Environmental Report 2015

Environment and Health & Safety

aalborgportland
CEMENTIR HOLDING

Environmental Report 2015

Environment and Health & Safety

Aalborg Portland A/S
The company has manufactured cement at the Aalborg factory for more than 125 years and is the sole producer of cement in Denmark. The move towards sustainable production began in the 1970s when the energy crisis meant closure of three rival Danish cement plants. Focus came to be placed on improved energy efficiency, and in 1988 Kiln 87 entered service with an efficient semi-dry production process for grey cement. The first installation for recovery of waste heat with desulphurisation of flue gases in white cement production entered service in 1990.

Further energy and environmental initiatives have been developed subsequently, and sustainable production remains of major importance for employment, technological development and export.

Some of these initiatives – both solutions implemented and sustainable projects planned – are described on page 9.

General information about Aalborg Portland A/S is contained on page 56. See also aalborgportland.com.

Environmental Report 2015 – target group
Aalborg Portland's Environmental Report 2015 is intended to provide interested parties with easy access to the company's principal environmental impacts and health & safety activities and to the measures being taken to implement ongoing improvements.

The report also outlines how the company's environmental management system is used and is evolving.

The interested parties are:
Customers, employees, suppliers, present and future investors, financial institutions, insurance companies, public authorities, neighbours, political groups and interest organisations.

A part of the Aalborg Portland Holding Group
Aalborg Portland A/S is a part of the Aalborg Portland Holding Group owned by the Cementir Group, an international supplier of cement and concrete headquartered in Rome and listed on the Italian stock exchange in Milan. For more information on Cementir, see www.cementirholding.it/index-eng.php.

Environmental Report 2015 covers Aalborg Portland's cement plant situated at Rørdalsvej 44, 9220 Aalborg Øst, Denmark.

One of Denmark's leading industrial companies, Aalborg Portland, owns 1200 hectares in the Rørdal district. In addition to the cement factory the site contains a variety of nature and agricultural land.

The factory including chalk pit covers a total area of 330 hectares, of which the chalk pit comprises 210 hectares. In addition to cement and district heat production there is a recycling facility and two on-site landfills, one now closed.

Aalborg Portland A/S has 267 employees. There are also a substantial number of subcontractors, which augments the company's benefit to society.

This Environmental Report covers the period 1 January - 31 December 2015.

EMAS verification of Environmental Report 2015 has been performed by Bureau Veritas Certification (Accreditation No. 6002) in accordance with the EMAS scheme, cf. page 55.

Certifications
Aalborg Portland's management system for quality, environment, health & safety and energy has been certified by Bureau Veritas Certification.

Aalborg Portland is certified in accordance with the following standards:
ISO 9001 – since 1 March 1989
ISO 14001 – since 3 July 1998
OHSAS 18001 – since 9 September 2002
ISO 50001 – since 4 September 2013
The company has been product-certified according to EN 197-1, since 2002

In addition, the company's environmental management system has been EMAS-registered since 2 March 2000. Reg. no. DK-000132

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Aalborg Portland – environment, energy and health & safety in 2015

Environmental Report 2015 is Management's review of the year's most significant environmental, energy and health & safety activities relating to Aalborg Portland's Danish cement production and Danish storage terminals.

In 2015 we saw the results of the EUR 6.0m investment made in the alternative fuel facility. Now in service, this facility made it possible in 2015 to achieve our strategic goals for substitution of fossil fuels with fuel produced by combustible waste. In Kiln 87 operation, 43% of the supplied fuel energy thus came from alternative fuels, beating the 2015 target of 41%. The long-term target is to replace 60% of the fuel energy supplied to Kiln 87 with waste-based fuels.

Alternative fuels and raw materials

The use of alternative fuels and raw materials is a focus area for Aalborg Portland in sustainable production, and we are constantly on the lookout for new possibilities. In 2015 we used, among other things, waste from industry, meat and bone meal, and dried municipal sewage sludge from Aalborg as alternative fuels. All with view to limiting consumption of non-renewable resources and reducing CO_2 emission.

In 2015 the Aalborg Portland cement factory utilised approx. 400,000 tonnes of alternative raw materials, including fly ash from power stations and sand dredged from the Limfjord at Hals Barre. Under the partnership whereby we supply chalk slurry to the desulphurisation plant at Nordjyllandsværket power station, we received 29,000 tonnes of FGD gypsum in return which will be recycled together with 28,000 tonnes of our own.

Wind turbines

Together with the authorities, work continued in 2015 on securing the necessary permits to set up wind turbines at Bredhage. The 5 turbines planned will enable 18% of total factory power consumption to be replaced by green energy.

The initiatives described above are strongly in harmony with the wishes of the Danish Government for a transition to green industry, a circular economy, and environment-friendlier electricity.

Michael Lundgaard Thomsen, Managing Director, Aalborg Portland A/S

Improved energy efficiency

Projects launched in the period 2010 – 2015 based on work carried out in recent years to improve the energy efficiency of existing production plant have resulted in an annual fuel and electricity saving equal to the yearly power consumption of 63,000 households.

Going forward, continued focus will be placed on optimising energy consumption through more efficient use of fuel and electricity. Aalborg Portland will in this way contribute to reaching the Government's targets for Denmark's future energy savings.

Waste heat from cement production at Aalborg Portland is recycled environmentally to provide district heating for Aalborg's residents. In 2015 the amount of heat supplied corresponded to the annual consumption of 24,000 households. Work continues on developing new ways to increase this amount in future.

Work environment
The company's most important resource is its people. It is our employees who are the driving force behind ongoing improvements in routines, equipment and processes. Resources must be utilised with consideration, and this poses many challenges.

Aalborg Portland's integrated management system involves employees at all levels and reflects the company's processes. We are certified in accordance with health & safety standards and this brings with it obligations.

Our health & safety organisation was the subject of ongoing focus from our H&S Committee during 2015. Is the organisation efficient, do we make the best use of resources, can we do things better?

Against the background of positive dialogue between Management, employees and shop stewards, a new and changed health & safety organisation was established on 1 December 2015 - implementation is expected to take the whole of 2016.

Wellbeing is one of the cornerstones of every successful business and this is also an area in which our health & safety organisation has a key part to play. Thus, summer 2015 saw the launch of Project Wellbeing, and completion is expected in mid-2016.

This project complements Strategy 2020, a Danish health & safety initiative targeting occupational accidents, psychosocial work environment and musculoskeletal disorders. In 2014 Aalborg Portland implemented a similar, smaller project focused on musculoskeletal disorders/heavy lifting, and we expect to see the effects of this project when we conduct a Workplace Assessment Survey in 2016.

Green investments
Provided a continued long-term and stable levy policy is maintained by the politicians, not creating anti-competitive environmental taxes in Denmark, we at Aalborg Portland will be able to continue our green investment programme that clearly signals our strong commitment to improved energy efficiency, climate, external environment, and an internal environment that benefits both company and employees. This ambition is wholly consistent with the wishes of both Government and society for sustainable development.

Michael Lundgaard Thomsen
Managing Director, Aalborg Portland A/S
September 2016

Environmental vision, environmental and energy policy

Environmental vision: Aalborg Portland shall be a responsible company promoting sustainable development.

Aalborg Portland's environmental and energy policy applies to the cement factory in Aalborg and storage terminals in Denmark.

We will:

- Respect statutory legislation and relevant official requirements. If a limit is exceeded we will inform the authorities and prepare remedial action plans.
- Promote sustainable development and cleaner technology within the scope of economic feasibility.
- Set pro-active targets for our future work and review our targets once a year at Management's seminar established for that purpose.
- Support our customers in achieving their environmental targets by developing and helping to develop sustainable cement and concrete products which improve the life cycle of concrete.
- Protect the environment by reducing emissions and consumption of energy and raw materials per tonne of cement product through energy efficiency measures, energy management and other means.
- Inform our suppliers and subcontractors of relevant procedures and requirements.
- Adopt an active and open approach towards communication, knowledge and dialogue with customers, employees, public authorities, neighbours, organisations and other collaboration partners.
- Educate and motivate our employees to ensure that we live up to the requirements contained in our policies, targets and action plans.
- Oppose introduction of further anti-competitive environmental levies and work for a reduction of the existing tax burden.

To realise these objectives we are committed to:

- Maintain and develop a process management system that embraces external environment, energy and CO_2. The system is certified according to ISO 14001, ISO 50001 and the Danish Energy Agency's supplementary requirements hereto and is registered under the EMAS scheme.
- Publicise our policy, targets, action plans and results in the form of an annual Environmental Report.
- Formulate and use indicators as guidance mechanisms to achieve defined targets.
- Assess our products, facilities and significant renovation projects in relation to the scope of this policy, and support energy-efficient procurement and eco-friendly project planing.
- Be an active collaboration partner in Danish environmental and energy policy by utilising alternative raw materials and fuels.

Sustainable development

Aalborg Portland is committed to promoting sustainable development based on the following principles:

- Environment shall be an integral part of the development in the company's activities, including reduction of environmental footprint.
- Our environmental activities shall be implemented through involvement of all employees and in dialogue with the community.
- Key performance indicators shall signal sustainable development.
- Production and economic growth shall take place without relative increase in energy consumption, emissions, use of chemicals, creation of waste, and other consumption of resources for the individual products.
- Resource efficiency shall be promoted i.a by substitution of non-renewable resources and introduction of new technologies.
- The global perspective shall be invoked – i.a. by CO_2 emissions trading, Joint Implementation and the Clean Development Mechanism.

Sustainable production

In the development and manufacture of Aalborg Portland's cement products focus is placed on sustainability and responsibility.

During the production of cement there is emission of CO_2 and other substances to the environment. Aalborg Portland is focused on efficient use of energy and minimising environmental impact.

Aalborg Portland is committed to contributing to a sustainable development for society. The targets set by us in the area of environment are intended to help reduce our impact on nature and environmental footprint. Our environmental spotlight also covers employee health & safety. Focal areas include:

Climate, CO_2 and alternative fuel
Aalborg Portland is focused on reducing emission of the climate gas CO_2 by increased use of waste fuel containing biomass, which is CO_2-neutral, as an alternative to fossil coal and petcoke. The use of waste as fuel thereby helps to stretch the world's resources of fossil fuels. At the same time we are reducing the need for long-distance transport of fossil fuel.

Aalborg Portland's plans to install wind turbines of its own will also reduce our CO_2 emission from electricity consumption, cf. also page 26.

Energy, CO_2 and products
In order to reduce our CO_2 emission per tonne of cement produced we have introduced mineralised operation in the manufacture of grey and white cement clinker. This is a kiln process that is less fuel-intensive and therefore produces less CO_2 emission.

We have also initiated production trials with types of cements that contain less cement clinker. These cements are less energy-intensive in the production phase and thus emit less CO_2. Developing new types of cements is a protracted process as the market must subsequently also accept the new cements.

Energy savings and switching to alternative fuel have meant that our relative emission of CO_2 has been reduced by 8% in the period 2000-2015.

Heat recovery, SO_2 reduction and gypsum production
We recover heat from the kiln flue gases for supply as district heating to the City of Aalborg. Our waste heat recovery and flue gas desulphurisation facility has sufficient capacity to meet the annual district heating needs of 36,000 households. Using chalk slurry, this facility removes up to 98% of the sulphur from the SO_2 contained in the flue gas. The resulting FGD gypsum is a recyclable waste product which substitutes natural gypsum in cement manufacture. Hereby, long-distance transport of natural gypsum from abroad is avoided.

NO_X reduction
In the mid-2000s we introduced i.a. SNCR and mixing air technology to reduce NO_X. Using these techniques has led to a 70% reduction in the relative NO_X emission in the period 2003-2015.

Waste water and water resources
Early in 2005 we introduced a waste water recycling facility into cement production. This unit recycles the filtrate water produced in heat recovery and flue gas desulphurisation. In 2015 the volume of this process water, which was previously released into the Limfjord, exceeded 410,000 m^3. Waste water recycling also avoids the need to extract an equivalent volume of water from Aalborg Portland's own wells, thus reducing the burden on local groundwater resources.

Waste recycling
Aalborg Portland has recycled microfiller, a kiln by-product, for use in the chalk pit rehabilitation project. This recycling at the same time lessens the need to find additional public landfill capacity, cf. also "Resource-efficient partnership" on page 10.

Wellbeing
Aalborg Portland focuses on maintaining a good working environment and to prevent stress among its employees and has a well-functioning contingency plan for dealing with individual cases. This plan includes dialogue therapy and careful planning for a return to work, cf. also "Our work environment" on page 40.

Resource-efficient partnership

Aalborg Portland converts wastes and by-products into cement and district heating. We work to promote sustainable development by basing large parts of our cement production on recycling flows of materials from society and industry in a resource-efficient partnership. This is consistent with the Danish Government's desire that resources should form part of a circular economy.

Wastes and homogenous by-products from other industries are therefore recycled and utilised as fuel and raw materials in producing cement. Waste heat is also recovered from kiln flue gases and supplied to the City of Aalborg for district heating, after which the gases are released through the stacks. In this way Aalborg Portland's overall environmental footprint is reduced significantly.

By means of recycling and by using alternative fuels and raw materials in cement production, wastes and by-products are fully utilised. All the constituents are consumed and no new wastes formed. High temperatures and exceptional process conditions make cement kilns ideal for this purpose. At the same time the flue gases are effectively cleaned in the kiln system, in electrostatic precipitators and scrubbers, which means that use of alternative fuels and raw materials does not increase the environmental impacts.

In 2015 Aalborg Portland used approx. 527,000 tonnes of alternative fuels and raw materials in producing 1.9 million tonnes of cement, replacing an equivalent volume of natural raw materials and fossil fuels otherwise needing to be sourced in Denmark or imported. Aalborg Portland has the capacity to handle 700,000 tonnes of alternative fuels and raw materials annually.

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SOCIETY AND INDUSTRIES		WASTE PRODUCT
Power stations	→	Fly ash and desulphurisation gypsum
Navigation channels	→	Sand
Sulphuric acid – factory	→	Iron oxide
Recycled paper – factory	→	Paper sludge
Recycled aluminium – factory	→	Aluminium by-products
Biomass-fired plants	→	Dross
Collection schemes	→	Waste from industry
Daka Bio-Industries	→	Meat and bone meal
Sewage treatment plants	→	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 CO_2 and NO_X emission

Fewer ultimate wastes and smaller quantities

Lower overall environmental impact

Cement for building with ambition

Cement is used for making concrete – and is the most widely used construction material in the world. Buildings, bridges, runways, kerbstones and garden paving are examples, and architects, engineers and manufacturers are constantly seeking new areas of application.

Aalborg Portland's products

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

Aalborg Portland's cements are subject to Bureau Veritas Certification, which verifies that they comply with the requirements of product standard EN 197-1 and are therefore CE-labelled.

Cement products manufactured for the Danish market include the following:

BASIS® cement
Suitable for pre-cast concrete units and concrete products.

RAPID® cement
Suitable for ready-mixed concrete, pre-cast concrete units, concrete products, floors and screeds. Also suitable for masonry mortars, including lime cement mortars used in building, rendering etc.

LOW ALKALI SULPHATE RESISTANT cement
Specially developed for concrete used for civil engineering structures such as bridges or constructions in contact with sulphate-containing groundwater.

BASIS® AALBORG cement
Suitable for general concreting and construction work on building sites, such as foundations, floors, masonry, rendering etc.

MESTER® AALBORG cement
Suitable for lime cement mortars used in construction, pointing, rendering, roofing etc.

