaging or sorting of non-hazardous waste prior to use or disposal.

Ownership

Aalborg Portland A/S is 75%-owned by Cementir España S.L., Madrid, Spain and 25%-owned by Globo Cem S.L., Spain. The ultimate owner is Caltagirone S.p.A., Italy.

Management

The Environment & Energy Group:
Kjeld Pedersen, Managing Director
Jesper Høstgaard-Jensen, Director – Production
Preben Andreasen, Environment & Energy Manager
Charlotte Birkholm Kristensen, Health & Safety Manager

Principal environmental approvals

19 November 2010

Use of tyre chips as fuel in Kiln 87.

7 April 2010

Use of meat and bone meal as fuel in Kiln 76.

18 December 2009

General environmental approval and review – comprising environmental approval of expansion of activities at recycling site and review of the company's older environmental approvals.

6 December 2006

Approval of transitional plan for on-site landfill.

6 December 2006

Approval of closure plan for tip.

5 November 2004

Permission to quarry chalk.

28 July 1992

Establishment of landfill site.

29 November 1991

Final permission for water extraction.

29 June 1990

Permission under the Danish Environmental Protection Act to send waste water to the municipal treatment plant.

Aalborg Portland is not covered by the Danish Ministry of Environment's regulations for the safe storage, handling and transport of materials that can cause serious environmental hazard in the event of accident.

ISO 14001 and EMAS

Aalborg Portland has been certified according to ISO 14001 since 3 July 1998 and EMAS-registered since 2 March 2000.

Audit report and EMAS registration

KPMG has expressed an opinion with a reasonable level of assurance on the Environmental Report 2011 presented by the Management of Aalborg Portland. The report has been verified by Bureau Veritas according to the EMAS declaration, cf. page 32.

Brief qualitative description

The Environmental Report 2011 covers the parent company Aalborg Portland A/S situated at Rørdalsvej 44, 9220 Aalborg Øst, Denmark.

Aalborg Portland is one of Denmark's leading industrial companies. The factory covers a total area of 320 ha, including the chalk pit of 200 ha. In addition to cement production facilities there are two on-site landfills, one of which is now full up and closed, and a recycling site.

The following principal cements are produced:

BASIS® cement, **RAPID**® cement, **AALBORG WHITE**® cement, **ELEMENT** cement and **LOW ALKALI SULPHATE RESISTANT** cement.

Additionally, other types of cement are produced for export.

Output in 2011 totalled 1.8 million tonnes, around 39% of which was exported. In the course of production, flue gases, waste products, waste water, surface water and cooling water were released which impact the environment. For more details, see report sections "Principal environmental impacts" and "Material flows".

The Environmental Report 2011 covers the period

1 January - 31 December 2011.

The next Environmental Report will be issued no later than April 2013.



Contents

00	General information
02	Environment, energy and health & safety in 2011
04	Environmental vision, environment and energy policy
05	Investments in climate and environmental improvements
06	Financial highlights and social contribution
07	Resource efficiency
08	The resource-efficient partnership
10	Water as a resource: efficient solutions
11	Climate and energy – targets, activities and results
12	Environmental Action Plan
14	Cement production and products
16	Environment and energy and health & safety management
18	Principal environmental loads
23	Measurement and calculation of material flows
24	Material flows and key performance indicators 2011
26	Environmental database
27	Health & Safety report
32	Independent auditors' report
32	EMAS registration
33	Terminology

ENVIRONMENTAL REPORT 2011 – TARGET GROUP

Aalborg Portland's Environmental Report 2011 is intended to provide stakeholders with a straightforward insight into the company's principal environmental impacts and health & safety activities and into the initiatives being taken to implement ongoing improvements. The report also outlines the way in which the company's environmental management system is used and the direction in which it is moving. The Environmental Report 2011 conforms to the statutory regulations.

Our stakeholders are:

Customers, employees, suppliers, present and future investors, financial institutions, insurance companies, public authorities, neighbours, political groups and non-governmental organisations.

Environment, energy and health & safety in 2011

The Environmental Report 2011 is the Management's report on the company's principal activities relating to Danish cement production and on the company's continuing work in the areas of environment, energy and health & safety.

As part of its ongoing endeavours to be a resource-efficient enterprise, Aalborg Portland has successfully tendered to win back the contract to receive dried sewage sludge from the City of Aalborg as from January 2012. This supports the wishes of the Danish Government to use waste streams as resources and to foster partnerships between business and the community.

Through its other use of alternative fuels and raw materials and its symbiosis with the City of Aalborg and a local power station, Aalborg Portland is also a contributor to a resource-efficient society. Surplus heat from Aalborg Portland is used to supply district heating to 24,500 Aalborg households, and chalk slurry from Aalborg Portland is supplied to the Nordjyllandsværket power station in exchange for 23,000 tonnes of flue gas desulphurisation gypsum. In addition to this gypsum Aalborg Portland also recycles 30,000 tonnes of gypsum from its own desulphurising facility, thus conserving available global stocks of natural raw materials and fuels.

In 2011, due to the continued economic slowdown, Aalborg Portland's cement production was again below factory capacity. Although production was slightly up on 2010 the relative emissions of CO₂, NO_x and SO₂ decreased. This was due to Aalborg Portland's continued focus on cutting and restructuring its energy consumption and introducing alternative raw materials, measures which are driving down emissions per tonne of cement. Through strategies and action plans, significant focus will continue to be given to implementing these activities in order to maintain and improve the company's environmental performance.

Total NO_x emission from the Aalborg Portland factory was reduced by 77% from 8,349 tonnes in 2005 to 1,945 tonnes in 2011. This reduction is due to several factors, including heavy investment in scrubbing equipment over recent years to achieve compliance with European BAT regulations.

Continued strong focus will also be given to reducing energy consumption through more efficient use of electricity and fuel. This will contribute to achieving the Danish Government's targeted energy saving via the agreement between the Danish Climate and Energy Minister and the grid and distribution utilities.

In keeping with the Danish Government's desire to see the adoption of more sustainable energy forms, Aalborg Portland is seeking to be a part of the coming municipal plan for wind turbines as the company's land ownership includes areas that would be well suited to this purpose.

It is imperative that Danish production companies, including Aalborg Portland, should operate within a known, long-term and competitive framework that is commensurate with that of its competitors in other countries. This will provide a clear incentive for keeping energy-intensive companies in Denmark and ensure that related R&D can be retained here.

A clear example of the opposite is the adoption of the Danish Government's finance bill in autumn 2011 with, among other things, a raising of the tax on NO_x emission. This will mean a minimum ten-fold increase in the tax burden and will hit Aalborg Portland and Danish production industry hard without resulting in environmental benefits. Distortion of competition leads to loss of orders and jobs, less investment and increased cement imports.

In 2011 focus was again given by Aalborg Portland to accident prevention and the implementation of the company's new Health & Safety Organisation will further spotlight this area and lead to a general intensification of preventive measures.

Kjeld Pedersen

Managing Director, Nordic Cement
April 2012

Surplus heat from Aalborg Portland is supplied in the form of district heating to 24,500 households, contributing to a resource-efficient society



Aalborg Portland nominated for prestigious environmental award



Aalborg Portland's Environmental Report 2010 was nominated by The Danish Environmental Protection Agency to take part in EU EMAS AWARDS 2011. The 2010 report, which is also Aalborg Portland's EMAS report for Nordic Cement, was chosen by the Agency from among the environmental reports of leading Danish companies. The award ceremony was held in Krakow, Poland on 17 November 2011.

EMAS (Eco-Management and Audit Scheme) is the European environmental management system and was introduced by the European Commission in 1993. Companies can apply for EMAS certification and Aalborg Portland has been registered under the scheme since March 2000.

Kjeld Petersen, Managing Director, Nordic Cement: "The EMAS Award is presented by the European Commission and is the most prestigious award in the area of environmental management. We are therefore most proud to have been chosen from among Denmark's leading enterprises to compete for the award. We see the nomination as a pat on the back for the targeted and committed environmental efforts of Aalborg Portland over many years, and as recognition for the dedication shown by our employees on a daily basis." The companies selected for this year's awards were characterised by strong environmental involvement at employee level and by dialogue with suppliers and the local community.

Aalborg Portland was nominated in one of six categories – 'Large Organisations' – and was in competition with nine major European rivals. The winner was the Greek bank, EFG Eurobank Ergasias S.A.



As nominated, Aalborg Portland, represented by Environmental Engineer Torben Ahlmann-Laursen and Environment & Energy Manager Preben Andreassen, received the sculpture shown

Environmental vision, environment and energy policy



ENVIRONMENTAL VISION

Aalborg Portland must be a responsible company promoting sustainable development

The policy set out below applies to the cement plant in Aalborg and to Danish storage terminals.

The company's policy is to:

- Respect statutory legislation and relevant official requirements.
- Inform the authorities if a limit is exceeded and prepare remedial action plans.
- Promote sustainable development and cleaner technology within the scope of economic feasibility.
- Set pro-active goals for future work and review the goals once a year at the Management's seminar established for that purpose.
- Assist customers in achieving their environmental goals by implementing and helping to develop sustainable cement and concrete products which improve the life cycle of concrete.
- Protect the environment, including reducing emissions and consumption of energy and raw materials per tonne of cement, by energy efficiencies, energy management and other means.
- Inform suppliers and subcontractors of relevant procedures and requirements.
- Adopt an active and open approach towards communication, knowledge and dialogue with customers, employees, authorities, neighbours, organisations and other relevant parties.
- Train and motivate the company's employees in order to ensure that the requirements of policies, goals and action plans are met.
- Oppose introduction of further anti-competitive green taxes and work for reduction in existing taxes.

Sustainable development

Aalborg Portland's commitment to sustainable development is based on the following principles:

- Environment, including reduction of environmental footprint, shall be an integral part of the development in company activities.
- Environmental activities shall involve all employees and dialogue with the community.
- Production and financial growth shall take place without relative increase in consumption of energy, chemicals and other resources and without relative increase in emissions and wastes for the individual products.
- Environmental indicators shall reflect sustainable development.
- Resource-efficiency shall be promoted by substitution of non-renewable resources, introduction of new technologies and other means.
- Invoking global perspective – by CO₂ emissions trading, Joint Implementation, the Clean Development Mechanism and other means.

To realise these objectives we will:

- Maintain and develop a process management system covering environment, energy and CO₂. The system is certified according to ISO 14001, DS/EN 16001 and the Danish Energy Agency's supplementary requirements hereto and is registered under the EMAS scheme.
- Publicise our policy, goals, action plans and results in the form of an annual Environmental Report.
- Formulate and utilise indicators as guidance mechanisms to achieve established goals.
- Assess Aalborg Portland's products, facilities and significant modification projects in relation to this policy.
- Be an active collaboration partner in Danish environmental and energy policy by utilising alternative raw materials and fuels.



Investments in climate and environmental improvements

Aalborg Portland has continuously made significant investments in climate and environmental improvements and in health & safety. In the period 2007-2011 a total of EUR 19.6m has been invested in a wide range of projects.

In 2011, Aalborg Portland invested a total of EUR 3.1m in climate and environmental improvements, including energy-saving projects, accident prevention and health & safety initiatives.

Investment projects in 2011 included:

- Internal transport – optimised operating and route plans
- Increase in alternative fuel for Kiln 87
- Expert Control System for optimised energy management of Kiln 87
- New emission measuring equipment for Kilns 73 and 79
- Reduced heat consumption in storage facility
- Conveyor belt modernisation in chalk pit
- Central fire alarm system for electrical equipment rooms, and replacement of RCCBs
- New well to limit nitrate in drinking water

A total of EUR 3.2m was also invested in maintenance of product plant. Preventive maintenance in the form of filter replacement can for example reduce dust emission, and energy consumption can be improved by limiting intake of false air during kiln operation. Considerable focus is also given to operational reliability; for example, replacing kiln lining bricks as and when necessary can help meet production targets.