AALBORG WHITE® cement
General-purpose cement, but the preferred choice when the specification calls for white or pigmented concrete.

Product information
It is important for us as a manufacturer that information about our products is readily accessible. The intended use for each individual product must be stated in the product information and in the technical documentation prepared with view to compliance with relevant legislation.

Information about our products can be found on our website www.aalborgportland.dk and relevant documents can be downloaded.

Declaration of Performance (DoP)
Declarations have been prepared for our individual products bearing the cement name, CE marking, and declared interval for the properties required in the cement standard, supplemented as appropriate with properties of special importance for our customers.

Safety Data Sheets (SDS)
Our products are accompanied by Safety Data Sheets and therefore form the basis for the preparation of Workplace Instructions by customers in their own business. Details of any risks associated with working with the product are stated along with information about relevant wear protection. The Safety Data Sheets are prepared in accordance with CLP (Classification, Labelling and Packaging) regulations and are updated at least once a year.

European Chemicals Agency and REACH
All our products are registered with the European Chemicals Agency (ECHA), and relevant documents are compiled in accordance with the REACH regulation.

Cement and concrete of the future

Aalborg Portland is involved in developing a variety of cement types for the future.

The aim is to create cements that will ultimately be able to be manufactured with less energy consumption and in some cases with less CO_2 emission.

In the cement a part of the clinker is replaced by grey microfiller and burned clay, thereby reducing the emission of CO_2.

Initial cement lab tests have yielded positive results. Full-scale trials have therefore been carried out on concrete that contains the cement in order to determine the properties of the cement in practical application.

In the cement trials a concrete retaining wall was cast at Aalborg Portland using CO_2-reduced cement. CO_2 emission from the test concrete is approx. 18% lower than with conventional concrete. We are convinced that still better results can be achieved with further development.

There is a long way to go before the new cement can enter production. Part of the development process is taking place under the auspices of "Green Concrete II", a three-year project in which Aalborg Portland will conduct research into new types of cements and concretes together with Unicon and numerous other players.

However, the positive results to date have positioned Aalborg Portland at the leading edge of development for the low-CO_2 cements of the future.

Environmental Product Declarations

The Environmental Product Declaration (EPD) is used to provide information about the environmental profile of a product.

EPDs are becoming common in the building industry and are required in tenders for building projects to estimate a project's environmental footprint. The EPDs also supports decision-making on what the supplier's preferred material should be when eco-friendly construction is specified.

To ensure our compliance with these new requirements we have established a partnership with Aalborg University to develop Life Cycle Assessment (LCA) models and thereby identify the environmental hotspots in our value chain – from extraction of chalk to product packaging. We use them to set specific targets by means of relevant indicators.

These LCA models provide the necessary support for preparation of EPDs and for providing full information to customers requiring a high level of environmental transparency. Ultimately they will be a necessary tool for supporting building projects which follow a specific certification scheme.

Manufacture of cement

The manufacturing process for grey and white cement is essentially identical but there are variations in kiln configuration.

Sourcing of raw materials

Cement is manufactured principally using the natural raw materials chalk and sand, which are the core components in all cements produced at Aalborg Portland. Chalk is excavated from Aalborg Portland's chalk pit, while the sand is quarried at Sandmosen and dredged at Hals Barre and in the Limfjord. The dredging of sand also helps keep the fjord navigable.

Initial processing of raw materials

The chalk is first processed in a slurry drum, while the sand is ground in a mill. The two ingredients are then mixed to form the finished kiln slurry.

Kiln process (grey cement)

The slurry is injected together with fly ash into a dryer-crusher where the material is converted with the help of hot flue gases into raw meal. The raw meal is conveyed via a separating cyclone to the cyclone preheaters where it is heated to 750° C.

The raw meal is further heated in the calciners to 900° C, at which temperature the carbon dioxide is released. 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. The clinker is then cooled in the clinker cooler.

Process heat for the kiln is provided by coal, petcoke and alternative fuels, including waste products, dried sewage sludge and meat and bone meal.

Heat recovery

In 2015, heat recovered from the kiln process during production of white cement and supplied to the City of Aalborg was sufficient to meet the annual heat consumption of 24,000 households.

Grinding in cement mill

After stockpiling in the clinker store the clinker is ground in the cement mill to a fine powder to which a few percent of gypsum is added to produce the types of cement required.

Packing and distribution

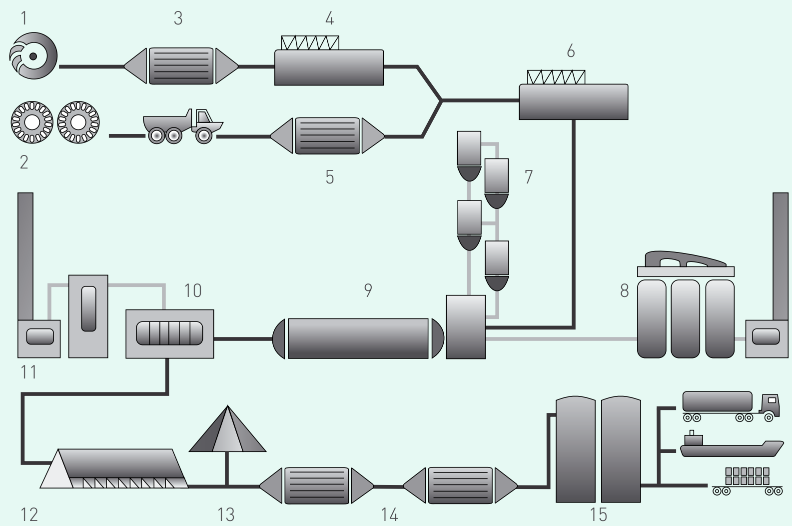
The cement is distributed in bags or in bulk by road or ship.

A quality product

The finished cement product is ready for use in all sizes of building projects worldwide. The cement is a quality product used in concrete, mortar etc. and one that adds strength, stability and long life to buildings and constructions everywhere.

From raw materials to cement

1. Chalk excavator
2. Sand dredger
3. Slurry drum
4. Chalk slurry
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

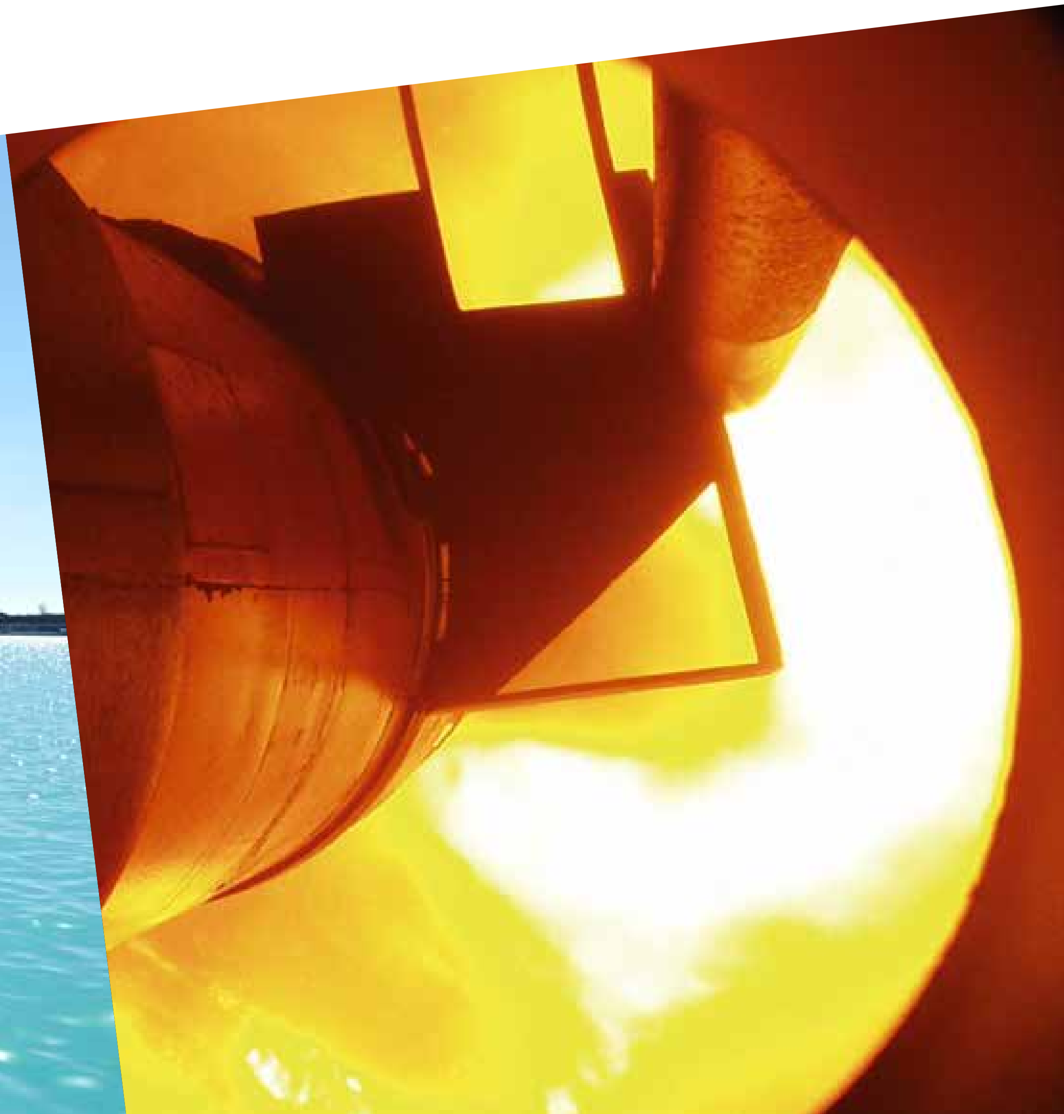


Environment and energy in focus

Aalborg Portland is a large industrial company in terms of area and includes a cement factory and chalk pit in which environmental and energy factors are in focus.

The principal environmental and energy factors form part of Aalborg Portland's environmental and energy management system and are discussed on pages 23-37 under the following headings: Raw materials – Energy – Emission to atmosphere – Noise – Water – Waste – Land use – Sustainable distribution.

We work to environmental and energy targets with view to achieving ongoing improvements. Activities and results appear in pages 20-21.



Environmental and energy management

At Aalborg Portland we have an integrated Process Management System that defines the flows and procedures in all our processes.

Aalborg Portland is certified according to:

ISO 14001, EMAS III, ISO 50001, OHSAS 18001, the Danish Working Environment Authority's Order No. 1191, ISO 9001, the Danish Maritime Authority's Regulation No. 6 of 9 October 2002 on Bulk Carriers, the Danish Safety Technology Authority's Quality Management System for electrical and installation work, ISPS regulations on security of port facilities against terrorism, and DS/EN 197-1/-2 concerning quality of cement products.

In 2015 new ISO 9001 and 14001 standards were issued. A process for converting to the new standards has been initiated and is expected to be concluded in 2017.

The integrated nature of the Process Management System is important for the individual employee as the approach to environment, energy, quality and health & safety is in all cases 'process-oriented'.

The system is supported by a vision statement, policies, targets and action plans.

Management's review
The Environment & Energy Group conducts ongoing administrative follow-up on the Environmental and Energy Management System, including progress on activities in the general action plan.

Health & safety assessment is described on page 43.

A 2016 target seminar was held in November 2015 to review and define policies, goals and action plans for environment, climate and energy.

Management's review in May 2016 contained the following key elements:

- As part of follow-up on the Environmental and Energy Management System, five meetings were held by the Environment & Energy Group, including two to discuss the status of primary environmental and energy targets.
- Six out of 10 defined targets have been achieved. The targets for CO_2, NO_X and specific variable electricity consumption were not achieved due to unstable operation on Kiln 87. On the white cement kilns, reduced heat transfer from chain systems to slurry have resulted in higher energy consumption.
- Energy economies for both electricity and fuel continued in 2015. One example was change from one to two-string operation on Kiln 87 for production of SC7 clinker, which produced a total saving for the year of 18,762 MWh.
- In 2015 there has been an increasing number of inquiries about dust deposition in the neighboring area. Actions are planned to prevent dust emission.
- The Environmental Protection Agency is still in the process of reviewing the general environmental approval.
- A new agreement with the Energy Agency on implementing improved energy efficiency is expected ready for signature in August 2016.

Internal audit
Certification carries with it obligations, one being an internal audit of Process Management. It is important that the audit process and findings should have value for the company.

The audit is executed as an interplay between Aalborg Portland's individual departments and the internal audit group, which consists of auditors with varied background expertise.

The annual internal audit plan provides for audit to be conducted at regular, scheduled intervals to ensure that Process Management:

- Conforms to what has been planned and agreed
- Lives up to the requirements in the standards
- Is implemented effectively
- Is maintained at all levels of the organisation.

Will all internal audits, discrepancies and improvement proposals must entered in an action plan and discrepancies recorded for further processing.

Environmental and energy audits planned for 2015 have been carried over to 2016. For example, an internal audit has been conducted in January 2016 with focus on energy management in accordance with ISO 50001 and the Danish Energy Agency's supplementary requirements. In addition, the system for calculating CO_2 has been reviewed based on the CO_2 monitoring plan.

Principal environmental impacts
Cement manufacture involves substantial consumption of raw materials and energy and therefore gives rise to a number of direct environmental impacts in the form of flue gas emissions, wastes, noise, waste water, etc. In addition, there are indirect environmental impacts outside the factory arising from product distribution, sourcing and processing of fuels and raw materials, and production of electricity at power stations.

Materiality criteria
The "PRTR list" – the list of pollutants and emission thresholds for reporting to the European Pollutant Release and Transfer Register – is used as the point of departure.

In our environmental and energy work the most significant direct and indirect environmental impacts have been defined and chosen according to the following criteria:

- Dispersion of substances and climate and environmental impact.
- Volumes.
- Terms of environmental approvals and consideration for neighbours.
- Optimisation of raw material resources.
- Receipt of waste products from other industries.
- Potential for energy savings.
- Minimised energy consumption during distribution.
- Product development – research into sustainable production of cement and concrete.
- Biodiversity.

Aalborg Portland considers odour irrelevant for environmental reporting purposes due to the nature of the production process and the fact that the cement factory is situated at a relatively long distance from the nearest neighbours.

Environmental approval
Environmental impacts are regulated in Aalborg Portland's environmental approvals and permits, which are listed on page 56. Conditions for operation are stipulated, including:

- Emission conditions for all material sources of atmospheric contamination: kilns, cement and coal mills, cooler stack and boiler plant.
- Emission of factory noise.
- Requirements for handling and reporting of serious operating issues and breakdowns.
- Requirements for operation of raw material and fuel stores.
- Requirements for operation of on-site landfills and recycling facilities
- Release of process waste water, cooling water, rainwater, etc.

Compliance with the requirements in the approval along with the day-to-day environmental work at the factory help to ensure that no unnecessary environmental impact is caused.

Environmental and energy performance
As a follow-up to our environmental and energy work, key performance indicators (KPIs) have been selected for grey and white cement production. These indicators are relative values which show consumption and emission in relation to production.

Reference should also be made to the relative values in "Material flows – key performance indicators 2015" on pages 38-39, showing development over the past five years.

KEY PERFORMANCE INDICATORS	Unit	2011	2012	2013	2014	2015
Grey cement production						
Energy	GJ per. tTCE	4.61	4.29	4.28	4.50	4.45
CO_2	kg per tTCE	792	764	761	781	761
NO_X	Kg per tTCE	0.64	0.63	0.58	0.62	0.70[a]
White cement production						
Energy *	GJ per tTCE	6.96	6.59	6.48	6.74	6.82[b]
CO_2 *	kg per tTCE	1,154	1,139	1,124	1,144	1,155[b]
NO_X *	kg per tTCE	2.11	1.54	1.25	1.39	1.51[c]

* Adjusted for heat recovered and supplied to the City of Aalborg's district heating system.
Adjustment relating to CO_2 and NO_X is calculated according to the 125% thermal efficiency method for district heating.

[a] NO_X increase for grey cement production was due to periods of increased NO_X during unstable operation when NO_X cleaning with aqueous ammonia was limited by compliance with NH_3 limit.

[b] Energy consumption and CO_2 increased in white cement kilns due to reduced efficiency of kiln chain systems for heat transfer to kiln slurry.

[c] NO_X increase for white cement production was due to consideration for the employee work environment. Adjustment of the mixing air equipment for NO_X cleaning has reduced dust in the environment adjacent to the kiln burners.

Environmental and energy targets – activities and results

TARGETS 2015	STATUS 2015	TARGETS 2016
ELECTRICITY SAVINGS Continued focus on reduction of base power load and on power-saving measures.		Continued focus on reduction of base power load and on power-saving measures.
The 2015 target is to implement power economy measures, also for base load equipment, to achieve annual electricity savings of 2,799 MWh. Implement the following projects: • Introduce two-string instead of one-string operation for SC7 production (885 MWh). • Upgrade filter cleaning for Cement Mill 7/10 (77 MWh). • Optimise flue gas exchangers for Kilns 74 and 78 (1,127 MWh). • Adjust Cement Mill 4 for HDC production (710 MWh).	Target achieved with annual saving of 3,048 MWh by implementation of the following projects: • Change to two-string instead of one-string operation for SC7 production was implemented in April 2015. Documented electricity saving 1,416 MWh. • Change from time to differential pressure-control of air to filters – still pending. • Completed with documented electricity saving of 1,218 MWh. • Cement Mill 4 will not be used for HDC production, which will continue on Cement Mill 2. Project not to be implemented. • Replacement of IT servers yielded electricity saving of 414 MWh.	The 2016 target is to implement power economy measures, also for base load equipment, to achieve annual electricity savings of 2,351 MWh. Implement the following projects: • Increase capacity for Cement Mill 8/9 regarding ROC cement (2,250 MWh). • Replace network switches (64 MWh). • Replace dockside compressor motor (16 MWh). • LED lighting in canteen and welfare building (21 MWh).
Reduce the specific variable electricity consumption by 8% against 118 kWh per tTCE in 2010. Reduce base power load by 5% in 2015 against 26 kWh per tTCE in 2011.	Target not fully achieved due to unstable operation on Kiln 87. Specific variable electricity consumption has been reduced to 111.5 kWh per tTCE, a decrease of 5.5% against 2010. Target achieved as base power load has been reduced by 7.7% to 24 kWh per tTCE.	Reduce specific variable electricity consumption by 8% against 118 kWh per tTCE in 2010.
WIND TURBINES The 2015 target is to replace 18% of electricity consumption against 2014 with renewable energy from 5 wind turbines.	On 15 December 2014 Aalborg City Council approved a proposed addendum to the urban area development plan for installation of five wind turbines at Bredhage. The proposal, together with the Environmental Impact Assessment (EIA) and Environmental Assessment (EA), was subject to public hearing until 23 February 2015. Resulting objections are being discussed by the City of Aalborg and final approval of the addendum by Aalborg City Council is awaited.	The 2016 target is to replace 18% of electricity consumption against 2014 with renewable energy from 5 wind turbines.
FUEL SAVINGS The 2015 target is to implement measures to achieve an annual fuel saving equivalent to 11,680 kWh by the following projects: • Two-string instead of one-string operation for SC7 production (8,334 MWh). • Phase out steam plant (3,346 MWh).	Target achieved with annual saving of 29,917 MWh by implementation of the following two projects: • Change to two-string instead of one-string operation for SC7 production was completed in April 2015. Documented fuel saving 17,346 MWh. • Steam plant shut down on 1 June 2015. Documented saving 12,571 MWh.	The 2016 target is to implement measures to achieve an annual indirect fuel saving corresponding to 8,528 MWh through the following project: • Increase heat recovered from flue gases for district heating purposes to match coal-fired district heating production.

Six out of 10 environmental and energy targets were achieved in 2015.

TARGETS 2015	STATUS 2015	TARGETS 2016
ALTERNATIVE FUEL The target is ultimately to replace at least 60% and 20% respectively of the fuel energy for grey and white cement production with alternative fuel, reducing CO_2 emission.		The target is ultimately to replace at least 60% and 20% respectively of the fuel energy for grey and white cement production with alternative fuel, reducing CO_2 emission.
The 2015 target is to replace 41% of the fuel energy for Kiln 87.	Target achieved for Kiln 87 with 43.4% of fuel energy replaced.	The 2016 target is to replace 41.5% of the fuel energy, which is less than was achieved in 2015, as higher production and consequently higher overall fuel consumption are expected in relation to fuel contribution from alternative fuels.
The target for white cement kilns is to replace 4.6% of fuel energy.	Target achieved for white cement kilns with 4.7% of fuel energy replaced.	The target for the white cement kilns is to replace 1.5% of fuel energy, which is less than was achieved in 2015, due to expected decreasing supplies of meat and bone meal.
CO_2 REDUCTION Continued focus on reducing CO_2 emission by increased use of biofuel, and ultimately development of new types of cement *.		Continued focus on reducing CO_2 emission by increased use of biofuel, and ultimately development of new types of cement *.
Target unchanged: Reduce CO_2 emission from grey cement production by 3% against 764 kg CO_2 per tTCE in 2012.	Target not fully achieved. CO_2 emission from grey cement production decreased to 761 kg CO_2 per tTCE, a fall of only 0.3% against 2012, due to unstable operation on Kiln 87.	Target unchanged: Reduce CO_2 emission from grey cement production by 3% against 764 kg CO_2 per tTCE in 2012.
Target unchanged: Reduce CO_2 emission ** from white cement production by 2% against 1,139 kg CO_2 per tTCE in 2012.	Target not achieved. CO_2 emission ** from white cement production increased to 1.155 kg CO_2 per tTCE. This was an increase of 1.4% against 2012 due to higher fossil fuel consumption caused by less efficient heat transfer from kiln chain systems to kiln slurry.	Target unchanged: Reduce emission ** from white cement production by 2% against 1,139 kg CO_2 per tTCE in 2012.
NO_X REDUCTION Maintain low NO_X emission of 0.77 kg per tTCE by means of introduced NOx-reducing technologies.	Target not achieved. Specific NO_X emission increased to 0.96 kg per tTCE, indicating that, with the technologies introduced, the NO_X cleaning is in a normal optimised range where consideration has been given to reducing dust in the work environment and conformity with NH_3 limit, cf. also Notes a and c on page 19.	Maintain low NO_X emission in the normal range of 0.77 - 0.96 kg per tTCE by means of the NO_X-reducing technologies introduced.
WASTE Recycle 20,000 tonnes of landfilled filler for rehabilitating the chalk pit.	Target achieved. 44,199 tonnes were removed from landfill and recycled for rehabilitating the chalk pit.	Recycle 26,000 tonnes of landfilled filler for rehabilitating the chalk pit.

* "Cement and concrete of the future" is discussed on page 14 and is included in research projects that promote sustainable development. The Environmental Product Declarations referred to must document sustainable development.

** Adjusted by CO_2 fraction relating to heat recovered and supplied to the City of Aalborg for district heating. The adjustment is based on the 125% thermal efficiency method.

Target achieved   Target not achieved

Environmental dialogue

Aalborg Portland pursues the following significant activities to ensure and strengthen the ongoing environmental dialogue with interest groups:

- Continuous contact with central and local environmental authorities in Denmark and EU, as legislation and regulations that will impact the company are constantly being developed.
- Involvement of environmental information from suppliers by means of supply contracts that include environment.
- Aalborg Portland hosted 117 visits and 2,080 visitors in 2015. Visitors were given an environmental briefing and opportunity to ask questions.
- Aalborg Portland staff addresses external seminars and meetings.
- Employees in the company's departments participate in Energy & Environmental Focus Groups.
- Current and previous editions of the Environmental Report are published at www.aalborgportland.dk.

The Environmental Report is distributed to numerous interested parties nationally and internationally, including neighbours, owners, authorities, politicians, the Danish Society for Nature Conservation, customers and suppliers.

The report is also available in the factory to all employees and published on the company's website.

In order to ensure optimum engagement and dialogue with internal and external interested parties regarding our environmental activities we urge everyone to voice opinions and suggest improvements to our reporting.

Operating problems
Procedures for dealing with operating incidents and breakdowns are defined in Aalborg Portland's Process Management System and in the terms of our environmental approval. Provision is made for all relevant authorities to be contacted in cases of actual or risk of environmental pollution.

The number of inquiries arising from dust emissions at Aalborg Portland increased from 21 to 33 and related mainly to several short-duration precipitator outages on Kiln 87.

Number of releases resulting in inquiries

	2011	2012	2013	2014	2015
Dust	11	9	19	21	33
Noise	0	1	0	1	1
The Limfjord	1	0	2	1	1
Other	0	0	0	1	0

Requirements to suppliers
Aalborg Portland systematically strives for improvements in the areas of quality, environment, energy, workplace and health & safety.

Strategic suppliers are called to a yearly evaluation meeting which reviews activities between Aalborg Portland and relevant suppliers in the above areas.

Aalborg Portland makes clear that priority is given to suppliers who are also environmentally and socially aware. We initiate dialogue with selected suppliers as part of our focus on improving our activities in the areas stated above. Based on updated selection criteria we yearly identify suppliers with whom we wish to establish closer dialogue. Relevant and specific questions are defined, and meetings are arranged which result in specific action plans.

In 2016 special focus will be placed on suppliers of transportation services and alternative fuels.

Aalborg Portland's Danish cement carrier has invested in new, eco-friendlier cement transporters. Larger road tankers have also been acquired to optimise tonnage per km, which similarly benefits the environment.

In 2016 Aalborg Portland has recruited a postgraduate to conduct a three-year period of research into our use of alternative fuels. The focus in the current year will be on identifying the alternative fuels which can help maximise CO_2 reduction.

Raw materials

Cement is manufactured using raw materials from natural resources, such as chalk, sand and gypsum. In 2015, to limit the impact on the natural reserves of these materials, Aalborg Portland replaced 11% of natural raw materials with alternatives obtained from other industries and from society. These alternative raw materials take the form of wastes and by-products which are thus recycled as resources.

Aalborg Portland began using fly ash – a waste product from power stations – almost 40 years ago. Subsequently a number of additional alternative raw materials have been included in production.

Sand from dredging
Sand dredgers keep navigation channels at Hals Barre and in the Limfjord open for the passage of ships, a public interest to which Aalborg Portland contributes. The dredged sand replaces quarried sand and would otherwise be dumped in the Limfjord, impacting both marine environment and landscape. Aalborg Portland location on the Limfjord also affords an effective logistical solution as the dredgers can dock next to the factory and pump the sand directly into settling tanks ashore.

FGD gypsum
FGD gypsum obtained from desulphurisation of flue gases is used in cement production as an additive. This gypsum comes from both Aalborg Portland itself and from a local power station, Nordjyllandsværket, and replaces natural gypsum and anhydrite sourced in Morocco and Canada. Use of FGD gypsum also reduces the number of long-distance shipments by sea.

The local partnership between Aalborg Portland and Nordjyllandsværket is a good example of industrial symbiosis. We supply chalk slurry to the power station for use in desulphurisation and take FGD gypsum in return.

A specially designed lorry delivers the chalk slurry to the power station and brings back the FGD gypsum, thus halving the number of road journeys required.

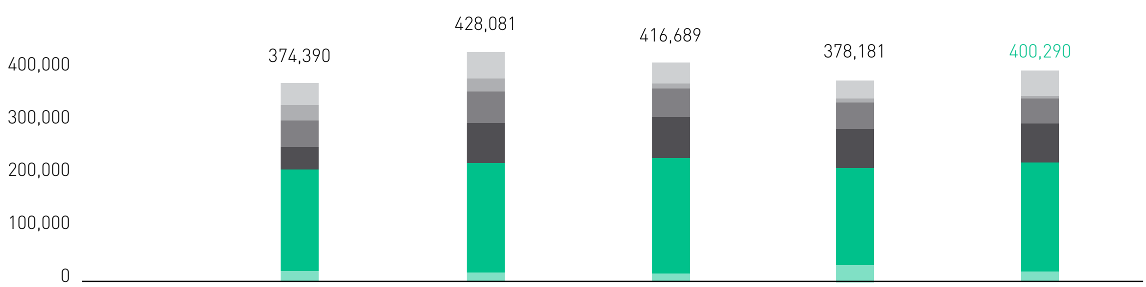
Fly ash
Fly ash, a mineral product resulting from generation of electricity and heat at coal-fired power stations, has been recycled at Aalborg Portland since the 1970s.

The fly ash is used in cement production to replace natural clay which would otherwise have to be sourced in Denmark.

Paper sludge
Paper sludge is a by-product of the manufacture of recycled paper. Since 2013 Aalborg Portland has reduced its consumption of paper sludge due to the closure of its Danish supplier and is currently using up its remaining reserves.

Iron oxide
A by-product of the manufacture of sulphuric acid, iron oxide is a necessary source of iron for production of grey cement.

Alternative raw materials – tonnes



	2011	2012	2013	2014	2015
Iron oxide	45,331	44,728	41,769	39,102	42,763
Paper sludge	22,186	24,845	5,492	3,165	2,002
FGD gypsum	52,853	55,022	58,680	53,490	56,961
Sand	43,489	81,311	79,980	64,314	75,410
Fly ash	189,990	204,148	213,176	189,339	201,406
Other	20,541	18,027	17,592	28,771	21,748

Energy

Cement manufacture requires relatively large amounts of fuel and electricity.

The replacement of fossil fuels, such as coal and petcoke, by alternative fuels began in the early 1990s. In 2015, these combustible waste products accounted for more than 43% of the energy used in making grey cement and almost 5% of the energy for white cement production.

Waste is energy

Recycling of waste contributes to a resource-efficient society. Instead of being consigned to landfill a valuable fuel is instead recycled as a resource to replace coal and petcoke in cement production.

Unlike in a waste incineration plant, in a cement plant no secondary wastes are created as all the input materials are integrated in the cement chemistry and the finished cement product.

Waste-based fuel also helps reduce emission of CO_2, NO_X, SO_2 etc. in kiln flue gases, and biomass content is recycled, benefiting the global climate. As examples, meat and bone meal are considered wholly carbon-neutral, and in mixed industrial waste the biomass carbon fraction is typically 30-40% in replacement of fossil fuels.

Dried sewage sludge

Aalborg Portland receives dried sewage sludge from the City of Aalborg as a CO_2-neutral biofuel replacement for coal and other fossil raw materials.

The sludge was previously transported 800 km by motorway from Aalborg to North Germany. Now that Aalborg Portland has won back the contract to take dried sewage sludge from the City of Aalborg the distance it is transported by road is just 8 km.