These activities result in stable and optimal operation of production installations and cleaning arrangements, thereby minimising environmental impacts.

Green taxes

Green taxes amounted to EUR 5.7m, principally relating to waste, electricity, PSO, raw materials, NO_x and SO₂.

Environment

As well as funding environmental improvements, operating costs, green taxes and running costs for the Health & Safety Organisation, Aalborg Portland also defrays operating costs relating to the Environment & Energy and Health & Safety units. These operating costs totalled EUR 0.6m in 2011.



Financial highlights and social contribution

Parent company Aalborg Portland A/S

Financial highlights

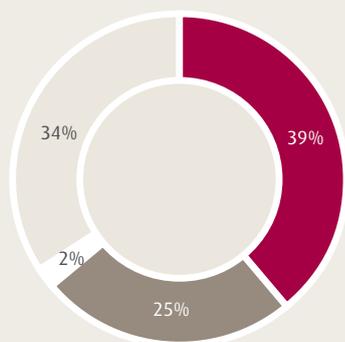
EURm	2010	2011
INCOME STATEMENT		
Net sales	151	180
Variable costs	50	56
Gross profit	100	124
Other production costs	56	56
Sales costs	5	5
Distribution costs	22	25
Administrative expenses	16	15
Other operating income	1	1
Earnings before interest and tax (EBIT)	3	24
BALANCE SHEET		
Intangible assets	9	9
Property, plant and equipment	148	138
Financial assets	148	148
Total non-current assets	305	295
Total current assets	102	97
Total assets	406	392
Equity	308	309
Non-current liabilities	29	28
Current liabilities	69	55
Total liabilities	406	392
FINANCIAL RATIOS		
Return on equity	1.6%	8.2%
Equity ratio	76%	76%
Number of employees at 31 December	363	323

The Environmental Report 2011 covers the parent company Aalborg Portland A/S situated at Rordalsvej 44, 9220 Aalborg Øst, Denmark.

As regards accounting policies, reference is made to Aalborg Portland's Annual Report 2011.

Social contribution

EURm	2010	2011
Value added and Aalborg Portland's social contribution, by stakeholders		
Net sales	151	180
Spent on materials, services, depreciation etc.	106	105
Total value added for distribution	45	75
Distribution		
Society	20	29
Employees	19	19
Sources of funds	6	27
Distribution, total	45	75
Society		
VAT	3	6
Corporate tax	1	6
Employee tax	9	10
Green taxes	6	6
Other taxes	1	1
Society, total	20	29
Employees		
Wages, salaries, pensions after tax	19	19
Employees, total	19	19
Sources of funds		
Interest on loan capital	1	1
Provisions	5	0
Dividend to the owner	0	26
Sources of funds, total	6	27



EUR 29m

of the social contribution went to the public sector in 2011, corresponding to an increase of 45%

Social contribution

- Society
- Employees
- Interest on loan capital
- Dividend to the owner

Resource efficiency

– cement production is Cleantech



Aalborg Portland converts wastes and waste products to cement and district heating. The company actively promotes sustainable development by basing significant parts of cement manufacture on recycling flows of materials from society and industry in a resource-efficient partnership.

Waste materials and homogenous by-products from other industries are recycled and used as fuel and raw materials in cement manufacture. In addition, heat is recovered from the factory's flue gases and supplied to the City of Aalborg's district heating network. The total environmental impact is thereby significantly reduced.

Aalborg Portland started using fly ash, a waste product from power stations, 30 years ago. Since then many more materials have been included in Aalborg Portland's "clean technology" cement production.

By recycling these wastes as fuels and alternative raw materials in the manufacture of cement, the wastes and by-products concerned are fully utilised. All the constituents are consumed and no new wastes are generated. High temperatures and specialised flow conditions mean that cement kilns are well suited to the use of alternative fuels and raw materials. At the same time, filters and scrubbers inside the kiln system ensure efficient cleaning of flue gases, avoiding additional pollution.

In 2011, the Aalborg cement plant used 455,000 tonnes of alternative fuels and raw materials to manufacture 1.8 million tonnes of cement. This amount replaced an equivalent volume of raw materials and fossil fuels that would otherwise have had to be excavated in Denmark or imported. Aalborg Portland has sufficient capacity to utilise 700,000 tonnes of alternative fuels and raw materials annually.

The resource efficient cooperation

Read more about the resource-efficient partnership in the following pages



Society and industries

- Power stations
- Navigation channels
- Sulphuric acid – factory
- Recycled paper – factory
- Recycled aluminium – factory
- Biomass-fired plants
- Collection schemes
- Daka Bio-Industries
- Sewage treatment plant



Waste product

- Fly ash and desulphurisation gypsum
- Sand
- Iron oxide
- Paper sludge
- Aluminium-contain. by-products
- Dross
- Industry waste
- Meat and bone meal
- Dried sewage sludge



Cement production

- Consumption of alternative fuels and raw materials



Cement and district heating with climate and environmental improvements

- Recycling of alternative fuels and raw materials
- Utilisation of waste from other industrial production
- Lower CO₂ and NO_x emission
- Fewer ultimate wastes and smaller quantities
- Lower overall environmental impact



The resource-efficient partnership

Based on the vision of promoting sustainable development Aalborg Portland has developed practical solutions over a number of years in partnership with the public and private sector. These solutions focus on utilising resources in the flow of materials to and from the factory. Using these resources efficiently and with minimum loss remains the goal.

Four elements in “the resource-efficient partnership” on page 7 are described below. These efficient solutions create no new

waste volumes but are integrated in the production of cement and district heating. The internal circulation of material flows at the Aalborg Portland factory also helps to reduce the total climate and environmental impact significantly.

The complete material flows to and from the cement plant can be seen in the table on pages 24-25, which shows volumes, key indicators and development over the last five years.

Dried sewage sludge and cheap district heating

A form of “symbiosis” may be said to have been established between the community and the cement plant that benefits all parties. The community, represented by the City of Aalborg, supplies Aalborg Portland with dried sewage sludge which is utilised as a CO₂ neutral biofuel replacing coal and raw materials. Aalborg Portland in turn supplies the community with cheap district heating based on surplus heat from production. The heat supplied makes a significant contribution to the district heating network, which at maximum plant production meets the heating needs of some 36,000 households.

In addition, there will be a reduction in motorway transport – from 800 km to 8 km – now that Aalborg Portland has won back the contract to receive sludge from Aalborg East sewage plant as from 2012. After a lapse of six years, during which time the sludge was transported to north Germany, the Danish Parliament decided to lift the incineration tax which meant that foreign companies were significantly better placed when bidding for EU tenders.

Dredged sand used in cement

Sand dredgers keep the navigation channels at Hals Barre and in Limfjorden free for the passage of ships, a task which benefits society and in which Aalborg Portland plays a part. The dredged sand, which would otherwise be dumped in the Kattegat, impacting on the marine environment, is used in cement manufacture to replace quarried sand, thereby avoiding scenic impact. The position of the cement factory next to Limfjorden also provides an effective logistical solution. The dredgers anchor alongside the plant and pump the sand ashore into

settling basins where it is drained and the salt content flushed out by natural means using rainwater.

Waste is a resource

Waste is a resource that can contribute to a resource-efficient society. Instead of being dumped in landfills, waste can be used as valuable fuel to replace coal and petcoke in the manufacture of cement. Unlike with incineration at a public incineration plant there are no slag by-products as the waste is wholly integrated into the cement chemistry and into the finished cement product.

Waste fuel also helps reduce NO_x emission in flue gases, and a biomass content of 30-100% benefits focus on the global climate. For example, meat and bone meal are considered completely CO₂ neutral, and replacing fossil fuels with mixed industrial waste typically improves the CO₂ balance by 30-40%.

Efficient partnerships with power stations

Flue gas desulphurisation gypsum

Gypsum resulting from the removal of SO₂ in flue gases is used in cement manufacture and is obtained from the factory's own production processes and locally from the Nordjyllandsværket power station. It replaces natural gypsum and anhydrit mined in Morocco and Canada and therefore reduces the number of long consignments by sea.

The local partnership between Aalborg Portland and Nordjyllandsværket is a good example of industrial symbiosis. Aalborg Portland supplies chalk slurry to the power station for desulphurisation and receives flue gas desulphurisation gypsum in return.

A special vehicle has been developed that delivers chalk slurry to the power station and brings back flue gas desulphurisation gypsum. This therefore halves the number of journeys.

Fly ash

Similar collaboration has existed since the 1970s with regard to fly ash. Fly ash is a mineral product resulting from generation of electricity and heat at Danish coal-fired utilities.

In cement manufacture this fly ash replaces the use of natural clay which would otherwise have to be extracted in Denmark.

Internal recirculation

- Heat from recovery of energy in flue gases -> used for heating.
- Microfiller from scrubbing of flue gases -> added to special cements.
- Filtrate water from heat recovery and desulphurisation process -> used in slurry preparation department and kilns – for more details refer to “Water as a resource” on page 10.
- Own flue gas desulphurisation gypsum -> used as additive in cement mill department.
- Recycling of outdoor clinker -> added during kiln process and in cement mill department.
- Recycling of cement from silo cleaning -> used for cement.

The goal is to utilise resources efficiently and with minimum wastage

INPUT



Dried sewage sludge from public sewage treatment



Sand from dredging of navigation channels



Waste fuel



Desulphurisation gypsum and fly ash from power stations



OUTPUT



Cement products



Cheap district heating





Water as a resource

– efficient solutions



Water is used in cement-making for cooling production equipment and other purposes. Aalborg Portland obtains its water from on-site wells in a limestone aquifer situated outside of specially designated drinking water areas. Various solutions introduced over the years relating to the distribution system and to limiting of consumption are discussed below.

Aalborg Portland A/S is licensed to extract 5.2 million m³ of water annually. In 2011, 4.1 million m³ was extracted as equivalent loading of the water resource. This included 1.1 million m³ from chalk quarried on site below the water table using a deep excavator.

The remaining 3 million m³ included 1.8 million m³ originated from 12 waterworks wells on company land close to the cement plant and 1.2 million m³ from groundwater lowering around Kilns 76 and 85.

Groundwater lowering – for equipment cooling

Over the years, local lowering of the water table has proven an effective solution for keeping dry the factory's underground basements, passages and transport systems. In addition, 900,000 m³ of the relevant water is recycled for cooling the factory's compressor facility, which would otherwise have to be cooled with water extracted specifically for this purpose.

Divided water system

Following bacterial contamination of drinking water in 1998 the water distribution system was divided into two: a drinking water system and a technical water system. Technical water is used for production purposes.

Recirculation of filtrate water

Filtrate water originates from the heat recovery and flue gas desulphurisation system in the production of gypsum. Until

2005 filtrate water was discharged into Limfjorden. A high production level meant that the limit for water extraction of 5.2 million m³ was also being reached.

Recirculating the filtrate water to consumption points in the cement manufacturing process was and remains the most efficient solution. In 2005 this saved 460,000 m³ of technical water which would have otherwise been extracted from the water resource. The equivalent discharge to the fjord ceased at the same time, creating a win-win situation. In 2007 the saving reached 520,000 m³.