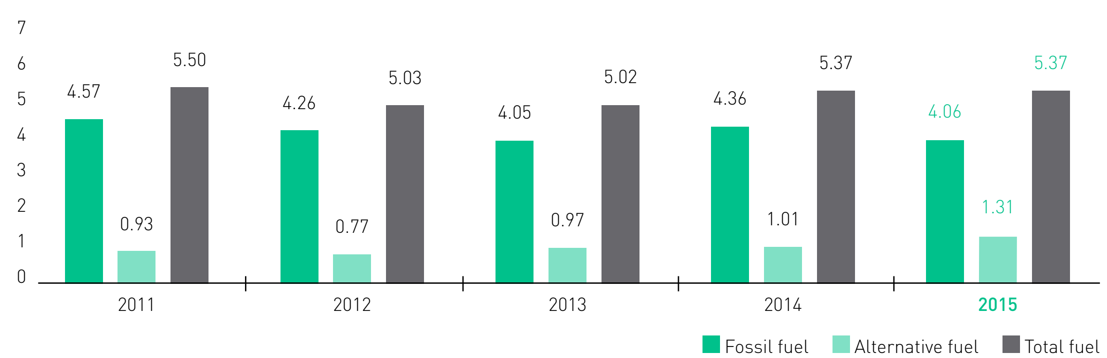
Fuel consumption and heat recovery

In 2015 Aalborg Portland's specific fuel consumption was 2% lower than in 2011 and unchanged in relation to 2014, cf. graph below.

Waste heat is recovered from cement factory production and used to provide district heating for City of Aalborg residents.

In 2015 waste heat from Aalborg Portland met the annual heat requirements of some 24,000 households.

Consumption of fossil and alternative fuel – GJ per tTCE



Electricity
Electricity is essential to cement plant operation and power consumption by the Aalborg Portland in 2015 was 257,703 MWh.

The distribution of electricity consumption at Aalborg Portland is shown in the graph below. The largest consumers are the kilns and cement mills.

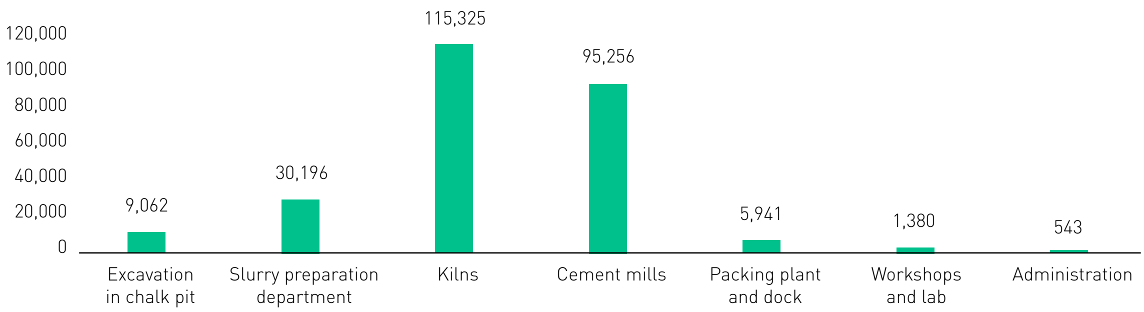
The consumption of electricity consists of a factory base load and a variable element that depends on the size of production on primary installations.

With implemented power savings and with higher and therefore more efficient production, relative electricity consumption in 2015 was 1.4% less than in 2014 and 4.0% less than in 2011.

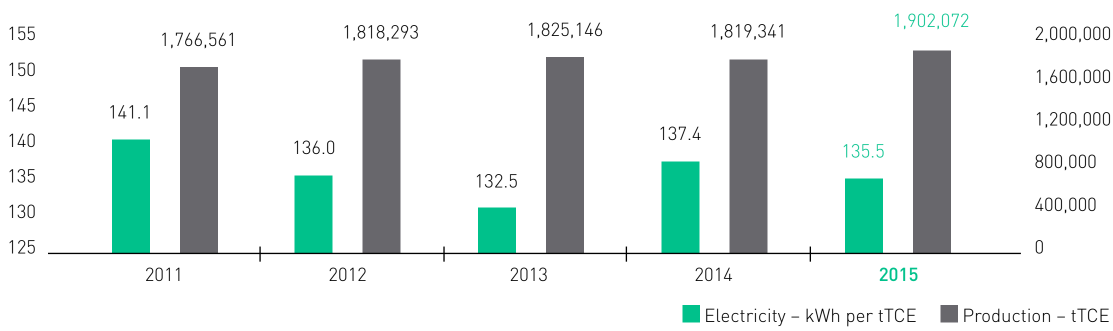
Energy saving
Aalborg Portland has made determined efforts over many years to realise savings in power and fuel consumption.

Projects completed in 2011-2015 as a result of heightened focus on improving energy efficiency in existing production installations have delivered power and fuel savings of more than 252 million kWh. This corresponds to the annual electricity consumption of 63,000 households.

Distribution of electricity in 2015 by consumption points – MWh



Electricity consumption – kWh per tTCE **Production – tTCE**



Wind turbines – green energy

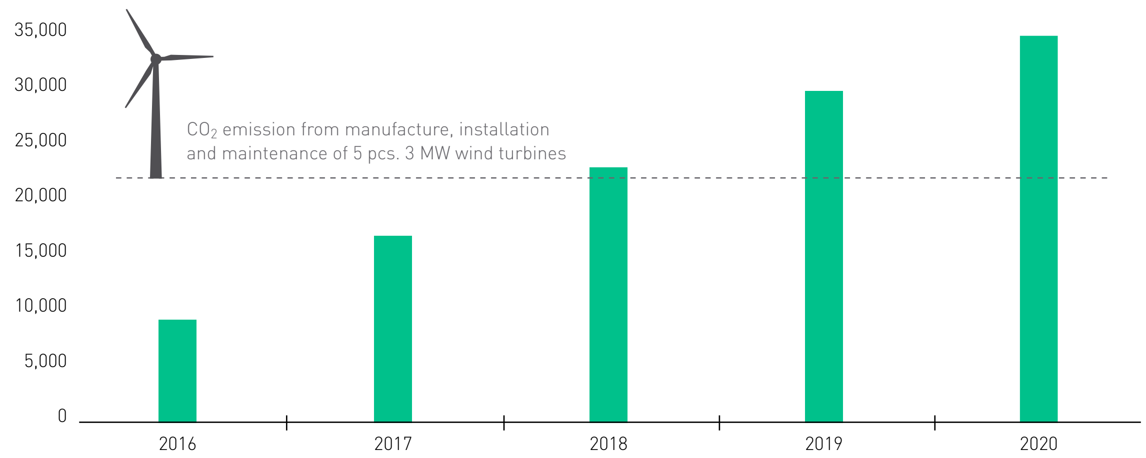
Aalborg Portland has concrete plans to install 5 wind turbines on company-owned land close to the factory. This will lead to even more green energy being used to make cement.

In 2015 more than half (54%) of electricity consumption was supplied by renewable energy sources, such as wind power, solar power and CO_2-neutral biofuel.

With the installation of these wind turbines, CO_2 emission relative to electricity consumption will be reduced by 12%.

Within just three years of turbine installation the CO_2 saving will exceed the CO_2 produced in turbine manufacture, installation and maintenance, cf. graph below.

CO_2 saving from substitution of traditional electricity with electricity from 5 wind turbines – tonnes




FAM

Emission to the atmosphere

There are a number of emission sources at Aalborg Portland, ranging from the chimney stacks to smaller workshop extractors.

Overall there are around 400 emission points at the factory where the air is cleaned in a variety of filters before being released.

The major stacks are equipped with gauges which continuously meter the concentrations of the relevant emissions.

In addition, regular samples are taken at a number of extraction points and analysed to provide further documentation. The sampling and analysis are performed by an independent accredited laboratory.

Flue gases

CO_2

Relative CO_2 emission decreased 1% overall compared with 2014. CO_2 emission from grey cement production fell due to increased consumption of CO_2-neutral alternative fuel. In white cement production, CO_2 emission increased due to higher consumption of fossil fuel. This increase was caused by reduced heat transfer efficiency in the kiln chain systems. Repair is planned at main kiln stop in 2016.

NO_X

In the period 2004-2007 development and installation of NO_X cleaning equipment on all kilns was established. In 2015, relative NO_X emission has fallen as a result by 70% compared with 2003.

Optimised NO_X cleaning in 2013 led to an optimised normal range of emission. In 2015 a change caused by operating conditions meant that NO_X emission increased from 0.77 to 0.96 kg per tTCE.

In the grey cement kilns NO_X is reduced by injecting aqueous ammonia. Since 2011 this has caused emission of ammonia (NH_3) to increase. However, this emission remains within the limits specified in our environmental approval.

SO_2

Relative emission has fallen over the years but has increased since 2013 from 0.32 to 0.44 kg per tTCE. This is primarily due to scrubber changes made to ensure low gypsum content in filtrate water. Without these changes, the filtrate water would cause clogged pipelines when recycled for slurry production.

It is noted that the SO_2 emission remains within the limits specified in our environmental approval.

CO

Relative emission has fallen 7% since 2014, from 0.91 to 0.84 kg per tTCE, due to more stable operation after Kiln 87 was reconditioned. Operation of the white cement kilns with mixing air equipment in the normal range for NO_X reduction has also reduced CO emission.

Dust

Relative emission is unchanged at 0.05 kg per tTCE. Complaints about dust emission due to operating problems are described on page 22.

Emission limits

Aalborg Portland's environmental approval dating from 2009, as last amended in 2015 with more stringent emission requirements for kilns (BAT), includes emission requirements for operation and limits.

The permitted daily averages for SO_2, NO_X, CO, HCl, NH_3 and dust were exceeded 40 times in 2015 and notified immediately and in the monthly reports to the Environmental Protection Agency in Aarhus.

The table over page shows the five main sources of air pollution, the emission limits and Aalborg Portland's current average emission level.

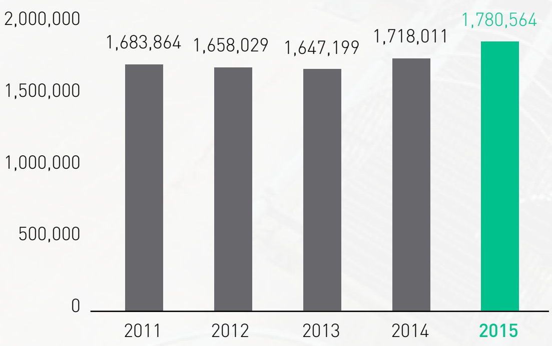
NO_X, SO_2 and dust emissions are determined by averaging continuously recorded data.

Limits stated are average emissions per 24-hour period.

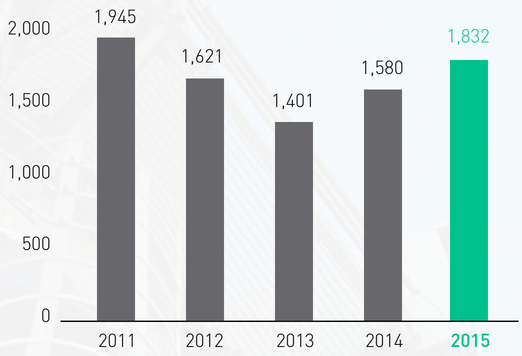
For clarity the table shows the average daily level over the year.

Atmospheric emissions – CO_2 and NO_X

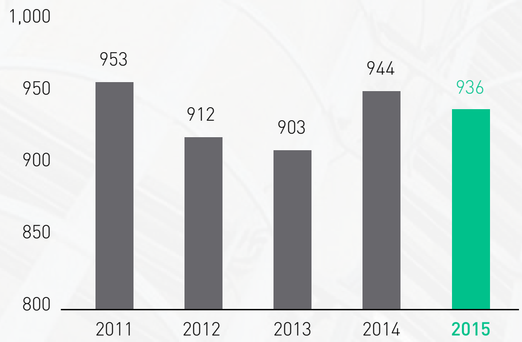
CO_2 – absolute figures – tonnes



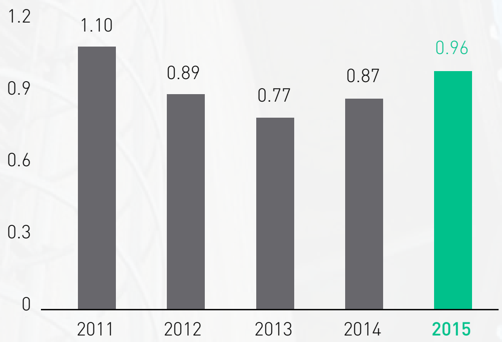
NO_X – absolute figures – tonnes



CO_2 – relative figures – kg per tTCE



NO_X – relative figures – kg per tTCE



Limits and levels during operation – the five main sources

	NO_X		SO_2		Dust	
	Limit *	Averaged level 2015 **	Limit *	Averaged level 2015 **	Limit *	Averaged level 2015 **
Heat recovery kiln 73/79	550	393	375	174	25	2
Heat recovery kiln 74/78	650	270	425	284	25	3
Heat recovery kiln 76	500	120	250	198	25	0.7
Kiln 85	750	797 ***	500	71 ***	35	11 ***
Kiln 87	400	238	10	0.7	25	13

* Daily average according to enviromental approval valid at 31.12.2015.
** Daily average over the year.
*** The data relate to 2009. The limit value for NO_X was 800 mg/Nm^3.

All values are stated in mg/Nm^3 dry flue gas at 10% oxygen content.

Noise

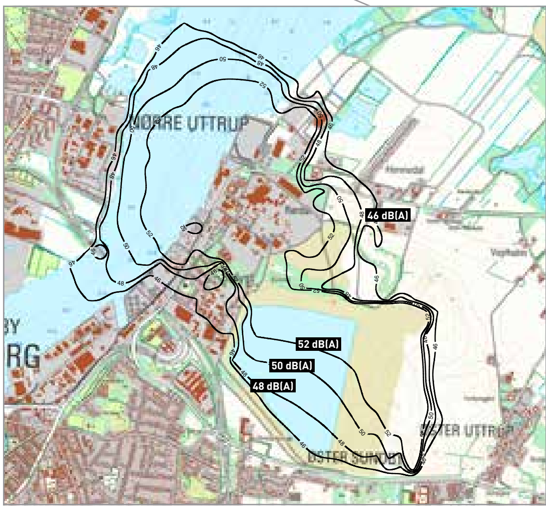
Aalborg Portland's noise emission is attributable to a large number of stationary sources, both indoors and outdoors, as well as internal factory traffic.

The noise sources include e.g. chimneys, kilns, cement and coal mills, belt conveyors, fans, ships loading and unloading, lorries, and excavation and rehabilitation operations in the chalk pit.

A noise map of Aalborg Portland was produced in 2006 using GPS to determine the location of all noise sources. This has improved the data on which noise calculations are based.

The noise map was last updated in January 2016 when application was made to upgrade Cement Mill 4 with a separator and bag filter facility.

The resultant noise calculation with all factory installations simultaneously working at maximum (worst case scenario) shows that conformity with existing noise emission limits can be achieved at all locations by using a specially designed filter fan mounted in a sound-proofed enclosure and by cladding and insulating the bag filter.



Noise map in dB(A) – evening conditions

When the bag filter is installed, measurements will be performed at new and changed noise locations to verify continued compliance with noise limits.

Aalborg Portland's actual noise contribution is considered to be below the theoretical maximum as the plant installations are rarely all in operation simultaneously and, unlike prior to the financial crisis and building slowdown in 2007, they are still not in full production.

In 2016 work will continue on extending the noise embankment northwards from the south-east corner of the chalk pit in order to screen the village of Øster Uttrup from operations in the chalk pit.

Water

Water is used in the various cement manufacturing processes and also for cooling production equipment.

Aalborg Portland obtains technical water for production purposes from on-site wells in a limestone aquifer situated outside designated drinking water areas.

Aalborg Portland is licensed to remove a total of 5.2 million m^3 annually. In 2015, 4.2 million m^3 was extracted as equivalent loading of the water resource. This includes 1.3 million m^3 of water from chalk sourced below the water level by deep excavator.

The remaining 2.9 million m^3 includes 1.8 million m^3 obtained from 15 on-site wells close by the cement factory, and 1.1 million m^3 from groundwater lowering around Kilns 76 and 85.

Relative water consumption increased by 5% compared with 2014, which was principally due to a greater need for groundwater lowering and a rise in consumption for compressor cooling.

A number of projects have been implemented to reduce water consumption and are described below.

Groundwater lowering for cooling
Local lowering of groundwater has proven an effective solution over the years for keeping underground basements, corridors and conveyor systems at the factory dry. More than 785,000 m^3 of this water is also recycled for cooling the factory's compressor plant, which would otherwise have to be done by Aalborg Portland's water resource.

Split water system
Following bacterial contamination of drinking water in 1998 the water supply system was split into two parts - one for drinking water and one for technical water used for production purposes. In 2015, Aalborg Portland received drinking water from the City of Aalborg after pesticide residue was detected in the company's own drinking water wells. The level of contaminant is now falling and nearing the permitted concentration of 0.1 µg/litre for drinking water.

Recycling of filtrate water
Filtrate water is produced in the heat recovery and desulphurisation system during gypsum formation. Until 2004 this water was released into the Limfjord.

Also at that time the water extraction limit of 5.2 million m^3 had almost been reached due to the high

level of production. Recycling filtrate water for use in cement production was found to be the effective solution and still is. In 2015 recycled filtrate water replaced approx. 411,000 m^3 of technical water that would otherwise have needed to be obtained from our water resources. Discharge into the Limfjord has also ceased so this is a positive win-win situation.

Remediation wells
In 2007 three remediation wells were drilled to protect the factory's water supply from contamination by trichloromethane and tetrachloromethane originating from land formerly leased by Aalborg Portland to the Danish military. The contaminated water is used in the factory for technical purposes. The remediation wells proved highly effective as early as 2008.

Pumping continued in 2015 as the level of tetrachloromethane in the remediation wells was still above the permitted limit for drinking water of 1 µg/litre.

Collection of surface water
In 2015 approx. 11,000 m^3 of surface water was collected from the store next to the slurry preparation department and used in slurry production. The extraction of technical water was reduced correspondingly.

Monitoring programme
Since 1991 an external company has performed annual hydro-geological surveys and analyses of our water quality. Overview of developments is obtained by ongoing reporting, thereby ensuring effective protection and utilisation of our water resource.

Surface water and waste water
Waste water is released by Aalborg Portland into the public sewer system. Surface water and cooling water are released directly into the Limfjord. Waste water sent to the public sewer system passes through the municipal treatment plant before release into the Limfjord.

Waste water and surface water which may contain mineral oils and sand pass through oil-water separators and sand filters at Aalborg Portland.

Wastes and by-products

Waste is sorted close to source and deposited in skips, oil and chemical receivers located around the factory. The waste is recycled, incinerated in accordance with municipal regulations or landfilled on site at Aalborg Portland.

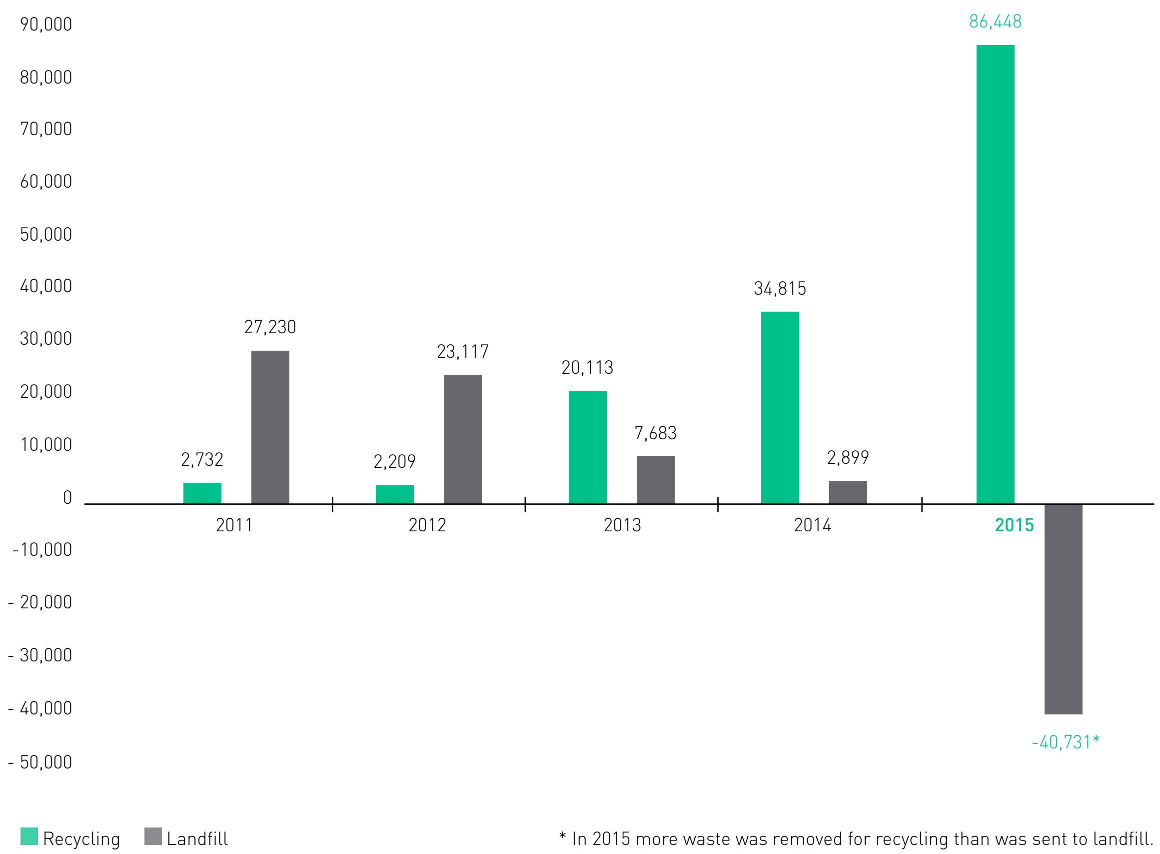
In 2015 more than 99% of the factory's waste was deemed non-hazardous. The remainder was characterised as hazardous oil and chemical waste or as mixed waste for external landfill.

Waste strategy implemented
Since 2013 a marked shift has taken place at Aalborg Portland – from landfilling to increased recycling. Recycled waste has increased by more than 84,000 tonnes compared with 2012.

Recycling of by-products
Aalborg Portland's waste statistics have been radically changed by the project to use microfiller – a kiln by-product – to rehabilitate the chalk pit, cf. also page 36.

Waste recycling is in harmony with the Danish Government's resources policy, which supports the substitution of waste for raw materials. At the same time the need to find new landfills is reduced.

Waste – from landfill to recycling – tonnes



* In 2015 more waste was removed for recycling than was sent to landfill.

WASTE – amount in tonnes	2011	2012	2013	2014	2015
TOTAL WASTE	**30,256**	**25,655**	**28,052**	**38,260**	**46,904**
UTILISED NON-HAZARDOUS WASTE	**2,888**	**2,432**	**20,307**	**35,132**	**87,605**
Recycling	2,732	2,209	20,113	34,815	86,448
Microfiller from kilns	-	-	16,235	27,399	78,371
Sweepings	-	-	1,403	1,683	824
Sand and grate material	1,187	1,079	235	377	48
Building waste	173	37	92	1,191	1,060
Metals	1,148	610	555	414	736
Paper and cardboard	4	15	13	14	9
Glass	0	-	0	1	0,5
Plastics	23	4	703	649	746
Electronic scrap	0	6	-	1	0.3
Other recyclables	196	458	876	3,087	4,653
Incineration	156	223	193	317	1,157
Mixed combustible	141	209	180	301	1,139
Municipal collection	16	14	14	16	18
UTILISED HAZARDOUS WASTE	**138**	**106**	**62**	**229**	**30**
Oil	134	102	55	216	26.7
Chemicals	4	3	7	13.4	2.8
DISPOSAL OF NON-HAZARDOUS WASTE					
On-site landfill	**27,221**	**23,094**	**7,210**	**2,522**	**-40,809**
DISPOSAL OF HAZARDOUS WASTE					
Off-site landfill	**9**	**23**	**473**	**377**	**78**

Land use and biodiversity

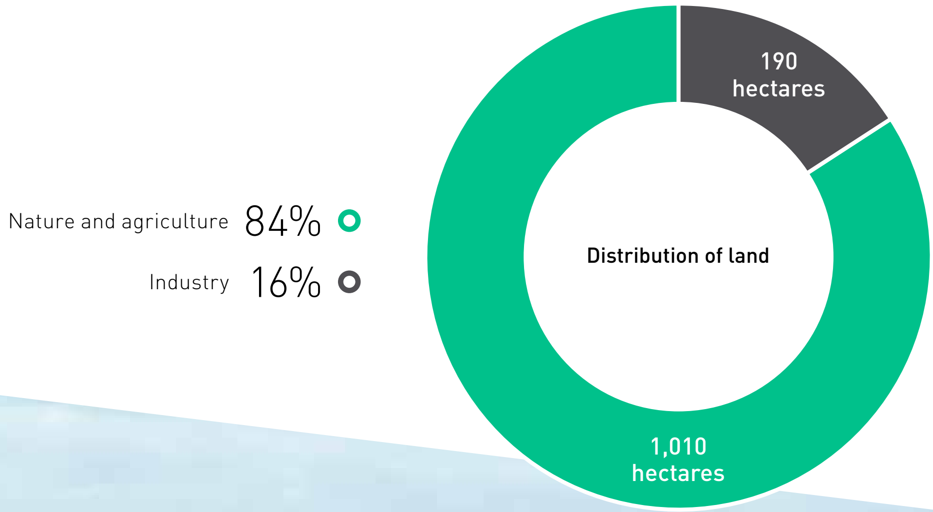
Biodiversity means variation or diversity in nature.

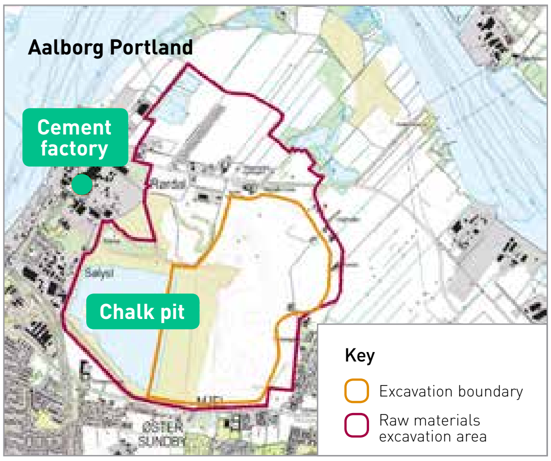
Areas used for production, buildings, storage and landfill are thus important for the biodiversity of land owned by Aalborg Portland in the Rørdal district.

The Rørdal site covers a total of 1,200 hectares, which includes 190 hectares used in connection with cement production. The remaining 1,010 hectares form a mosaic of lakes, woods, meadows, salt marshes, fallow and farmland. 84% of Aalborg Portland's land thus has good biodiversity potential.

The distribution of land use is as follows:

Aalborg Portland land in Rørdal area (hectares)	**1,200**
Factory	120
Active chalk quarry	54
Landfill site	12
Iron oxide facility	4
Total land used	**190**





Chalk pit

The chalk pit is situated close by the factory and will cover around 240 hectares when fully excavated. A significant part of the prospective plan for the chalk pit is the lake, the azure blue waters of which are characteristic of lakes in chalk quarries.

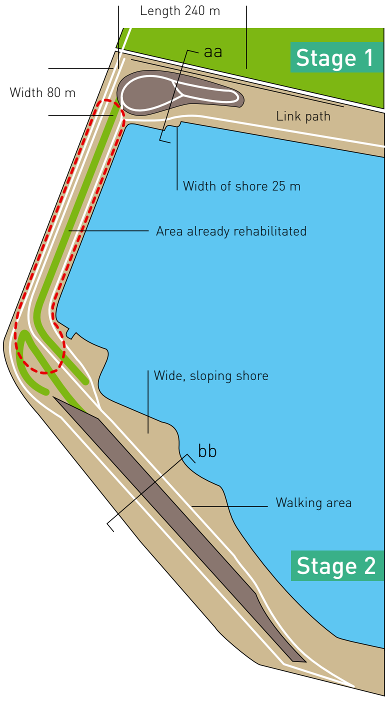
Aalborg Portland is licensed to quarry chalk in the Rørdal area within the designated excavation zone stated in the Raw Materials Plan for North Jutland. The licence is valid until 2052 when excavation in the chalk pit is expected to finish.

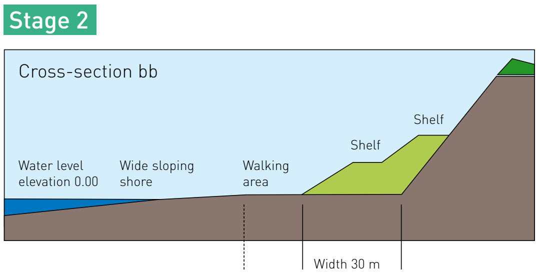
Chalk pit rehabilitation – Rørdal Lake Park

The concept of the rehabilitation plan is that the chalk pit should be transformed into "Rørdal Lake Park", which will offer the local population a variety of leisure and sporting activities close to urban surroundings.

The plan envisages the lake being used for sailing, water-skiing, diving and bathing, the areas around the lake providing amenities for hang-gliding, mountain-biking, jogging, walking and similar pursuits.

The steep slopes on the perimeter of the chalk pit, mainly to the west and north, and the areas close to the lake, will essentially remain as they are. The chalk will therefore be left exposed and in time become colonised by the unique vegetation characteristic of chalkland.





Recycling of microfiller in chalk pit
Construction of banks and terraces has commenced in two adjoining areas of the chalk pit (Stages 1 and 2) to enhance the visitor experience.

Stages 1 and 2 are situated in the northern and western parts of the chalk pit where adjacent earth banks will be backfilled with layers of microfiller.

When in place the microfiller will be capped with topsoil and planted subsequently to create variety in the recreational area.

Stage 1
The purpose of the embankment is to create a natural transition between the former transfer station and the lakeside. It will also screen the factory from view and act as a partial noise barrier between the factory and the public access area planned for the northern and western parts of the chalk pit.

Stage 2
In Stage 2, terraces will be constructed in the western part of the chalk pit.

The plan envisages the terraces being used for a variety of sporting activities, such as mountain-biking, jogging and hang-gliding. Paths and open spaces are also planned.

Work on Stages 1 and 2 continued in 2015 by backfilling with microfiller. Stage 1 is expected to be completed in 2016. A total of just over 78,000 tonnes of filler was deposited on site in 2015 for recycling in rehabilitation and landscaping.