Remediation wells against contamination

In 2007 three remediation wells were established to safeguard the factory's water supply from contamination by trichloromethane and tetrachloromethane originating from land formerly leased from Aalborg Portland by the Danish military. The contaminated water is used as technical water in the factory.

The remediation wells proved highly effective as early as 2008, and analyses from nearby test wells showed that levels of trichloromethane and tetrachloromethane were now with safe limits. This was still the case in 2011 but as the level of tetrachloromethane in the remediation wells still exceeded the limit for drinking water of 1 µg/litre, pumping from the remediation wells will continue as hitherto.

New drinking water well

Late in 2011 an additional new drinking water well was established as nitrate content in the existing well slightly exceeded the limit of 50 mg/litre. Analysis shows that nitrate content in water from the new well is around 35 mg/litre. An approval for water extraction permit has been received from the City of Aalborg.

Collection of surface water

In 2011, around 12,500 m³ of surface water was collected from the storage site adjacent to the slurry mill and used in slurry production. This reduced the volume of water extracted for technical purposes by an equivalent amount.

Monitoring programme

Since 1991 an external firm has performed a series of hydrogeological measurements and analyses of water quality. An overview of developments is provided by ongoing reporting, which ensures effective protection and utilisation of the water resource.



Climate and energy – targets, initiatives and results

TARGETS 2011

STATUS 2011

TARGETS 2012

RESEARCH PROJECTS PROMOTING CLIMATE-FRIENDLY AND SUSTAINABLE DEVELOPMENT

The long-term goal is to develop cements that can be produced with less energy consumption and in some cases up to 30% less CO₂ emission.

The target in 2011 is to:

- Initiate the new Supplementary Cement Materials (SCM) project.
- Initiate and complete documentation activities for the new cements and ensure market acceptance of these products.

 The SCM project, in which we are partnering EL.Smidt, iNANO/Aarhus University and Energiteknik/Aarhus University on development of production equipment for new Supplementary Cement Materials, is progressing well. SCM materials have been produced in the laboratory and on a pilot scale with promising results.

 A project application concerning documentation of the new materials for use in infrastructure has been submitted to the Danish Agency for Science, Technology and Innovation together with a number of partners from research institutions and the building industry's value chain.

A Test the new SCM project materials in cement and concrete to determine the best material combinations and ensure market acceptance. If the project application is approved, the project concerning documentation of the new materials in infrastructure must be initiated.

A Initiate a postgraduate project co-funded by Aalborg Portland as part of LowE CEM, a new research project to study long-term possibilities for low-energy cements.

A A postgraduate project begun at DTU Environment in 2010 and co-funded by Aalborg Portland is studying the environmental benefits of recycling concrete, including CO₂ absorption in crushed concrete. Hold progress meetings in 2012.

CO₂ REDUCTION

Continue focus on reduction of CO₂ emission by means of increased use of fuel containing biomass and eventual development of new cements.

Reduce CO₂ emission from grey cement production by 9% against 809 kg CO₂/tTCE in 2010.

Reduce CO₂ emission* from white cement production by 2% against 1,124 kg CO₂/tTCE in 2010.

CO₂ emission from production of grey and white cement was reduced by a total of 80,574 tonnes by replacing fossil fuel with fuel containing biomass.

 Target not achieved due to shortage of Cem fuel and unstable feed. CO₂ emission from grey cement production was 792 kg CO₂/tTCE, a fall of 2% compared with 2010.

 Target not achieved due to shortage of meat and bone meal. CO₂ emission* from white cement production was 1,155 kg CO₂/tTCE, a rise of 2.8% compared with 2010.

Continue focus on reduction of CO₂ emission by means of increased use of fuel containing biomass and eventual development of new cements.

F Reduce CO₂ emission from grey cement production by 2% against 792 kg CO₂/tTCE in 2011.

F Reduce CO₂ emission* from white cement production by 3% against 1,155 kg CO₂/tTCE in 2011.

ALTERNATIVE FUEL

The ultimate goal is to replace minimum 40% of fuel energy for grey cement production (Kiln 87) by alternative fuel, reducing CO₂ emission. Work continues on final project form.

Replacement in 2011 was 28%. The outdoor storage facility has been completed. The remainder of the project is being reviewed in the light of changed market conditions for waste resources.

F The ultimate goal is to replace minimum 40% of the fuel energy for grey cement production (Kiln 87) by alternative fuel, reducing CO₂ emission. Investigate possibility of expanding storage capacity.

FUEL SAVING

The targeted fuel saving for 2011 was not specified in Environmental Report 2010. The fuel saving achieved is stated in 'Status 2011'.

 Projects carried out in 2011 yielded annual fuel savings equivalent to 28,423 MWh. This was significantly more than in 2010.

- 25,824 MWh/year (Reduction of water content in chalk slurry).
- 2,420 MWh/year (Closure of steam supply to oil tanks).
- 179 MWh/year (Optimisation of steam plant).

F The 2012 goal is to implement measures to achieve annual fuel savings equivalent to 150,000 MWh.

ELECTRICITY SAVING

New strategy/objective for 2011-2015 focused on power-saving measures and reducing base power load.

The objective is to reduce the specific variable power consumption by 2.5% in 2015 against 118 kWh/tTCE in 2010.

Reduce the base power load by 5% against 44,764 MWh in 2010.

In 2011 the goal is to implement power-saving initiatives, including for equipment based on base load, with a view to an annual saving of 1,000 MWh.

 Target achieved. The specific variable electricity consumption was reduced to 115 kWh/tonne TCE, a fall of 2.5% against 2010.

 The base power load for 2011 was 45,856 MWh, a rise of 2.4%. This was because the increased consumption for auxiliary equipment exceeded economy measures to reduce base load.

 Target achieved. Economy projects carried out 2010 yielded total annual savings of 1,283 MWh.

- 654 MWh/year (Repair of compressed air leaks).
- 629 MWh/year (Reduced compressed air consumption in slurry basins).

Continue focus on power-saving measures and reducing base power load.

F Increased target: reduce the specific variable power consumption in 2015 by 4% in 2015 against 118 kWh/tTCE in 2010.

F Reduce base power load in 2015 by 5% against 45,856 MWh in 2011.

F The 2012 target is to implement power-saving initiatives, including for equipment based on base load, with a view to an annual saving of 1,000 MWh.

 Target achieved  Target not achieved **F** Improvement target **A** Activity target

* Adjusted by heat recovered and supplied to Aalborg's district heating system. The adjustment for CO₂ is based on the 125% thermal efficiency method for district heating.



Environmental Action Plan – targets, initiatives and results

TARGETS 2011

STATUS 2011

ENVIRONMENT AND ENERGY MANAGEMENT

Maintain certification under ISO 14001, EMAS III, DS/EN 16001 (DS 2403), OHSAS 18001 and Working Environment Authority Executive Order No. 87.

Verify CO₂ emission so that necessary CO₂ quotas for 2010 can be cancelled in the quota register by 30 April 2011.

Perform three special power saving studies in the period 2010-2012 by arrangement with the Danish Energy Agency.

Continue focus on energy management by means of energy campaigns and bi-monthly follow-up on energy indicators by the KPI Team.

Establish extended environmental collaboration with two key suppliers.

😊 External audit was conducted on 9-12 May 2011. Discrepancies have been closed and improvement recommendations are being discussed.

😊 CO₂ audit was performed by external verifier and CO₂ quotas for 2010 were cancelled in quota register. CO₂ baseline study for 2013-2020 quota allocation was completed and verified documentation was submitted to Danish Energy Agency.

😊 Two special studies concerning compressed air and boiler replacement in heat recovery system were concluded and the results were reported to the Danish Energy Agency.

😊 Two poster campaigns were implemented relating to compressed air. The central compressed air installations were checked for leaks and the results published on the intranet. Leaks equivalent to the annual electricity consumption of 170 households were discovered and repaired.

The KPI Team held three follow-up meetings on causes of unacceptable KPI indicator values and remedial measures. Focus also centred on base load.

😊 Environmental factors, in particular diesel consumption and optimised transport, were embodied in an invitation to tender relating to internal transport services. Collaboration with selected supplier intensified at end-2011 after contract signature.

Environmental collaboration, principally focused on diesel consumption, was begun with two other suppliers: a Danish bulk cement haulier and a general haulier in Germany.

ENVIRONMENT

Reduce specific NO_x emission by 8% against 1.48 kg/tTCE in 2010 by continued optimisation of scrubbing and by increased use of NO_x reducing alternative fuel.

Increase the application of filler materials by use for construction work and by further-development of the product assortment.

Thereby reduce landfill volume by 7,584 tonnes against 2010 (24,464 tonnes), a reduction of 31%.

😊 Target achieved. The specific NO_x emission fell by 25.6% to 1.10 kg/tTCE as a result of optimised NO_x scrubbing.

😞 Target not achieved. 27,221 tonnes of waste were landfilled at Aalborg Portland, an increase of 11% on 2010, as filler sales for construction purposes did not meet expectations.

HEALTH & SAFETY

Determine by means of sick leave interviews whether workplace factors are a contributory cause of sickness absence. Incorporate Workplace Assessments (WA).

Ongoing update of WA action plans in IPL. 90% of WA action plans must be completed by 1 April 2011.

Participate in DHL relay race.

Max. 2.8% sickness absence in 2011 (excl. long-term absentees).

Hold quarterly meetings with the Steering Group for Sick Leave and Employee Retention Policy, which formulates plans for necessary measures.

Aalborg Portland is committed to avoiding accidents and does not want registered accidents to exceed the figure for 2010 (13).

Implement necessary campaigns in collaboration with the General Health & Safety Committee.

Systematic safety follow-up and check.

Increased focus on near-misses.

😊 Target achieved. Working environment was a factor in sickness absence in 2011. Formal sick leave interviews were not held, but dialogue took place by email and telephone.

😊 Target achieved. Ongoing follow-up took place on WA action plans within the Health & Safety Organisation. Fewer than 10% of the action plans remain to be finalised.

😊 Target achieved. Six five-strong teams took part in the DHL relay race on 25 August.

😊 Target achieved. Total sickness absence was 2.6% excl. long-term absentees (3% incl. long-term absentees). The Steering Group for Absence and Retention Policy held two meetings.

😞 Target not achieved. There were 14 registered accidents, one more than in 2010, corresponding to 22 accidents per million working hours.

😊 Quarterly safety checks are performed by the Health & Safety Representatives.

😊 A new report sheet for recording near-misses was introduced and publicised.

-  Target achieved
-  Target not achieved
-  Improvement target
-  Maintenance target
-  Activity target

TARGETS 2012

-  Maintain certification under ISO 14001, EMAS III and DS/EN 16001 (to be converted to ISO 50001) and also OHSAS 18001 and Working Environment Authority Executive Order No. 87.
-  Verify CO₂ emission so that necessary CO₂ quotas for 2011 can be cancelled in quota register by 30 April 2012.

-  Perform a special study focused on power savings in the excavating and slurry preparation process by arrangement with the Danish Energy Agency.

-  Continue focus on energy management by energy campaigns and via quarterly follow-up on energy indicators by the KPI Team.

-  Continue extended environmental collaboration with the supplier of internal transportation services and with two cement hauliers, one in Denmark and one in Germany, including follow-up on diesel consumption.
-  Prepare extended environmental collaboration with two other key suppliers.

-  Reduce the specific NO_x emission by 6% against 1.10 kg/tCE in 2011 by continued optimisation of NO_x scrubbing and by increased use of NO_x-reducing alternative fuel.
-  Increase the application of filler materials by use for construction work by further-development of the product assortment.
-  Thereby reduce landfill volume by 9,295 tonnes against 2011 (27,221 tonnes), a reduction of 34%.