Sustainable distribution

Product distribution in 2015 involved handling and transporting approx. 1.9 million tonnes of cement to domestic and export customers.

Our influence on the distribution of cement to export markets is chiefly limited to the choice of transport by ship, and this part of the distribution may therefore be termed an indirect environmental impact.

However, in the domestic market we can better influence the impact that distribution has on the environment in the form of exhaust emissions, wear on roads, etc. We therefore also have a responsibility to perform distribution in a sustainable manner.

In 2015, 74% of our cement was distributed by ship and 26% by road.

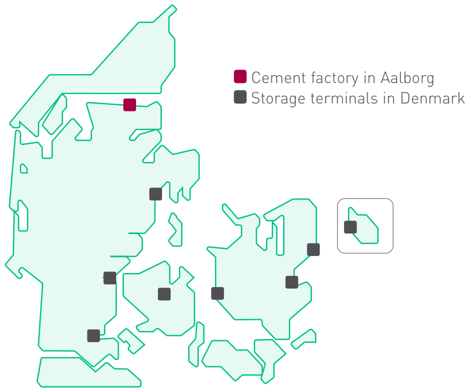
All our cement is manufactured in Aalborg, from where the bulk of production is forwarded by ship to our eight Danish storage terminals strategically positioned nationwide. Onward distribution to the customer takes place by road.

The average distance from terminal to customer is 65 km, which means that long-haul transport by heavy road tankers is avoided.

This strategy led to the establishment in 2011 of a storage terminal in Aabenraa for the export of white cement to the European market. Cement is now carried from Aalborg to Aabenraa by ship, a more eco-friendly mode of transport and one which avoids the need for two journeys of 270 km in each direction on the motorways of Jutland.

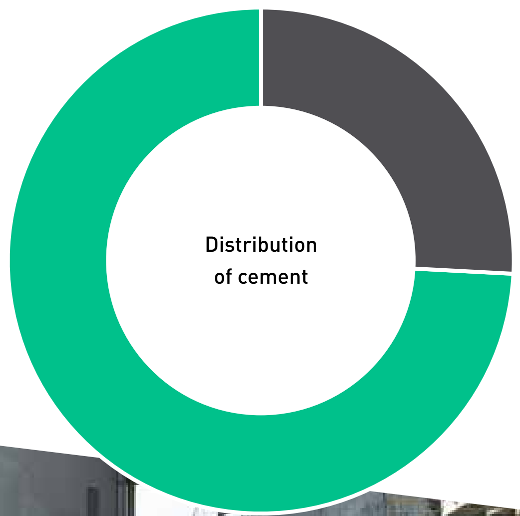
Some road haulage is contracted out to third parties. Customers in northern Jutland are supplied direct from Aalborg. Distribution of all bagged cement also takes place from Aalborg.

Aalborg Portland's focus on using alternative fuel represents an indirect CO_2 benefit as this fuel can be sourced locally and is therefore transported a far shorter distance than coal, petcoke and oil.



Cement distributed by lorry and road tanker 26%

Cement distributed by ship 74%



Material flows

Key performance indicators 2015 – Aalborg Portland cement plant

Material flows are stated using both absolute and relative figures as key performance indicators.

The absolute amounts are calculated as tonnes in the wet state. The relative values are based on the quantity (kg) of materials in the wet state used to make one tonne of Total Cement Equivalent (tTCE), a standard unit for production. This is obtained by calculating the equivalent cement tonnage if all the clinker were processed into cement.

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

INPUT

	Absolute figures – tonnes *					Relative figures – kg * per tTCE				
	2011	**2012**	**2013**	**2014**	**2015**	**2011**	**2012**	**2013**	**2014**	**2015**
COMBUSTION AIR										
(O2, N etc.)	570,452	557,128	543,819	593,783	627,846	322.9	306.4	298.0	326.4	330.1
RAW MATERIALS										
Chalk	2,937,540	2,939,060	2,963,408	3,064,648	3,173,982	1,662.9	1,616.4	1,623.7	1,684.5	1,668.7
Water	3,057,496	3,052,623	2,782,798	2,881,522	3,170,668	1,730.8	1,678.8	1,524.7	1,583.8	1,667.0
Sand	128,047	106,838	107,246	129,488	129,595	72.5	58.8	58.8	71.2	68.1
Gypsum	31,469	32,769	29,778	32,126	42,373	17.8	18.0	16.3	17.7	22.3
Other	29,885	39,442	27,013	24,536	33,290	16.9	21.7	14.8	13.5	17.5
Packaging	1,101	1,003	1,027	1,129	1,305	0.6	0.6	0.6	0.6	0.7
RECYCLABLES										
Fly ash	189,990	204,148	213,176	189,339	201,406	107.5	112.3	116.8	104.1	105.9
Sand	43,489	81,311	79,980	64,314	75,410	24.6	44.7	43.8	35.4	39.6
FGD gypsum	52,853	55,022	58,680	53,490	56,961	29.9	30.3	32.2	29.4	29.9
Paper sludge	22,186	24,845	5,492	3,165	2,002	12.6	13.7	3.0	1.7	1.1
Iron oxide	45,331	44,728	41,769	39,102	42,763	25.7	24.6	22.9	21.5	22.5
Other	20,541	18,027	17,592	28,771	21,748	11.6	9.9	9.6	15.8	11.4
Total	**374,390**	**428,081**	**416,689**	**378,181**	**400,290**	**211.9**	**235.5**	**228.3**	**207.9**	**210.4**
FUELS										
Coal	54,679	36,150	46,265	44,820	49,456	31.0	19.9	25.3	24.6	26.0
Petcoke	204,211	213,894	191,767	207,863	201,429	115.6	117.6	105.1	114.3	105.9
Fuel oil	7,222	5,615	4,689	4,447	4,637	4.1	3.1	2.6	2.4	2.4
Alternative fuel	83,022	81,899	97,250	100,817	126,618	47.0	45.0	53.3	55.4	66.6
Total	**349,133**	**337,558**	**339,972**	**357,947**	**382,140**	**197.7**	**185.6**	**186.3**	**196.7**	**200.9**
	(MWh)	(MWh)	(MWh)	(MWh)	(MWh)	(kWh per tTCE)	(kWh per tTCE)	(kWh per tTCE)	(kWh per tTCE)	(kWh per tTCE)
ELECTRICITY	**249,188**	**247,241**	**241,742**	**250,048**	**257,703**	**141.1**	**136.0**	**132.5**	**137.4**	**135.5**
INTERNAL RECIRCULATION										
	(GJ)	(GJ)	(GJ)	(GJ)	(GJ)	(MJ per tTCE)	(MJ per tTCE)	(MJ per tTCE)	(MJ per tTCE)	(MJ per tTCE)
District heat from heat recovery	21,055	24,278	21,197	24,090	19,672	11.9	13.4	11.6	13.2	10.3
Microfiller	110,453	107,376	115,816	109,429	100,549	62.5	59.1	63.5	60.1	52.9
Water **	407,897	329,887	342,171	431,700	410,851	230.9	181.4	187.8	237.3	216.0
Own FGD gypsum	22,969	27,190	29,641	28,439	27,591	13.0	15.0	16.2	15.6	14.5
Recycling of clinker/raw meal	30,749	17,253	21,287	37,081	19,418	17.4	9.5	11.7	20.4	10.2
Recycling of cement from silo cleaning	609	268	753	1,505	4,054	0.3	0.1	0.4	0.8	2.1

* Determined with water content of materials. ** Recirculated water has been adjusted for previous years as all filtrate water has been recycled since 2005.

OUTPUT

	Absolute figures – tonnes *					Relative figures – kg * per tCE				
	2011	**2012**	**2013**	**2014**	**2015**	**2011**	**2012**	**2013**	**2014**	**2015**
FLUE GASES										
CO_2	1,683,864	1,658,029	1,647,199	1,718,011	1,780,564	953.2	911.9	902.5	944.3	936.1
NO_X	1,945	1,621	1,401	1,580	1,832	1.10	0.89	0.77	0.87	0.96
SO_2	620	504	587	682	844	0.35	0.28	0.32	0.37	0.44
CO	1,068	1,372	1,678	1,649	1,601	0.60	0.75	0.92	0.91	0.84
Dust	52	62	81	91	96	0.03	0.03	0.04	0.05	0.05
NH_3	18	28	38	39	40	0.01	0.02	0.02	0.02	0.02
HCL	5	2	2	6	7	0.003	0.001	0.001	0.003	0.004
HG	0.02	0.01	0.04	0.03	0.03	0.000010	0.000004	0.000020	0.000014	0.000014
PRODUCTS										
Cement	1,810,647	1,798,013	1,796,553	1,877,284	1,971,721	1,025.0	988.8	984.3	1,031.8	1,036.6
Clinker ***	-32,514	19,591	12,839	-47,969	-25,178	-18.4	10.8	7.0	-26.4	-13.2
Filler ***	2,373	2,016	1,026	1,583	1,373	1.3	1.1	0.6	0.9	0.7
Chalk slurry to power station (Nordjyllandsværket)	10,230	4,358	10,109	17,945	8,846	5.8	2.4	5.5	9.9	4.7
Total	**1,790,736**	**1,823,978**	**1,820,528**	**1,848,843**	**1,956,763**	**1,013.7**	**1,003.1**	**997.4**	**1,016.2**	**1,028.8**
Adjustment	-	-	-	-	-	-13.7	-3.1	2.6	-16.2	-28.8
Total Cement Equivalent	**1,766,561**	**1,818,293**	**1,825,146**	**1,819,341**	**1,902,072**	**1,000.0**	**1,000.0**	**1,000.0**	**1,000.0**	**1,000.0**
Packaging	1,101	1,003	1,027	1,129	1,305	0.6	0.6	0.6	0.6	0.7
WATER										
Water vapour	1,361,524	1,317,884	1,371,187	1,361,211	1,407,063	770.7	724.8	751.3	748.2	739.8
Cooling water, incl. Kiln 85 groundwater	2,256,291	2,358,260	2,216,054	2,241,899	2,409,532	1,277.2	1,297.0	1,214.2	1,232.3	1,266.8
Groundwater lowering (Kiln 76)	313,446	272,284	96,102	221,125	313,543	177.4	149.7	52.7	121.5	164.8
Waste water	38,588	33,820	27,813	28,835	41,396	21.8	18.6	15.2	15.8	21.8
HEAT RECOVERY FOR DISTRICT HEATING	(GJ) **1,204,501**	(GJ) **1,045,751**	(GJ) **1,072,975**	(GJ) **1,152,611**	(GJ) **1,214,257**	(MJ per tTCE) **681.8**	(MJ per tTCE) **575.1**	(MJ per tTCE) **587.9**	(MJ per tTCE) **633.5**	(MJ per tTCE) **638.4**
WASTE ****										
Recycling	2,732	2,209	20,113	34,815	86,448	1.5	1.2	11.0	19.1	45.4
Incineration	156	223	194	317	1,157	0.1	0.1	0.1	0.2	0.6
Landfill	27,230	23,117	7,683	2,899	(40,731)	15.4	12.7	4.2	1.6	(21.4)
Oil and chemical waste	138	106	62	229	30	0.1	0.1	0.03	0.1	0.0
Total	**30,256**	**25,655**	**28,052**	**38,260**	**46,904**	**17.1**	**14.1**	**15.3**	**21.0**	**24.7**

*** Incl. sales and change in stocks. **** Waste volumes are classified into hazardous and non-hazardous wastes on page 33 with indication of whether the materials are utilised or disposed of.

Our work environment

A positive work environment with an open and trustful dialogue between management and employees is a prerequisite for safe and satisfactory collaboration and work performance.

A good work environment contributes to the safety, health and wellbeing of the individual employee, at the same time strengthening productivity, improving product quality and thereby ensuring company competitiveness.

If the foundation is sound this will be reflected in satisfied employees, customers, shareholders and stakeholders.

In 2015 particular attention was paid to:

- Reducing number of accidents
- Greater, targeted focus on day to day safety
- Changing the culture/behaviour
- Restructuring the health & safety organisation (subsidiarity principle – holistic approach)
- Increasing wellbeing and reducing stress.

Future expectations

Our ultimate goal is to do away with accidents – entirely.

Our wish is to reduce the number of accidents and stress cases, improve wellbeing and thereby ensure a safe and healthy work environment.

And we want to do this through targeted focus on day to day safety and through behavioural change:

- By taking care of each other
- By thinking ahead (risk assessment)
- By speaking out

We expect the traditional risk factors where work environment is concerned will continue to be biological, chemical, ergonomic, musculoskeletal and psychosocial, and in prevention we will take a holistic approach.

New Health & Safety organisation

As stated on page 4 we set up a new H&S organisation on 1 December 2015. This was prompted by our wish to ensure that the organisation at all times has optimum conditions for the proactive performance of its work.

By adapting the structure of the H&S organisation to the company's situation (process-oriented) we create the platform for ongoing progress in H&S work and optimum conditions by which foremen and employees can tackle the everyday challenges of the work environment.

Members of the health & safety groups receive the necessary knowledge about production and the various tasks in their area (subsidiarity principle), and they are capable of systematically performing the tasks the group is assigned. Besides their statutory training the members regularly undergo other relevant training, participate in ERFA groups and attend H&S seminars/after-work meetings with a view to continuously updating their area knowledge.

New H&S players

The individual H&S groups are allocated resource persons (department managers) to strengthen them in their work.

To support the collaboration between the H&S organisation and employee representatives, the senior shop steward is a member of the Health & Safety Committee.

H&S and HR share many common interests/points of contact. To strengthen their cooperation the annual meeting is attended by an HR partner and monthly meetings are scheduled between HR and QHS (Quality, Health & Safety).

A Wellbeing Committee with an established meeting structure has also been appointed.

Health & Safety organisation (H&S org.)

Health & Safety Committee

Chairman
Jesper Høstgaard-Jensen

Foreman rep. Søren Konstmann-Lausen
Foreman rep. Jan Nygaard
Foreman rep. Birgit Jensen

H&S rep. Erik Jensen
H&S rep. Morten Lund Jensen
H&S rep. Rene Tue Iversen
H&S rep. Pernille Munk Frandsen

H&S manager Bent U. Niss
Senior shop steward Harry Andersen

1st substitute Michal Engelbredt
2nd substitute Jens Laustsen

Health & Safety Groups

Slurry Production
Foreman rep. / H&S rep.
2 resource persons

White Clinker Production
Foreman rep. / H&S rep.
2 resource persons

Grey Clinker Production
Foreman rep. / H&S rep.
2 resource persons

Cement Produktion
Foreman rep. / H&S rep.
2 resource persons

Packing Plant / Dock / Storage Terminal
Foreman rep. / H&S rep.
2 resource persons

Shift A
Foreman rep. / H&S rep.

Shift B
Foreman rep. / H&S rep.

Shift C
Foreman rep. / H&S rep.

Shift D
Foreman rep. / H&S rep.

Shift E
Foreman rep. / H&S rep.

Shift F
Foreman rep. / H&S rep.

PRO LAB & Control room
Foreman / H&S rep.
1 resource person

Store & Machine shop
Foreman / H&S rep.
1 resource person

Administration & Islands Brygge 43
Foreman / H&S rep.
1 resource person

Research & Development
Foreman / H&S rep.
1 resource person

H&S targets and focus areas

The annual meeting of the H&S organisation assesses the past year and agrees targets for the next.

Based on input at the annual meeting an action plan is prepared to support the targets we have set. Targets and action plans are continuously reviewed at the quarterly meetings of the H&S Committee and particulars are provided via email, intranet and in-company info boards.