-  Complete Workplace Assessments and enter action plans in IPL before 1 July 2012.

-  Minimise ORW (One-sided Repetitive Work) focus in relation to results of WA survey.

-  Max. 2.8% sickness absence in 2012 (excl. long-term absentees).

-  Aalborg Portland is committed to reducing the number of accidents. The 2012 target is max. 19 accidents per million working hours. Max. 0.19 days lost per employee.
-  For supplier of internal transport services the 2012 target is max. 19 accidents per million working hours and max. 0.19 days lost per employee.
-  Contract personnel: Max. 16 accidents in 2012 (same level as 2011).

-  In order to strengthen safety culture and strengthen team spirit, supplementary training will be provided for the entire Health & Safety Organisation in the second half of 2012.
-  In order to strengthen safety culture, an annual plan for Health & Safety will be formulated. Focus will be given to meeting activities and internal regulations (compulsory use of helmets, use of lifts, safety interlocking, on-site transport/routes, etc.).

Local environmental targets

In addition to the General Environmental Action Plan, all departments work to local targets.

In 2011, 17 of 25 targets were achieved, including climate and energy targets on page 11.





Cement production and products



Cement is manufactured using the natural raw materials chalk and sand, the core ingredients in all cement produced at Aalborg Portland. The chalk is excavated from the company's on-site chalk pit, while the sand is dredged from Limfjorden at Hals Barre and Løgstør Rende, which also helps keep the fjord navigable.

Manufacture of cement

Aalborg Portland produces grey cement by the "semi-dry process". This starts with the chalk being processed in a slurry drum while the sand is ground in a sand mill. The two ingredients are then mixed to form a slurry which is injected into a dryer-crusher together with fly ash. In the dryer-crusher the material is converted with the help of hot flue gases into raw meal. This raw meal is conveyed via a separating cyclone to the cyclone preheaters where it is heated to 750° C.

In the calciners the raw meal is further heated to 900° C, releasing the carbon dioxide. The material then enters the 74-metre long rotary kiln where it is gradually heated to a temperature of 1500° C to form cement clinker. After cooling, the clinker is ground in the cement mill to a fine powder to which a few percent of gypsum is added.

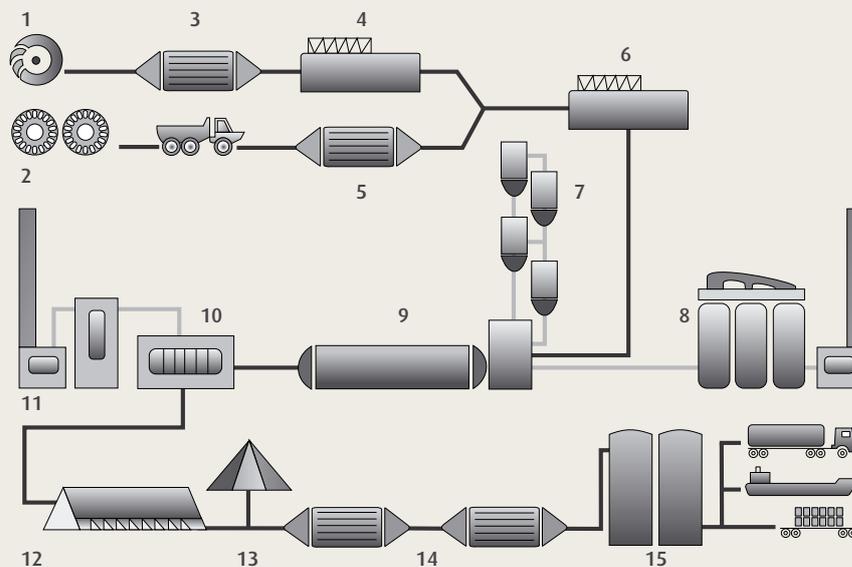
In 2011, heat recovered from the flue gases during production of white cement was supplied to the city of Aalborg and was sufficient to meet the district heating requirements of 24,500 households.

A quality product

The finished product is cement, which is ready for use in building projects of all sizes worldwide. A quality product that is easy to use in concrete and mortar, cement adds strength, stability and durability to buildings and structures.

From raw materials to cement

1. Chalk excavator
2. Sand dredger
3. Slurry drum
4. Chalk sludge
5. Sand mill
6. Finished slurry
7. Cyclone tower
8. Electrostatic precipitator
9. Rotary kiln
10. Clinker cooler
11. Electrostatic precipitator
12. Clinker store
13. Gypsum store
14. Cement mills
15. Cement silos





Aalborg Portland's products

Aalborg Portland manufactures both white and grey cement of high quality. The products are distributed in bulk and in bags to both the domestic and export markets.

Cements manufactured for the Danish market include the following:

BASIS® AALBORG cement

Used as a binding agent in production of concrete or mortar and suitable for general concrete making. This is an environment-friendly product as it incorporates microfiller, which means that less energy per tonne of cement is used in production.

RAPID® AALBORG cement

Suitable for general concrete making, but ideal for floors and screeds. Also suitable for masonry mortars, including lime cement mortars used for rendering etc.

AALBORG WHITE® cement

Suitable for general concrete making, but the product of choice when the specification calls for particular whiteness or when a light colour is required for pigmenting.

MESTER® AALBORG cement

Specially developed for use as a binding agent in production of lime cement mortars and in masonry and rendering mortars.

LOW ALKALI SULPHATE RESISTANT cement

Specially developed for concrete used for civil engineering, including bridges etc. exposed to alkali-silica reactions and structures in contact with sulphate in groundwater.

ELEMENT cement

Suitable for general concrete making when sulphate resistance, extra low alkali content or whiteness is not required. Ideal for making concrete building components and dry mortars.





Environmental and energy and health & safety management

Aalborg Portland has an integrated process management system that defines the flows and procedures in all company processes. The system satisfies the requirements of the company's certification standards, which are currently:

DS/EN ISO 14001, EMAS III, OHSAS 18001, Working Environment Authority Executive Order No. 87, DS/EN 16001, DS/EN 9001, Maritime Authority technical regulation No. 6 of 9 October 2002 on bulk vessels, Safety Technical Authority safety guidelines for quality control of electrical work and installation, ISPS regulations on protection of port facilities against terror, and DS/EN 197-1/-2 on cement product quality.

The integrated nature of the system is important for the individual employee as thought and action are "process-oriented" whatever the context: environment, energy, quality or health & safety. Based on the company's established policies, objectives are defined for the individual processes, and associated targets and action plans are determined.

The cornerstones of the system are vision, policies, targets and action plans.

Management's assessment

The Environment & Energy Group performs ongoing managerial follow-up on the environmental and energy management system, including progress on activities in the general action. Health & safety are assessed in "Health & Safety report" on page 27.

In June 2011, a seminar was held to review and establish policy, targets and action plans for environment, climate and energy in 2012.

In January 2012, the Management performed its annual system assessment, including target fulfilment and activities in 2011. All significant events and activities in 2011 were discussed, notably including:

- Internal and external audit and control of the CO₂ monitoring plan for 2009-2012 approved by the Danish Energy Agency.
- Positive verification by Bureau Veritas Certification of factory CO₂ emission in 2011 ready for quota reporting purposes in March 2012 to enable cancellation of corresponding quotas in quota register by 30 April 2012.

- Verification by Bureau Veritas Certification in May 2011 of CO₂ calculation for the baseline period 2005-2008 for use in quota allocation for the third period 2013-2020.
- External verification of the EMAS report in March 2011, and external audit of the environment and energy management system in May.
- Seven meetings of the Environment & Energy Group were held as part of follow-up on the environmental management system, including three progress follow-ups on main environmental and energy targets.
- Progress follow-up on climate and environmental targets for 2011 in General Environmental Action Plan.

The status of the EIA Environmental Impact Assessment for Aalborg Portland and the application for extension of the existing raw materials excavation permit were discussed in relation to the timetable.

It was gratifying to note that Aalborg Portland won back the tender to receive dried sewage sludge from the city of Aalborg. Its use as kiln fuel was resumed on 1 January 2012 and the transport of sludge from Aalborg to Germany has therefore ceased.

Energy management

Energy activities continued in 2011.

The Energy Savings Team reports to the Environment & Energy Group and is responsible for keeping the factory's energy mapping up to date so that focal areas for economies can be identified and assessed.

Recommendations are submitted by Energy Focus units in the individual factory areas. The Energy Savings Team is also responsible for reporting energy data and results of special studies to the Danish Energy Agency.

An Energy KPI Team has been set up to record and monitor significant energy consumptions and performance indicators for individual installations. Based on consumption data recorded, key indicators are established for monitoring and follow-up.

Within the framework of 30 individual agreements made with Danish energy companies in the period 2008-2011, potential reductions in both power and fuel consumption



are being examined. The annual saving on completion of 20 agreements was 64.1 million kWh, corresponding to the annual power consumption of 16,000 households.

A three-year agreement covering 2010-2012 has been established with the Danish Energy Agency under which efforts to implement electricity efficiencies will continue.

BAT reports have been prepared and submitted to the Environmental Protection Agency as an element in ongoing technological improvements. These reports describe the best available technologies in cement manufacture and define technical and economic feasibility for reducing NO_x, NH₃, SO₂, HCl and dust emissions. A BAT report on external noise has recently been prepared in conjunction with the upgrade of a cement mill.

Environmental dialogue

With a view to ensuring and strengthening ongoing dialogue with stakeholders, Aalborg Portland is currently pursuing the following important activities:

- Maintenance of regular contact with central and local environmental authorities in Denmark and the EU as a result of the ongoing development of new proposals and regulations that will affect the company.
- Incorporation of environmental data from suppliers and subcontractors by means of revised contracts that specifically refer to environment.
- Publication of Environmental Report 2011 in April 2012.
- Aalborg Portland received 86 visits, a total of 1,177 persons, in 2011. The visitors were given an environmental briefing and had an opportunity to ask questions.
- Employees from Aalborg Portland speak at external seminars and meetings.
- Environmental Reports for 2011 and previous years are available on Aalborg Portland's website. The Danish and English reports for 2010 were visited 1,022 times in 2011.
- Employees in our departments participate in Energy & Environmental Focus Teams.

The Environmental Report is sent to a large number of stakeholders nationally and internationally, including neighbours, owners, authorities, politicians, the Danish Society for

Conservation of Nature, customers and suppliers. Some 600 copies are distributed. The report is also available in the factory to all employees and is published on our website.

To motivate and create dialogue with internal and external stakeholders on environmental issues, all parties are urged to voice opinions and suggest improvements to our reporting.

Requirements to suppliers

General contracts with suppliers have been strengthened with a clause describing Aalborg Portland's systematic focus on environment, energy and health & safety, including the certified management systems.

Aalborg Portland also makes it clear that importance is given to working with certified suppliers who are environmentally and socially aware. Aalborg Portland reserves the right to audit relevant environmental and health & safety issues relating to the collaboration. Two audits of transport suppliers are planned for 2012.

Prior to contract signature, new suppliers are assessed for compliance with performance specifications relating to materials and fuels.

In 2011 a Finnish supplier of iron oxide for cement production was checked to ensure that:

- The supplier was licensed to sell temporarily landfilled iron oxide.
- The material was characterised as a product
- The performance specifications in respect of heavy metal content etc. were met.

Environmental and health & safety factors were incorporated in tender issued for the supply internal transport. Particular focus was placed on optimised transportation and diesel consumption, safe movement on factory premises and accident avoidance. The collaboration with the chosen supplier was intensified at the end of 2011 after contract signature.