H&S targets 2015-2017

At the first meeting of the H&S Committee in 2015 final approval was given to the following targets and action areas were identified to support them.

Targets

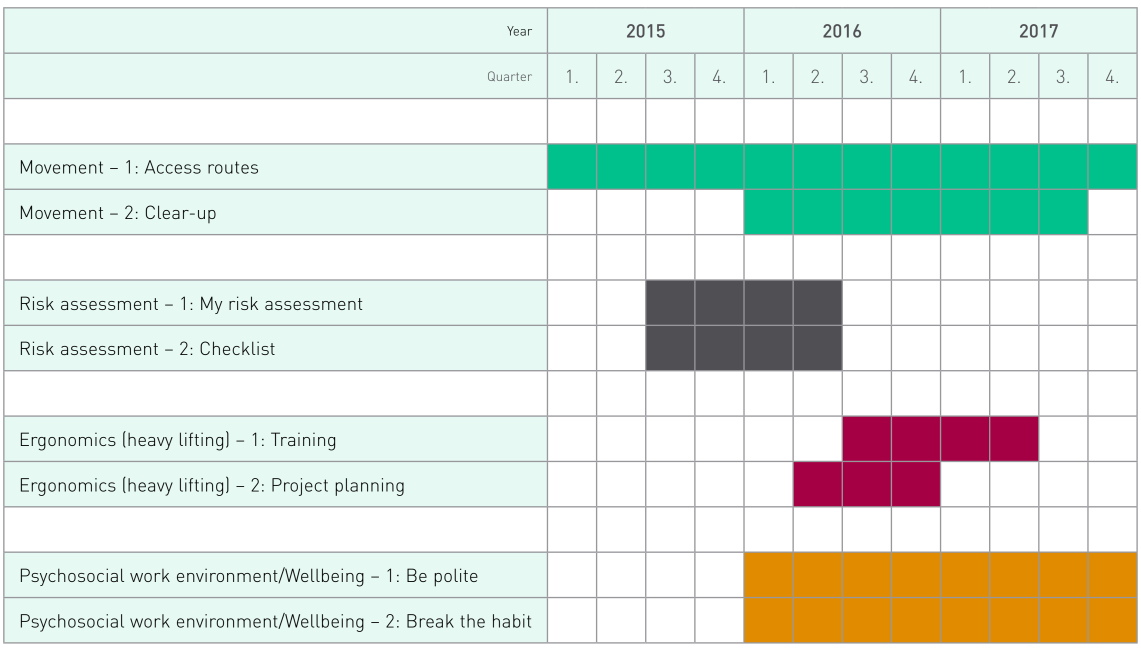
- Reduce the number of occupational accidents leading to more than one day's absence:
  2015: Fewer than nine accidents
  2016: Fewer than six accidents
  2017: Fewer than three accidents
- Reduce the number of stress cases:
  Fewer stress cases than in 2014.
- Improve wellbeing:
  Improve the score in our future engagement surveys.

Focus areas (H&S projects)

- Ergonomics (lifting)
- Risk assessment
- Movement accidents
- Psychosocial environment
  - Improve focus on positives (3:1 balance)
  - Support HR and the functions with information and improvement suggestions on the organisation, competences, resources, management, etc.

The focus areas will in the years ahead be operated as projects. A steering group and four project groups have been set up, and detailed project plans have been prepared that more specifically describe the phases required in the individual projects to ensure we reach our goals.

H&S org. projects – 2015-2017



Health & Safety policy

Aalborg Portland is committed to producing quality products that live up to customer requirements and expectations. Health & safety is an integral element in the everyday work environment and there is constant focus on improvement.

Guidelines
All activities shall always conform to relevant legislation, internal guidelines and our core values, which are: Grow with passion for effectiveness, integrated diversity, act with concrete simplicity, rigorous flexibility, and accountability for the future.

Our employees
Within the scope of technical and economic feasibility Aalborg Portland will create the best possible framework for a healthy and safe work environment by using the best available tools and solutions.

Aalborg Portland will ensure that all employees are trained and motivated to actively improve the work environment.

It is the responsibility of each employee to help to improve health & safety in and around performance of their work.

External contractors
Aalborg Portland recognises its responsibilities and obligations towards external contractors working in the production environment.

Society
Aalborg Portland adopts an open and active role in interaction with employees, authorities, customers, suppliers, organisations and other collaboration partners.

Policy, targets and objectives
Targets for the year ahead are proposed at the annual meeting of the H&S organisation.

These targets are discussed at Management's QHS Review where the final targets for the period are established. Health & Safety policy is updated on an ongoing basis and at least every two years.

Wellbeing

A positive social environment in the workplace with an open and trustful dialogue is an important prerequisite for wellbeing.

The psychosocial work environment is about the conditions in the workplace that have importance for our wellbeing.

Wellbeing is a prerequisite for job satisfaction, and it is generally known and documented that work satisfaction leads to reduced sickness absence, higher productivity and lower staff turnover.

Activities focused on the work environment were previously very much problem-oriented – you find the "faults" and put them right. This is an excellent approach when dealing with the physical work environment, like fitting out an office. When we look at wellbeing it is important also to focus on the positive factors in the work environment and not constantly reiterate the negatives. By directing focus onto the positive possibilities and the good aspects of the work environment, employee job satisfaction can be strengthened.

Wellbeing policy

The purpose of this policy is to promote wellbeing, health and work satisfaction and thereby prevent occupational stress.

At Aalborg Portland we recognise the need to achieve balance between life at work and home life as contented employees are more effective, are sick less often and deliver high-quality results to the benefit of both the company and their co-workers.

The objective for Aalborg Portland is to provide a good physical and psychosocial work environment and a workplace in which the individual employee can at all times feel secure and content - also in times of hectic activity and change.

Our goal is that all employees should feel part of the team and share a common purpose and a collective responsibility for one other and for the results we will create.

Core values
It is expected that all employees with speak and behave towards one another with the same consideration and expect that they themselves wish to receive.

This philosophy is enshrined in Aalborg Portland's five core values:

- Grow with passion for effectiveness
- Integrated diversity
- Act with concrete simplicity
- Rigorous flexibility
- Accountability for the future

Activities promoting wellbeing
It is the responsibility of the manager to ensure that balance exists between tasks and resources. Both the physical and the psychosocial work environment, along with other factors relevant to the individual's job situation, must therefore form part of an ongoing dialogue with the employee.

Aalborg Portland has a number of tools available to support wellbeing, including:

- Competence development
- Annual appraisal dialogues
- Workplace Assessment – survey of physical and psychosocial work environment
- Pensions and health insurance
- Various information channels
- Joint Consultative Committee, H&S Committee, etc.
- Sick leave and retention policy
- Alcohol and smoking policy
- Engagement survey
- Subsidised staff association, clubs and societies
- Floral greeting for employees who are sick
- Stress management (contingency and return to work plan)
- Part-time work option (based on individual assessment).

On joining Aalborg Portland, employees are urged to take out an insurance policy with Mølholm Behandlingsforsikring. This policy includes, among other things, discussion therapy and treatment for alcohol abuse.

Bullying and harassment
The Management distances itself strongly from all forms of bullying and harassment. Such behaviour is not compatible with the company's core values and may therefore have repercussions for the perpetrator's employment.

Bullying is defined as offensive behaviour taking place regularly over a long period, or repeated gross behaviour, perpetrated by one or more persons against one or more other persons to whom it is hurtful or degrading. Such behaviour only becomes bullying, however, when the persons targeted are unable to defend themselves effectively. It is therefore important that employees targeted in this way should protest or seek help in protesting.

Teasing which is perceived as good-natured by both parties is not considered bullying or harassment, and the same applies to isolated disputes.

Part-time working
A need may arise for certain employees to may find it necessary to take a temporary cut in working hours and a corresponding pay cut. The possibility of part-time working can be discussed with an immediate superior and is assessed individually.

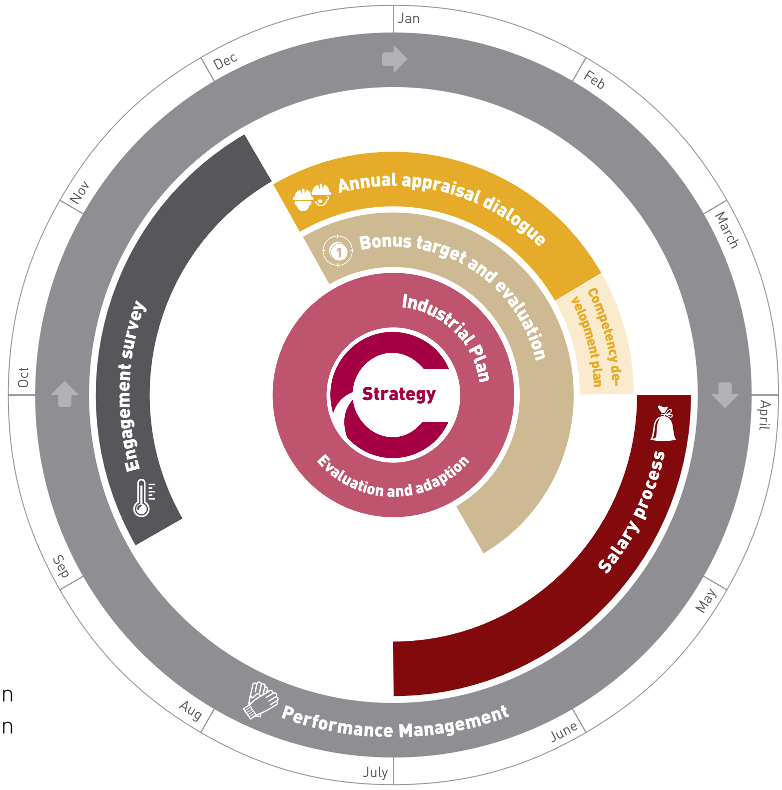
Smoking and alcohol
Smoking inside Aalborg Portland is prohibited. Smoking outdoors is permitted unless prohibited due to fire risk, cf. our smoking policy.

Consumption of alcohol is not considered conducive to professionalism and wellbeing at Aalborg Portland, and only non-alcoholic beer is therefore available in the company's canteen.

Follow-up
Employee wellbeing is monitored by:

- Annual appraisal dialogues
- Engagement surveys
- Sick leave statistics

The number of employees with whom agreement exists for a gradual return to work is also used as a follow-up indicator.



Project Wellbeing
The psychosocial work environment has been and still is a pressure environment for employees and managers. As a result, a number of cases of stress have been recorded in recent years.

Aalborg Portland gives focus to stress prevention and has a well-functioning contingency/action programme for dealing with individual cases. Stress victims are offered discussion therapy and their return to work is the subject of careful planning.

In summer 2015 we launched our Project Wellbeing initiative for some 25 production managers. The aim is to raise the level of stress prevention and thereby significantly reduce stress incidence. The initiative will also focus on job satisfaction and wellbeing for all production managers and employees.

The principal project goals are to:

- Reduce number of managers/employees with stress and diminished wellbeing
- Achieve high level of stress prevention
- Increase knowledge of load factors and important factors for enhancing wellbeing and job satisfaction at department level
- Implement specific measures in regard to planning and prioritising tasks, strengthening cooperation etc.
- Retain good managers and employees.

Evaluation of the first half of the project shows good progress but with work still to be done. Final evaluation will be carried out at end-May 2016.

Activities promoting wellbeing / Managing wellbeing
Managers at Aalborg Portland have a particular responsibility to ensure balance between tasks and resources. Physical and psychosocial work environment, together with other factors relevant to the individual's job situation, therefore form part of an ongoing dialogue with the employee.

We have discerned a need on the part of our employees for the management of wellbeing and stress, and we are seeking to address this need by means of a variety of activities promoting wellbeing. In addition, we at Aalborg Portland work with the strength-based approach and management principles that our managers have been trained in, and which they use in their daily work so that they can offer their staff a strength-based dialogue and feedback that can help promote wellbeing in the workplace.

We expect our managers to be good communicators so that managers and staff can achieve mutual understanding of their respective job frameworks. This will help us achieve the company's principal goals together. We therefore put strong emphasis on communicating goals and frameworks for the company.

At Aalborg Portland we also employ a number of structured HR management processes designed to help managers unlock the full potential of each employee through ongoing dialogue about performance, development needs and options, as well as wellbeing and engagement.

Annual appraisal dialogues are held between managers and staff that ensure clarity about goals for the coming year, talk about wellbeing and engagement, and discuss plans for competence development.

Every two years an engagement survey is conducted which shows where management should take action to enhance employee satisfaction and engagement. Based on this survey, an action plan of improvement measures is formulated jointly by the managers and their departments. The managers are responsible for annual review and update of this action plan.

Work accidents and prevention

A positive work environment strengthens company productivity and is the key to robust competitiveness in the form of low sick absence, high job satisfaction and good flexibility. This is to the benefit of all parties: management, employees and – not least – customers. Targeted focus on work environment is a prerequisite for a safe and healthy workplace.

In 2015, 13 accidents (i.e. cases resulting in more than one day's absence) were reported to the Working Environment Authority – way above the target for the year (< 9).This is mainly thought to be because of the strong focus we give to accident recording and in which all accidents are recorded regardless of type and seriousness. The accidents reported were typically of a minor nature, such as sprains, muscle strains, knocks, cuts and abrasions.

Besides the accidents that led to absence from work, 12 accidents were recorded which did not lead to time off.

Accident frequency (number of accidents per million working hours) was 24.9 in 2015 and the number of days lost per accident was 10.3.

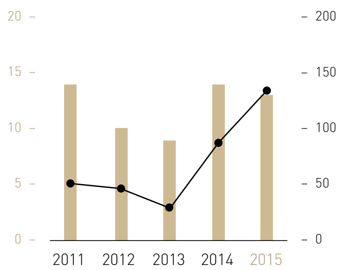
44 near-accidents were notified in 2015 as against 110 in 2014.

The number of accidents for the winter half of the year was virtually the same as the previous year and were chiefly due to slippery surfaces and access roads.

Subsequently, a number of projects with selected areas of focus were initiated in 2015 and are expected to help reduce the number of accidents in future. Several of the projects will not be completed until end-2017.

	2011	2012	2013	2014	2015
Accidents reported to the Working Environment Authority					
Number of accidents reported	14	10	9	14	13
Number of days lost	52	47	30	84	134
Accident frequency / Time lost – Hourly paid and salaried employees					
Accident frequency – accidents per one million working hours	22.1	17.9	15.7	26.8	24.9
Time lost – hours lost per 1,000 working hours	0.6	0.6	0.4	1.2	1.9
Accident frequency / Time lost – Hourly paid employees					
Accident frequency – accidents per one million working hours	48.8	32.2	36.5	49.2	49.2
Accident frequency – accidents per one million working hours (stone, clay and glass industries)	24.0	19.2	20.0	10.0	13.3
Time lost – hours lost per 1,000 working hours	1.3	1.3	0.9	2.3	3.8

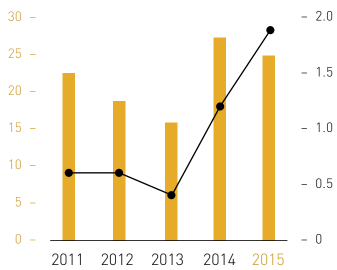
Accidents reported to the Working Environment Authority



Number of accidents reported

Number of days lost

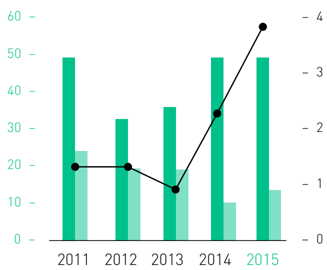
Accident frequency / Time lost Hourly paid and salaried employees



Accident frequency – accidents per mill. working hours

Time lost – hours lost per 1,000 working hours

Accident frequency / Time lost Hourly paid employees



Accident frequency – accidents per mill. working hours

Accident frequency (stone, clay and glass industries)

Time lost – hours lost per 1,000 working hours

Health & Safety targets

In 2015 two out of three H&S targets were achieved.