Environmental collaboration, particularly focused on diesel consumption, was also begun with two other suppliers: a Danish haulage operator distributing bulk cement and a general haulage company in Germany.



Principal environmental loads

The manufacture of cement involves significant consumption of raw materials and energy and therefore gives rise to various direct environmental loads in the form of gas emissions, waste materials, noise, effluent etc.

Materiality criteria

Based on environmental surveys, these loads have been selected according to the following materiality criteria: large volumes/large costs, distribution and impact, conditions in environmental approvals, and consideration for neighbours. The starting point is the list of pollutants and emission thresholds that must be reported to the European Pollutant Release and Transfer Register (PRTR). The materiality criteria form the basis for the paragraphs below and the material flows on pages 24-25.

Due to the nature of its production process and the fact that the cement plant is situated a long way from its closest neighbours, Aalborg Portland does not consider odour to be a relevant environmental reporting factor. No discharges are made to the ground.

Environmental approval

The environmental loads are regulated by Aalborg Portland's environmental approvals and permits which stipulate terms for operation. These include:

- Terms of emission for all important sources of atmospheric pollution, comprising kilns, cement and coal mills, cooler stack and boiler plant.
- Terms of emission for factory noise.
- Requirements for handling and reporting serious operating disturbances and incidents.
- Requirements for operation of raw material and fuel stores.
- Requirements for operation of on-site landfills.
- Discharge of process effluent, cooling water, rainwater, etc.

Compliance with the requirements in the environmental approval, combined with the day-to-day environmental work at the plant, helps ensure that no significant nuisance is caused to neighbours.

Selected key performance indicators

The table below shows key performance indicators for grey and white cement production. The indicators are relative terms, where consumption and emission have been related to production. See also pages 24-25 "Material flows – key performance indicators and status 2011".

Key performance indicators	Unit	2007	2008	2009	2010	2011
Grey cement production						
Energy	GJ/tTCE	4.54	4.39	4.43	5.07	4.61
CO ₂	Kg/tTCE	800	769	745	809	792
NO _x	Kg/tTCE	1.97	2.01	2.14	0.97	0.64
White cement production						
Energy *	GJ/tTCE	7.15	6.59	6.86	7.12	6.96
CO ₂ *	Kg/tTCE	1,150	1,062	1,122	1,124	1,155
NO _x *	Kg/tTCE	3.52	3.26	2.74	2.42	2.10

* Adjusted for heat recovered and supplied to the City of Aalborg district heating system. The adjustment relating to CO₂ and NO_x is based on the 125% thermal efficiency method for district heating. For white cement production the emission indicators for 2007-2010 have been restated as the 200% method was used during this period.

Flue gases

The total emissions are directly linked to cement volumes produced. In 2011, the total emission of factory flue gases were higher than in 2009 and 2010 due to increased production. However, the relative key indicators for emissions of CO₂, NO_x, SO₂ and CO decreased.

CO₂

Total CO₂ emission increased in volume due to increased production. Relative emission fell compared with 2010 primarily due to more efficient use of production capacity.

NO_x

During the period 2004-2007 all kilns were fitted with newly developed NO_x scrubbers to comply with emission limits. As a result both absolute and relative emission have decreased over the years, and they decreased further in 2011 with when NO_x scrubbing was optimised.

SO₂

Relative SO₂ emission has fallen for the past three years. This is partly due to the granting of environmental approval in April 2010 to fire Kiln 76 with meat and bone meal that typically has a sulphur content 90% lower than petcoke, which it partially replaces. Another factor was improved utilisation of the scrubber equipment for desulphurising flue gases.

CO

Relative CO emission fell in 2011. This was primarily due to Kiln 76, which recorded less CO formation while production increased.

Dust

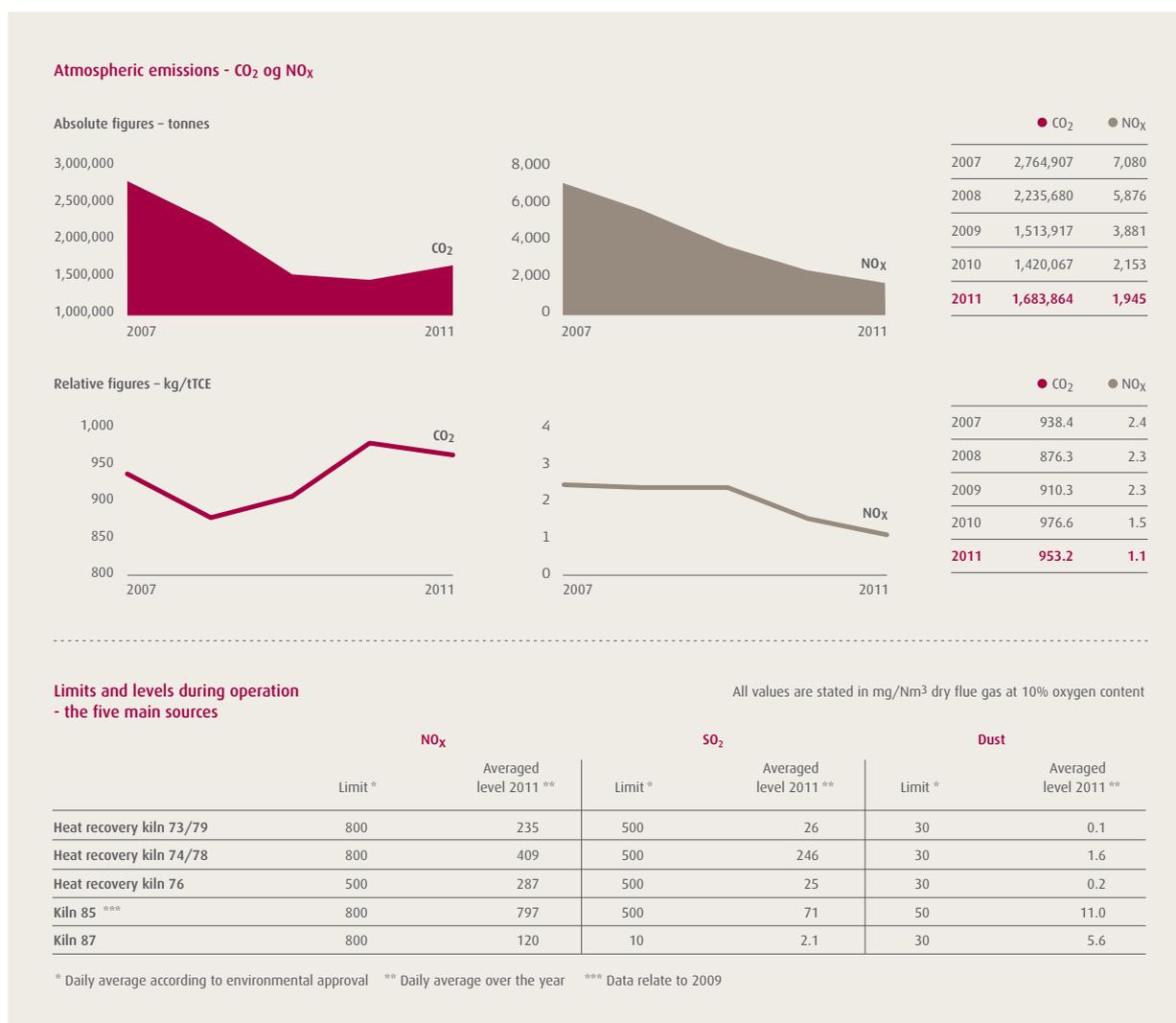
Dust emission increased relatively in 2011 but was still low compared with 2007 and 2008 due to lower production. Complaints relating to dust leaks caused by operating disruptions are described on page 20.

Emission limits

In connection with use of alternative fuels, Aalborg Portland complies with the emission limits for cement plants as set out in the regulations for incineration of wastes, including mercury and dioxin.

The table below shows the five main sources of air pollution from cement plants, the related emission limits, and Aalborg Portland's current average emission levels. Emissions of dust, NO_x and SO₂ are determined by averaging continuously recorded data. Limits stated are mean values per 24-hour period. For clarity the table shows the averaged daily level for the year.

In 2011, the limits for NO_x, SO₂, CO and dust were exceeded in a small number of cases. These instances were notified to the Environmental Protection Agency in the monthly reports.





◀ Waste

Waste is separated as close to the source as possible and placed in bins, skips and oil and chemical reception points around the plant. The waste is recycled and incinerated in accordance with City of Aalborg regulations or landfilled on site.

More than 99% of the waste is non-hazardous. The remainder is characterised as hazardous oil and chemical waste and mixed landfill waste. The total waste volume increased compared with 2010.

This was because recirculation of microfiller from white cement kilns to grey cement kilns was not possible to the same extent as previous years and because production of white cement also increased. This resulted in increased landfill on-site at Aalborg Portland.

Water supply

Water consumption increased in volume due to increased production but decreased in relative terms as base consumption for cooling purposes was unchanged. Circulation of filtrate water from heat recovery is an integral part of the operating cycle, and the volume of this water also increased along with increased production.

The City of Aalborg's inspection report on the factory's water supply was published in March 2010 and led to the wells being provided with additional sealing protection to prevent pollution.

Waste water

Waste water volumes comprise washing water and sanitary effluent. The absolute volumes fell in 2008 when the sewer taking rainwater from near Kiln 87 to the municipal treatment plant was cut. Rainwater is now discharged directly to the fjord instead.

Noise

An external noise survey was performed at Aalborg Portland in 2006. All noise sources were charted by GPS, improving the data on which noise calculations are based.

The noise map was last updated in February 2012 as part of the EIA assessment for the factory and chalk pit. Even with all equipment operating at maximum (worst case scenario) it was found that noise limits were complied with at all 14 locations.

The factory noise contribution is estimated to be less than the theoretical maximum as the production level remains low due to the economic slowdown and the low level of building activity.

Waste – amount in tonnes	2007	2008	2009	2010	2011
Total waste	41,411	23,919	23,714	28,937	30,256
Utilised non-hazardous waste	7,729	4,243	4,297	4,250	2,888
Recycling	7,302	3,629	3,800	3,670	2,732
Sand and grating material	1,313	1,443	2,441	2,366	1,187
Building waste	343	894	499	222	173
Metals	1,033	751	634	662	1,148
Paper and cardboard	6	2	4	11	4
Glass	-	-	-	-	0,5
Plastics	-	-	-	-	23
Electronic scrap	5	4	3	5	0,02
Other recyclable	4,603	535	219	404	196
Incineration	427	614	497	580	156
Mixed combustible	395	581	471	561	141
Municipal collection	32	33	26	19	16
Utilised hazardous waste	447	224	274	125	138
Oil	444	220	271	124,3	134
Chemicals	3	4	3	0,4	4
Disposal of non-hazardous waste	32,798	19,357	19,109	24,464	27,221
On-site landfill					
Disposal of hazardous waste	437	95	34	98	9
Off-site landfill					

Operating disruptions

The procedure for dealing with breakdowns and operating disruptions is described in the factory's process management system and general environmental approval. The procedure ensures that all relevant authorities are consulted in problem solution.

The number of accidental dust releases resulting in complaints fell by three to a total of 11. Such complaints usually follow precipitator problems.

External complaints about noise, dust, pollution etc.

	Dust	Noise	Limfjorden	Other
2007	9	1	1	0
2008	19	2	0	0
2009	14	1	0	0
2010	14	2	1*	0
2011	11	0	1	0

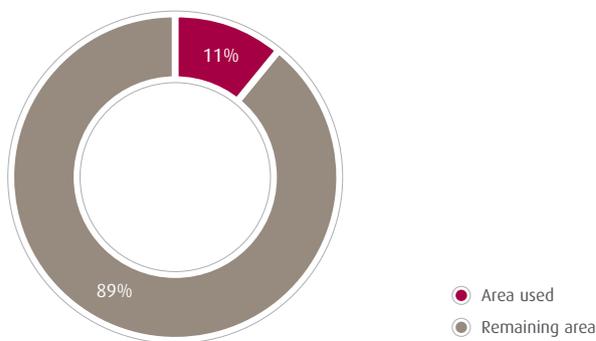
* This incident, concerning discharge of diesel oil into Limfjorden, was not the responsibility of Aalborg Portland and the relevant authorities in Aalborg were contacted. The 2011 incident resulted in an oil sheen and oil patches in Limfjorden and was caused by a leaking oil filter on a cement mill.



Land use and biodiversity

Areas used for production, buildings, storage and landfill are important to the natural biodiversity of the rest of the company's locally owned land.

Aalborg Portland's total land ownership amounts to 1,800 ha, which includes 197 ha used for cement production. The remaining 1,603 ha comprises a mosaic of lakes, woods, meadows, salt marshes, fallow and farmland. 89% of Aalborg Portland's land therefore offers good scope for biodiversity.



Aalborg Portland land (ha)	1,800
Factory	120
Active chalk quarry	61
Landfill site	12
Iron oxide facility	4
Total area used	197

Sustainable distribution

In 2001, the distribution of cement from Aalborg Portland involves the handling and transport of some 1.8 million tonnes of cement to domestic and export markets. Aalborg Portland's influence on distribution to export markets is chiefly limited to the choice of carriage by ship, and this part of the distribution may therefore be designated an indirect environmental load.

In the domestic market, however, we have more control on the environmental effects of distribution in the form of exhaust emissions, impact on roads, etc. This means we also have a responsibility for ensuring that distribution takes place in a sustainable manner.

In 2011, 68% of our cement was distributed by ship and 32% by road tanker or lorry.

All cement manufacture takes place in Aalborg from where most of the output is carried by ship to the company's eight Danish storage terminals strategically positioned nationwide. The cement is then conveyed by road to individual customers locally. The average distance from terminal to customer is just 65 km, thereby avoiding long-haul transport by heavy cement lorries.

This strategy continued in 2011 with the establishment of a storage facility in Aabenraa for white cement destined for export to the European market. This facility takes 2 x 270 km of truck transport off the motorways of Jutland as the cement is now carried to Aabenraa by ship, which is more environment-friendly.

Some road haulage is contracted out to third parties. Customers in Northern Jutland are supplied direct from the Aalborg Portland factory. All bagged cement is also distributed from Aalborg.

Aalborg Portland's focus on alternative fuel represents an indirect CO₂ benefit as this is sourced locally and therefore transported a much shorter distance than coal, petcoke and oil.



Measurement and calculation of material flows

Material flows and key performance indicators 2011 The Aalborg Portland cement plant

Aalborg Portland has published annual Environmental Reports since 1996. Material flows are shown for the period 2007-2011, enabling developments to be tracked over a five-year period.

The basic production activity at Aalborg Portland is the manufacture of cement using chalk, sand, water, alternative raw materials and fuels. The materials are processed, mixed and heated to high temperatures. This results in the production of cement as well as various by-products. Some of these by-products, including water, dust and flue gas desulphurisation gypsum, are recycled in production. The remainder are released in the form of flue gases, steam, cooling water, waste water and waste products.

Material flows and key performance indicators

The input volume of materials in the manufacturing process is equal to the output volume in the form of cement and by-products. This balance is called the "flow of materials" and is actually an expression of the resources used by Aalborg Portland in producing cement, the volume of cement produced, and the emissions resulting from the production process.

The material flows for the Aalborg Portland plant are shown in both absolute and relative terms as key performance indicators on pages 24 and 25. The absolute volumes are stated in tonnes in the wet state. The relative volumes are based on the quantity (kg) of materials in the wet state used to make one tonne of Total Cement Equivalent (tTCE), which is a standard unit for output. This is obtained by calculating the equivalent cement tonnage if all the clinker had been processed into cement.

The relative values thus enable year-on-year comparison of the material flows independent of any variations in size of cement production, changes in clinker stocks and sales of clinker.

Significant changes in material flows at Aalborg Portland, 2007-2011:

- Decreasing production in 2009-2010, compared to full production in 2007, led to generally falling consumption of raw materials, electricity and fuel as well as falling factory emissions. In 2011 there was a slight increase in production, which was therefore reflected in consumption and emission.
- "Clinker" (which includes clinker sales and changes in clinker stocks) is shown as negative in 2010 and 2011 as stock outflows of grey clinker exceeded stock inflows from production.

Measurement and calculation of material flows

Data used in compiling this report are obtained from Miljø-InfoSystem (environmental database), cf. page 26. Measuring methods relating to data capture are described below.

- Raw Materials, recyclables and fuels are determined by flow meters and weighing devices installed in the production process.
- Water consumption is measured by water meters.
- Electricity consumption is measured by kWh meters.
- Packaging is calculated from inventory statements.
- CO₂ emission for 2007-2011 is determined according to the approved CO₂ emission plan for Aalborg Portland and verified externally.
- NO_x, SO₂, CO, HCl and dust emission from kilns is determined by continuous metering in exhaust stacks. The same applies to dust concentrations in discharges from cement and coal mills, while airflow from these sources is based on sampling.
- Hg quantity is calculated by continuous measurement of kiln air volumes and Hg concentration samples from yearly performance measurements.
- Products are determined by weighing and calculation. District heating production is measured by calorimeter.
- Wastes are determined by weight on weighbridge and annual statements from external waste receivers.
- Cooling water is calculated on the "water balance principle" in which the following flow-metered outputs – steam, groundwater lowering at Kiln 76 and waste water (sanitation water and washing water) are deducted from measured inputs: water consumption, groundwater lowering and water content in materials and fuels.
- Combustion air is calculated indirectly by deducting the input side of the materials flow from the output side.
- Accidents and associated days lost are determined from data reported to the Health & Safety Authority.
- Noise calculation is performed by an accredited external firm based on measurement at source and subsequent computation.



Material flows

Key performance indicators 2011 The Aalborg Portland cement plant

INPUT

Absolutte figures – tonnes *

Relative figures – kg * / tTCE

	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Combustion air (O ₂ , N etc.)	940,789	766,094	542,622	457,277	573,029	319.3	300.3	326.3	314.5	324.4
Raw materials										
Chalk	4,771,180	3,922,933	2,615,372	2,400,904	2,937,540	1,619.4	1,537.6	1,572.6	1,651.2	1,662.9
Water	3,706,023	3,256,522	2,664,025	2,688,259	3,057,496	1,257.9	1,276.4	1,601.8	1,848.8	1,730.8
Sand	178,219	130,133	111,416	110,626	128,047	60.5	51.0	67.0	76.1	72.5
Gypsum	54,443	46,389	32,951	21,646	31,469	18.5	18.2	19.8	14.9	17.8
Other	40,207	33,263	24,568	31,253	29,885	13.6	13.0	14.8	21.5	16.9
Packaging	2,389	1,720	1,169	1,091	1,101	0.8	0.7	0.7	0.8	0.6
Recyclables										
Fly ash	269,859	273,656	186,721	158,949	189,990	91.6	107.3	112.3	109.3	107.5
Sand	152,835	159,335	59,330	54,484	40,894	51.9	62.5	35.7	37.5	23.1
FGD gypsum	65,118	64,564	25,201	52,407	52,853	22.1	25.3	15.2	36.0	29.9
Paper pulp	48,568	49,537	25,619	17,897	22,186	16.5	19.4	15.4	12.3	12.6
Iron oxide	65,448	60,406	32,374	30,182	45,331	22.2	23.7	19.5	20.8	25.7
Other	72,799	54,905	33,143	15,318	20,541	24.7	21.5	19.9	10.5	11.6
Total	674,627	662,403	362,388	329,237	371,795	229.0	259.7	218.0	226.4	210.4
Fuels										
Coal	160,725	140,928	45,713	78,285	54,679	54.6	55.2	27.5	53.8	31.0
Petcoke	284,031	214,391	186,145	161,393	204,211	96.4	84.0	111.9	111.0	115.6
Fuel oil	26,281	12,681	6,239	8,435	7,222	8.9	5.0	3.8	5.8	4.1
Alternative fuel	80,934	100,468	88,552	68,080	83,022	27.5	39.4	53.2	46.8	47.0
Total	551,971	468,468	326,649	316,193	349,134	187.4	183.6	196.4	217.4	197.7
	(MWh)	(MWh)	(MWh)	(MWh)	(MWh)	(kWh/tTCE)	(kWh/tTCE)	(kWh/tTCE)	(kWh/tTCE)	(kWh/tTCE)
Electricity	374,924	323,733	224,528	216,419	249,188	127.3	126.9	135.0	148.8	141.1

INTERNAL RECIRCULATION

	(Gj)	(Gj)	(Gj)	(Gj)	(Gj)	(MJ/tTCE)	(MJ/tTCE)	(MJ/tTCE)	(MJ/tTCE)	(MJ/tTCE)
District heat from heat recovery	27,351	26,947	26,779	28,992	21,055	9.3	10.6	16.1	19.9	11.9
Microfiller	160,238	181,737	122,810	95,768	110,453	54.4	71.2	73.8	65.9	62.5
Water	521,912	432,575	332,336	301,468	323,654	177.1	169.5	199.8	207.3	183.2
Own FGD gypsum	36,177	28,086	24,366	29,947	22,969	12.3	11.0	14.7	20.6	13.0
Recycling of clinker/raw meal	97,597	74,729	33,229	14,715	30,749	33.1	29.3	20.0	10.1	17.4
Recycling of cement from silo cleaning	901	1,142	736	1,311	609	0.3	0.4	0.4	0.9	0.3

* Determined with water content of materials.



OUTPUT

Absolutte figures – tonnes *

Relative figures – kg * / tTCE

	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Flue gases										
CO ₂	2,764,907	2,235,680	1,513,917	1,420,067	1,683,864	938.4	876.3	910.3	976.6	953.2
NO _x	7,080	5,876	3,881	2,153	1,945	2.4	2.3	2.3	1.5	1.1
SO ₂	1,622	1,397	877	680	620	0.55	0.55	0.53	0.47	0.35
CO	1,676	1,792	1,244	1,113	1,068	0.57	0.70	0.75	0.77	0.60
Dust	177	175	69	35	52	0.06	0.07	0.04	0.02	0.03
HCl	34	31	10	13	5	0.012	0.012	0.006	0.009	0.003
Hg	0.19	0.15	0.07	0.03	0.02	0.000063	0.000057	0.000045	0.000022	0.000010
Products										
Cement	2,854,457	2,494,021	1,575,211	1,553,003	1,810,647	968.8	977.5	947.1	1,068.1	1,025.0
Clinker **	84,736	52,862	76,267	-87,935	-32,514	28.8	20.7	45.9	-60.5	-18.4
Filler **	965	-353	1,881	-149	2,373	0.3	-0.1	1.1	-0.1	1.3
Chalk slurry to power station (Nordjyllandsværket)	17,556	6,004	13,847	16,203	10,230	6.0	2.4	8.3	11.1	5.8
Total	2,957,715	2,552,534	1,667,206	1,481,122	1,790,736	1,003.9	1,000.5	1,002.4	1,018.6	1,013.7
Adjustment	-	-	-	-	-	-3.9	-0.5	-2.4	-18.6	-13.7
Total Cement Equivalent	2,946,294	2,551,346	1,663,126	1,454,043	1,766,561	1,000.0	1,000.0	1,000.0	1,000.0	1,000.0
Packaging	2,389	1,720	1,169	1,091	1,101	0.8	0.7	0.7	0.8	0.6
Water										
Steam	1,507,750	1,366,972	984,264	1,149,406	1,361,524	511.7	535.8	591.8	790.5	770.7
Cooling water, incl. Kiln 85 groundwater	3,298,857	2,848,735	2,311,365	2,086,319	2,256,291	1,119.7	1,116.6	1,389.8	1,434.8	1,277.2
Groundwater- lowering (Kiln 76)	275,085	204,824	135,067	157,937	313,446	93.4	80.3	81.2	108.6	177.4
Waste water	61,145	44,271	38,377	27,612	38,588	20.8	17.4	23.1	19.0	21.8
Heat recovery for district heating	(GJ)	(GJ)	(GJ)	(GJ)	(GJ)	(MJ/tTCE)	(MJ/tTCE)	(MJ/tTCE)	(MJ/tTCE)	(MJ/tTCE)
	1,781,063	1,432,350	1,139,729	1,177,344	1,204,501	604.5	561.4	685.3	809.7	681.8
Waste ***										
Recycling	7,302	3,629	3,800	3,670	2,732	2.5	1.4	2.3	2.5	1.5
Incineration	427	614	497	580	156	0.1	0.2	0.3	0.4	0.1
Landfill	33,235	19,452	19,143	24,562	27,230	11.3	7.6	11.5	16.9	15.4
Oil and chemical waste	447	224	274	125	138	0.2	0.1	0.2	0.1	0.1
Total	41,411	23,919	23,714	28,937	30,256	14.1	9.3	14.3	19.9	17.1

** Incl. sales and change in stocks. *** Waste volumes are classified into hazardous and non-hazardous wastes on page 20 with indication of whether the materials is utilised or disposed of.



Environmental database

Aalborg Portland has established an environmental database for gathering and reporting environmental data from cement production. The database is the basis for the material flows shown on pages 24-25 and provides:

- High quality data. The database has contributed clear audit trails and documentation for the independent audit of Environmental Report 2011.
- A standard framework for efficient gathering and processing of data, and easy access for data analysis.
- Multi-purpose reporting, such as follow-up on action plans, calculation of CO₂, NO_x and SO₂, and environmental labels and declarations.

Key to chart and text

Data warehouse

A network server storing data that can be downloaded for purposes such as input to the environmental database.

Environmental database

Information system handling environmental data relating to cement production – see also Hyperion.

Hyperion

Name of program modules used for data input, processing, storage and reporting.

SAP

ERP [Enterprise Reporting Processor] system supporting functions such as production, procurement, inventory control, etc.

SDR

IT system for process control in cement manufacturing, including gathering of process data and reporting.

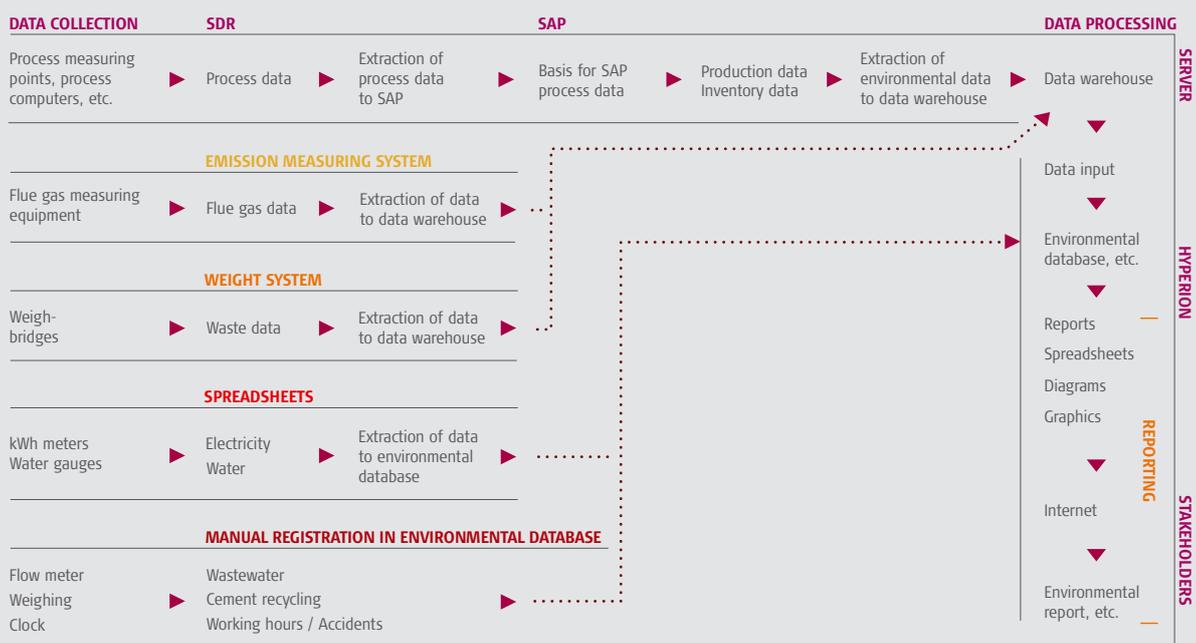
Server

A central computer in a network system.

Stakeholders

Customers, employees, neighbours, present and future investors, authorities, financial institutions, insurance companies, political groups and non-governmental organisations.

Environmental Database





Health & Safety report



Aalborg Portland continues to focus on health & safety, and both Management and employees strive constantly for improvements

Health & safety policy

Health & safety is accorded high priority and is an integral part of everyday operations. Ongoing efforts are made across the company to improve the working environment, and initiatives are implemented in selected focus areas to promote health & safety for all employees.

This policy applies to the Aalborg Portland cement plant and to the company's Danish storage terminals.

Aalborg Portland is committed to:

- Meeting or exceeding the requirements of statutory legislation.
- Maintaining and improving a process management system. The cement plant is certified according to OHSAS 18001 and Working Environment Authority Regulation No. 87 of 2005.
- Preventing accidents and injuries (including occupational diseases) through Workplace Assessments (WA) and related surveys and action plans, and through follow-up on accidents, near-misses, etc.
- Promoting a safe and healthy working environment within the scope of technical and economic feasibility.
- Adopting an active and open approach towards communication, knowledge and dialogue with customers, employees, authorities, neighbours, organisations and other relevant parties.
- Setting pro-active goals for future work and reviewing these goals annually.
- Assessing the principal health & safety loads and improving our efforts with a view to creating overview for formulation of new, relevant goals.
- Assessing our products, facilities and significant structural changes in relation to this policy.

- Contributing to the inclusive market through the personnel policy.
- Training and motivating the employees in order to ensure that we live up to the requirements contained in policies, action plans and objectives.
- Publicising our health & safety policy, goals, action plans and results by compiling and issuing an annual Environmental Report.

The health & safety policy is regularly reviewed.

Management's assessment

The annual Quality, Health & Safety (QHS) assessment of the integrated management system in which all significant events and activities are discussed was held on 10 February 2012. Prior proposals were submitted for measurable targets relating to the individual areas. Several of the targets were defined at the annual meeting of the new Health & Safety Organisation.

The Management adopted the following health & safety targets for 2012:

- WA survey to be completed and action plans to be entered in IPL before 1 July.
- Focus on One-side Repetitive Work (ORW)
- Max. 2.8% sickness absence (excl. long-term absentees)
- Max. 0.19 sickness days per employee
- External contractors: Max. 16 accidents in 2012 (same as 2011 level)
- Implement new chemicals database before 31 December 2012.





◀ The Health & Safety Organisation

In 2011, structural adjustments again had to be made in Aalborg Portland, and thus also in the company's new Health & Safety Organisation formed on 15 December 2011. The Environment, Health & Safety Group was disbanded on the same date and will be replaced by safety inspection rounds and internal audits.

The agenda for the annual meeting included a review of both general and specific activities relating to accidents in 2011. Statistics were presented detailing accident cause, type and time and the seniority of the victims.

By way of innovation, target recommendations for 2012 were prepared in small work groups based on results of safety inspection rounds and risk assessment.

The Health & Safety representatives continue to work on a variety of tasks such as Workplace Assessments, accident prevention, safety rounds, tidying up, campaigns, legislation, safety improvements, chemicals and substitution. The objective in all cases is to continuously ensure a safe and healthy working environment.

Ongoing focus on health & safety helps to prevent and further reduce the number of accidents.

Accidents and prevention

A tragic fatality occurred at Aalborg Portland in January 2011. The event made a deep impact and led to the review of a number of internal procedures. The incident was handled extremely professionally by all concerned both inside and outside the company, including Aalborg Portland's crisis personnel.

Strong praise was forthcoming during the annual external audit for the manner in which the tragedy was handled.

Lift procedures have been reviewed and implementation of lift courses called for.

In 2011, Aalborg Portland again focused on accident reduction, the ultimate goal being to avoid accidents entirely.

There were 14 registered accidents in 2011, one more than in 2010. The number of accidents appears to be falling more slowly than expected. However, the relatively small number of accidents is due to a high level of accident awareness on the part of the Health & Safety Organisation and among individual employees, together with intensified preventive work.

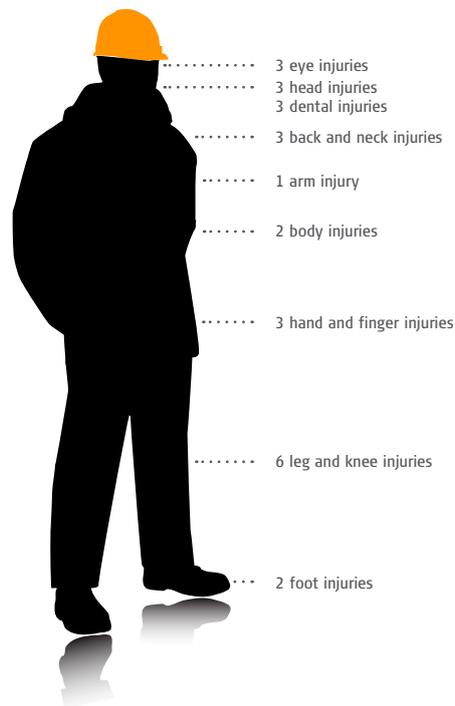
Accident frequency (number of accidents per million working hours) averaged around 22 for the year as a whole, the lowest being 17.8 and the highest being 44.9. Accident frequency in the second half of the year was lower or on a par with the same period in 2010.

Casualty list	Total 2011
Casualties with days lost *	14
Casualties without days lost	12
Total days lost	52
Days lost - long-term absentees	0
Near-misses	29

* Incidents leading to loss of one or more days must be reported to the Health & Safety Authority.

Types of accidents

Number and position of injuries



A total of 52 days were lost to accidents, somewhat fewer than the 87 recorded in 2010. The trend is towards less serious accidents as the number of days lost per 1,000 working hours is clearly falling.

In 2010, an average of one day per 1,000 hours was lost to accidents. In 2011, this figure fell to 0.6, the two longest absences being 17 and seven days, respectively. The other accidents cost around 1-2 days.

Significant efforts are still needed to continue the positive results for 2011 and to reduce accident levels further.

Shift personnel were subject to health and hearing checks in 2011 and the results were compiled into a health profile. The report will be discussed in the Health & Safety Organisation and areas for improvement will be entered in an action plan.



Plant protection

Aalborg Portland's plant protection plan was implemented at the start of 2011 and various courses held. A programme of drills is planned for the next three years in cooperation with Falck.

Safety and chemical instructions

Safety instructions are employee guidelines on how to perform day-to-day maintenance, repair and cleaning tasks in a manner which is safe and not detrimental to health. The instructions are available to both internal and contract personnel.

Update of the database containing details and instructions concerning the chemicals used at Aalborg Portland was kept to a minimum in 2011. The sole reason was that a new and more user-friendly database is currently in course of construction and is expected to be implemented in 2012.

Update of Aalborg Portland's own safety data sheets in accordance with REACH and CLP (new hazard labelling system) is planned for completion in 2012.

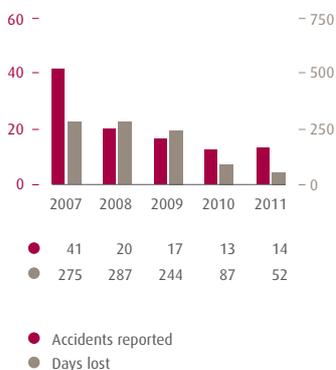
Workplace Assessments (WA)

Update work on WA action plans continues using the web-based tool IPL. The plans are followed up in the Health & Safety Groups and the status of the plans is presented at General Health & Safety Committee meetings. In 4th quarter 2011 preparations were made for a WA survey round every three years. All WA survey activities are planned for completion in mid-2012.

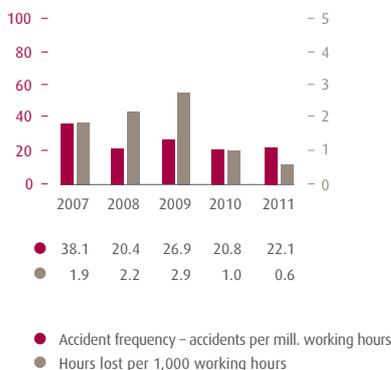
Collaboration between HR and the Health & Safety Organisation on the issue of sickness absence in relation to the Workplace Assessment continues as planned. Our absence and retention policy enables us to pinpoint and deal with health-related absence at a very early stage and thereby ensure a positive process for both the company and the employee.



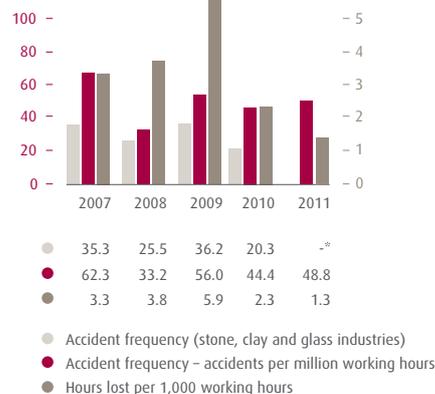
Accidents reported to the health & safety authority



Accident frequency / days lost
Hourly paid and salaried employees



Accident frequency / hours lost
Hourly paid employees



* Sector data will be available in 2nd half 2012.



◀ External contractors

The number of external contractors is increasing, and this is reflected in a need for increasing health & safety focus in order to maintain a good and safe working environment. Before starting work, external contractors are required to view our safety film – and the film must be viewed at least once annually.

In conjunction with major tasks, including kiln shutdowns, close contact is maintained with external contractors concerning coordination of safety work. This can prevent or pre-empt accident situations, and external contractors have expressed strong satisfaction with this arrangement. This close dialogue often gives rise to improvement suggestions that may produce concrete initiatives to the benefit of both parties.

New safety film

Aalborg Portland's safety film, which is mandatory viewing for external contractors before work can be started, was updated in 2011. Contractors must affix a sticker to their safety helmet as visible proof that they have seen the film, and they sign a form certifying that they have received safety information. The completed form can be referenced on Aalborg Portland's intranet to verify the safety status of individual employees. The film exists in English, Danish and German language versions.

An introductory folder containing the most important rules and regulations is also provided.

Hot work

Under the Health & Safety Authority's regulations on work in explosive atmospheres a classification plan and an expanded Workplace Assessment (explosion safety document) must be updated at least once every three years. Update was performed in 1st half 2011 and all relevant personnel attended the ATEX review which was held in May.

Courses have also been performed out in collaboration with Aalborg Construction College.

HEALTH PROMOTION

Aalborg Portland is committed to continuously motivating its employees to adopt a healthy lifestyle with regard to diet, exercise and smoking.

Fitness

The fitness centre continues to be used by many employees and their families. Help is still also available from an instructor and, on request, from a physiotherapist.

There are also badminton courts which are likewise very popular.

Aalborg Portland urges employees to participate in activities that support healthy living, and in 2011 teams from Aalborg Portland again took part in the local DHL relay race.

Diet

The canteen buffet from which employees can compose a healthy meal of their own choice remains a successful concept. Various theme campaigns of 1-3 days' duration are also staged. In 2012, based on the health profile produced in 2011, the canteen will give further focus to low-calorie products.

Smoking

Smoking is prohibited indoors at Aalborg Portland and anti-smoking courses are available to all employees.

Inclusive labour market

Aalborg Portland's absence and retention policy is closely adhered to. This ensures that contact is made with employees who are absent frequently or for prolonged periods and that employees who for some reason are compelled to take extended leave can be retained.

Performance reviews were held for both salaried and hourly-paid employees in 2011. Topics discussed included well-being, the working environment, and training needs targeted on providing new skills and proficiency. A job satisfaction survey was carried out in 4th quarter 2011, and this will form the basis of relevant Management initiatives in the first three months of 2012.

Aalborg Portland attaches major importance to health and safety and continuous focus is given to improving the working environment





Independent auditors' report

To the stakeholders of Aalborg Portland A/S

We have performed an assessment of Environmental Report 2011 presented by the Management for the activities of Aalborg Portland A/S in Aalborg, which is prepared in accordance with the statutory regulations on environmental reports and the disclosure requirements in the European Environmental Management Standard (EMAS) and in accordance with the measurement and calculation of material flows described.

The Management of Aalborg Portland A/S is responsible for the Environmental Report 2011. Our responsibility is to express an opinion on the Environmental Report 2011 based on our assessment.

Basis of opinion

We have conducted our work in accordance with the Danish Standard on Assurance Engagements (RS 3000) with the aim of expressing our opinion with a reasonable level of assurance.

Based on an assessment of materiality and risk, our work has comprised analyses, inquiries to the Management and accredited certification company, spot checks of systems, data and underlying documentation, including checks on whether the stated guidelines for recording and measuring data have been applied. We have assessed whether the accounting policies chosen by the Management are appropriate and whether the estimates made by the Management are reasonable, and we have assessed the overall presentation of the Environmental Report, including compliance with the statutory regulations on environmental reports and the disclosure requirements in the European Environmental Management Standard (EMAS).

We utilised audit as well as environmental specialists in the performance of our work. We believe that the work performed gives an adequate basis for our opinion.

Opinion

In our opinion the Environmental Report 2011 for the activities of Aalborg Portland A/S in Aalborg is presented in accordance with the statutory regulations on environmental reports and the disclosure requirements in the European Environmental Management Standard (EMAS), and in accordance with the measurement and calculation of material flows described.

Aalborg, 20 April 2012

KPMG
Statsautoriseret Revisionspartnerselskab

Hans B. Vistisen
State Authorised
Public Accountant

Nicolai Sommer
State Authorised
Public Accountant

EMAS registration



Verifier
Bureau Veritas Certification

Accreditation no.
DANAK DK-V Reg. 6002

Report verification date
26 March 2012

Terminology

Alkali

Alkalis used at Aalborg Portland are sodium and potassium compounds.

Alternative fuels

Burnable organic waste products that replace fossil fuels. Homogenous fuels produced for Aalborg Portland consisting of a reprocessed fuel product, meat and bone meal, and dried sewage sludge.

BAT

EU documents describing the Best Available Technology in different sectors. Used as basis for environmental approvals.

Biofuels

Organic fuels considered CO₂-neutral.

Cement clinker

Intermediate product that results from the burning of slurry in kilns and is ground to produce cement.

Cement mill

Grinds cement clinker into cement.

CO

Carbon monoxide. A result of incomplete burning of fossil fuel. Converted in the atmosphere to CO₂.

CO₂

Carbon dioxide. Formed by burning of fuel and calcining of chalk. CO₂ emission is calculated according to EU guidelines.

dB(A)

Noise is measured in dB(A) which is a logarithmic scale. For example, the noise from leaves rustling in the wind is around 20 dB(A). The noise level in an ordinary living room is around 40 dB(A), in offices 60-65 dB(A), on a street with normal traffic 80-85 dB(A) and from a pneumatic drill approximately 100 dB(A).

DS/EN 16001

Standard dealing with guidelines for establishing energy management systems.

EMAS

Eco-Management and Audit Scheme established by EU regulation.

Emission

Release of noise or gas. In flue gas emission the volumes released are metered continuously, except for CO₂ – see under CO₂.

Environmental Impact Assessment (EIA)

EU directive prescribing that systems with potential environmental impact may not be established until the procedure in the directive has been implemented, including preparation of an EIA Report, holding of a public inquiry, etc.

Filtrate water

Waste water generated in the heat exchangers of the heat recovery facility by condensing of vapour from flue gases.

Flue gas desulphurisation gypsum (FDG)

Gypsum formed by the desulphurisation of flue gases.

Fly ash

Material resulting from cleaning of flue gases in an electrostatic precipitator.

Fossil fuel

Coal, petcoke, oil and natural gas.

GJ

Gigajoule = 1,000 MJ.

HCl

Hydrogen chloride.

Hg

Mercury.

IPL

System for handling Aalborg Portland's Workplace Assessments (WA).

Iron oxides

Iron-containing residues from production of sulphuric acid and steel.

ISO 14001

Standard issued by the International Standards Organisation that contains guidelines for designing and maintaining environmental management systems.

Life Cycle Analysis (LCA)

Method for assessing the environmental and other impacts of a product on its surroundings from extraction of raw materials until final disposal.

Microfiller

Specially produced filler material with particle size < 50 µm.

NH₃

Ammonia.

NO_x

Nitrogen oxides. Formed by combustion of fossil fuel. Contributory cause of acid rain.

OHSAS 18001

International guideline for development and maintenance of health & safety management systems.

Petcoke

A low-ash coke by-product from the refining of crude oil into petrol.

Process management system

Aalborg Portland's system that ensures that all environmental, energy, quality and health & safety issues in the company are dealt with consistently and in accordance with policy, targets, guidelines and rules.

PRTR

European Pollutant Release and Transfer Register.

PSO charge

Levy obligating purchase of green electricity.

Pyrite ash

See iron oxides.

Raw meal

Cement clinker and incompletely burned raw materials. May result from e.g. kiln stoppage.

SO₂

Sulphur dioxide. Formed by combustion of fossil fuel. Contributory cause of acid rain.

Substitution

Replacement of a raw material by a waste product. For example fly ash substituted for clay.

tTCE

tonne Total Cement Equivalent. A standard unit for production output, obtained by calculating the equivalent cement tonnage if all the clinker had been processed into cement.

WA

Workplace Assessment.

Environmental Report 2011 **Environment and Health & Safety**

Edited and published by
Aalborg Portland A/S
Environment & Energy

Responsible under Danish press law
Preben Andreassen,
Manager, Environment & Energy
Tel. +45 99 33 79 33

The Environmental Report 2011 is
printed on CO₂ neutral paper produced
from sustainable forestry (PEFC).

Design and production: www.hegnet.dk

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