TARGETS 2015	STATUS 2015	TARGETS 2016
ACCIDENTS WITH MORE THAN ONE DAY'S ABSENCE FROM WORK The 2015 target is fewer than nine accidents with more than one day's absence.	Target not achieved, as 13 accidents with absence from work were recorded in 2015. The accidents were mostly minor in nature.	The 2016 target is fewer than six accidents with more than one day's absence.
PSYCHOSOCIAL WORK ENVIRONMENT AND WELLBEING Target: Reduce number of stress cases and improve wellbeing. This will be achieved among other things through Project Welling implemented in 2016 and completed in 2017.	Target achieved. The number of stress cases was reduced and wellbeing increased.	The 2016 target is at least to maintain and preferably further improve the present level. The project will continue in the first half of 2016 and then be assessed. Plans will then be made to maintain the positive development.
FOCUS AREAS – H&S ORG. PROJECTS • Movement • Risk assessment • Ergonomics/Heavy lifting • Psychosocial work environment/Wellbeing	Target achieved and targets set for the next two years. Focus area activities are in the form of projects, several of which will run till 2017. Risk assessment began in 2015 and the specific target – in the shape of a risk assessment form – was achieved.	The targets are defined in the project plan and have direct influence on the accident targets (accidents with and without absence).

Target achieved Target not achieved

Instruction in safety culture

In 2015 compulsory internal H&S courses were again held for all production employees – "Health & safety in everyday working". Once again the aim was to enhance safety and influence and to strengthen employee motivation for improving health & safety.

In everyday working ongoing focus is given to accident prevention, but also to accident follow-up. Accident causes are systematically recorded, analysed in depth and documented so that we can learn from them and avoid a repetition.

A fundamental knowledge of the company's processes is a prerequisite for optimum performance of health & safety work.

For many years we have had a variety of support tools available for this purpose, including a safety film and targeted instruction. In 2015 a further initiative was introduced in this important area, the purpose of which is to combine education and training with a test leading to an "H&S Driver's Licence". This project will continue in 2016.

Training, instruction and supervision

In 2015 renewed focus was placed on training, instruction and supervision following the issuance in January of Guideline 1.7.1 from the Danish Working Environment Service setting regulations for employers to ensure safe working by employees. The guideline also stipulates the need for effective supervision to ensure that work performance fully lives up to H&S requirements. A tightening in this area is also expected to positively impact our accident statistics.

Audit

Regular internal and external audit is an important method for workplace assessment. The audit process embraces the entire spectrum of work environment, including both the physical and psychosocial aspects. An annual third-party audit is performed in accordance with the standard OHSAS 18001.

Health check for shiftworkers

It was intended that the health checks for shiftworkers should be performed in 2015 but for various reasons these were postponed until January 2016. The health check report has been drafted and a future action plan prepared. This matter will be covered in Environmental Report 2016.

Benefit to society

Aalborg Portland is one of the largest employers in North Denmark. As well as the people employed directly, many more people are employed in the companies that supply us with raw materials, goods and services and use our cement products. Our investments in the cement factory will generate still more employment.

Investments in climate and environmental improvements

Aalborg Portland has made significant ongoing investments in climate and environmental improvements and also in work environment. In the period 2011-2015 a total of EUR 28.6m was invested in a variety of technology improvement projects that benefit nature, environment and society.

In 2015, Aalborg Portland invested a total of EUR 6.6m in climate and environmental improvements, including energy-saving projects, accident prevention and health & safety.

2015 investment projects included i.a.:

- Start of Phase 2 of chalk pit rehabilitation
- Shutdown of steam production
- Improved energy efficiency by switching to two-string operation for SC7 production
- Energy improvement of top cyclones and dry crushers on Kiln 87
- Completion of tank project to collect water for firefighting
- Public hearing phase of EIA for windfarm
- Preventive safety for vacuum cleaner installation – static electricity
- Establishment of new environmental database.

Investment in environmental technology improvements also covers:

- New alternative raw materials and fuels, cf. also page 10
- Eco-friendlier products for inclusion in joint research projects with universities and other partners to develop cement of the future.

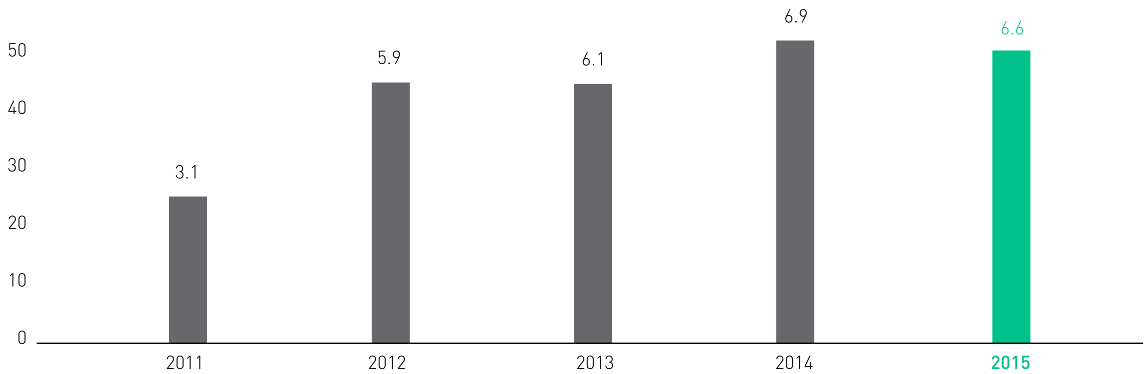
Aalborg Portland continues to plan initiatives that will reduce consumption and emission levels and have a positive knock-on effect on environment. These initiatives are governed by our environmental action plan, and targets, activities and results appear in pages 20-21.

Preventive maintenance
Maintenance expenditure for production plant totalled EUR 4.3m in 2015. Preventive maintenance in the form of filter replacement will for example affect dust emission, while repairing leaks in the kiln system saves on energy consumption by preventing ingress of false air.

Strong focus is also placed on production reliability in order to achieve the targets set. For example, timely replacement of kiln lining bricks minimises unscheduled kiln stops.

Preventive maintenance leads to stable and optimal operation of production plant and cleaning systems, thereby also minimising environmental impacts.

Investments in climate and environmental improvements – EURm



Financial highlights and social contribution

Environmental levies
In September the Danish government announced a budget proposal which promised a phase-out of the NO_X tax in 2016. However, the phase-out was not that which was expected. The NO_X tax has been reduced from EUR 3.4 to EUR 0.7 per kg with effect from 1 July 2016, but at the same time the basic allowance on the calculation of NO_X tax has been removed. The reduction is a step in the right direction but the production of cement in Denmark is still burdened by an annual NO_X levy of approx. EUR 1.3 - 2.0 million.

Added to this there remains a significant burden in the form of a PSO charge of approx. EUR 5.4. These special Danish levies thus continue to pose a significant disadvantage for Aalborg Portland in competition with other European companies not subject to these levies.

50%
increase in Aalborg Portland's PSO levy from 2012-2015

The company has incurred the following direct environmental levies:

EURm	2012	2013	2014	2015
PSO levy	3.2	3.5	4.2	4.8
NO_X levy	2.1	3.9	1.9	2.4
Waste levy	1.5	0.4	0.1	0.2
Electricity levy	1.0	0.7	0.1	0.1
Energy levy	0.6	0.9	0.8	0.7
Raw materials levy	0.6	0.5	0.5	0.6
Sulphur levy	0.1	0.3	0.3	0.7
Total	**9.1**	**10.2**	**7.9**	**9.5**

Social contribution
Aalborg Portland's cement production in Denmark is of significant economic importance to the nation.

In 2015 Aalborg Portland's value added was calculated as EUR 101m.

Of this, EUR 38m (37%) went to society in the form of VAT, company tax, other taxes and employee income tax. EUR 18m (17%) went to the employees in the form of wages and pension contributions (after tax). EUR 41m was transferred to the company's equity.

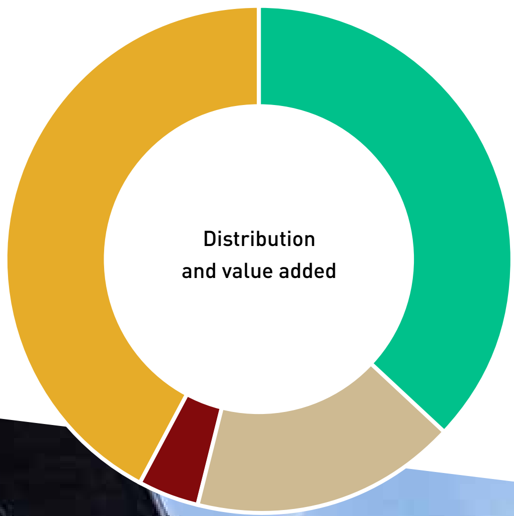
A social contribution is also created through our subcontractors involved in transport, maintenance, facility management etc. at Aalborg Portland.

EUR 38m

of the value added went to the public sector in 2015, corresponding to an increase of 18% from 2012-2015

Distribution and value added

EURm	2012	2013	2014	2015
Net sales	185	188	192	210
Spent on materials, services, depreciation, etc.	94	107	85	109
Value added	**91**	**81**	**107**	**101**
Society	32	34	35	38
Employees	16	18	17	18
Interest on loan capital	2	4	5	4
Transferred to equity	40	25	50	41
Dividend to the owner	0	0	0	0
Total	**91**	**81**	**107**	**101**



37% Society
17% Employees
4% Interest on loan capital
42% Transferred to equity

Measurement and calculation of material flows

The information used in compiling this Environmental Report was obtained from Aalborg Portland's environmental database which receives raw data from a variety of recording systems.

The methods of measurement used in conjunction with 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.
- CO_2 emission for 2011-2015 is determined according to the approved CO_2 plan for Aalborg Portland and verified externally.
- NO_X, SO_2, CO, HCl, NH_3 and dust emission from kilns are determined by continuous metering in exhaust stacks. The same applies to dust concentrations in discharges from cement and coal mills, while air volumes from these sources are based on sampling.
- Hg quantity is calculated by continuous measurement of kiln air volumes and Hg concentration samples from yearly performance measurements. This does not apply to Kiln 87 where continuous measurement of Hg concentration was established in 2014.
- Products are determined by weighing and calculation.
- District heating production is measured by calorimeter.
- Wastes are determined by weighbridge and annual statements from external waste receivers.
- Cooling water is calculated on the "water balance principle" in which flow-metered outputs (water vapour, groundwater lowering at Kiln 76 and waste water, i.e. 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.
- Work accidents and time off work are determined from data reported to the Working Environment Authority.
- Noise calculation is performed by an accredited external firm based on measurement at source and subsequent computation.

Continuous emission and flow gauges and weighbridges are subject to regular inspection and calibration by DANAK accredited companies.

Environmental verifier's report and EMAS registration

The environmental verifier of Bureau Veritas Certification (accreditation no. 6002) has reviewed the part of the Environmental Report dealing with external environment and issued the statement shown below.

Based on this statement the Danish Environmental Protection Agency has issued a Certificate of EMAS Registration and endorsed the Environmental Report.

BUREAU VERITAS
CERTIFICATION
23 JUNI 2016
EMAS - MILJØVERIFIKATOR
NR. DK-V6002

BUREAU VERITAS
Certification

BUREAU VERITAS 1828

MILJØVERIFIKATORS ERKLÆRING OM FORETAGET VERIFIKATION OG VALIDERING

Bureau Veritas Certification Denmark A/S

registreret som EMAS-miljøverifikator nr. DK-V 6002 og akkrediteret til NACE kode(r) 23.51, erklærer at have verificeret og valideret:
Miljøredegørelse for året 2015 af juni 2016 og stemplet den 23 juni 2016
for følgende anlægsområde eller organisation

Aalborg Portland A/S
Rørdalsvej 44, 9100 Aalborg
Registreringsnummer: DK-000132

opfylder alle kravene i Europa-Parlamentets og Rådets forordning (EF) nr. 1221/2009 af 25. november 2009 om organisationers frivillige deltagelse i en fællesskabsordning for miljøledelse og miljørevision (EMAS).

Bureau Veritas Certification Denmark A/S erklærer hermed at:

- verifikationen og valideringen er udført i fuld overensstemmelse med kravene i forordning (EF) nr. 1221/2009.
- resultatet af verifikationen og valideringen bekræfter, at intet tyder på mangler i efterlevelsen af gældende miljølovgivning.
- data og oplysninger i organisationens ajourførte miljøredegørelse, tegner et pålideligt, troværdigt og korrekt billede af alle organisationens aktiviteter inden for det omfang, der er angivet i miljøredegørelsen.

Dette dokument kan ikke sidestilles med EMAS-registrering. EMAS-registrering kan kun foretages af registreringsorganet i medfør af forordning (EF) nr. 1221/2009. Dette dokument kan ikke i sig selv anvendes som en meddelelse til offentligheden.

Verifikator har verificeret miljøredegørelsen på dansk og indestår ikke for oversættelse til andre sprog.

30-04-2017

30-06-2018

Dato: 23-06-2016

DANAK

Certifikat for EMAS-registrering
Certificate of EMAS-Registration

EMAS
VERIFICERET
MILJØLEDELSE

Aalborg Portland A/S
Rørdalsvej 44
DK-9220-Aalborg Øst

Registreringsnummer
Registration Number
DK-000132

Registreret første gang
Date of first registration
02-03-2000

Certifikatet er gyldigt indtil
This certificate is valid until
01-06-2017

Udstedelsesdato
Date of issue
04-07-2016

Denne organisation har indført et miljøledelsessystem, og udarbejdet en miljøredegørelse i henhold til forordning (EF) nr. 1221/2009 med det formål at fremme en løbende forbedring af organisationens miljøindsats og resultater, og informere offentligheden herom. Miljøledelsessystemet og miljøredegørelsen er verificeret af en uafhængig tredjepart.

This organisation has established an environmental management system and prepared an environmental statement according to Regulation (EC) No. 1221/2009 to promote the continual improvement of environmental performance and to inform the public hereof. The environmental management system and the environmental statement are verified by an independent third party.

Lars Hindkjær
Direktør
Director-General

Miljø- og Fødevareministeriet

General information

Name and address
Aalborg Portland A/S
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P.O. Box 165
9220 Aalborg Øst
Denmark
Tel. +45 98 16 77 77
E-mail: cement@aalborgportland.com
Internet: www.aalborgportland.dk

Environmental supervisory authority
Ministry of the Environment,
Environmental Protection Agency Aarhus

Industrial sector
Raw materials processing

Main activity
Production of cement for the domestic and export market

List item
3.1. a) Production of cement clinker in rotary kilns with an output capacity of more than 500 tonnes/day (s)

Company reg.
36 42 81 12

Production unit no.
1.019.874.563

NACE code
23.51 – Production of cement

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

Significant secondary activities
K212. Facilities for temporary storage of non-hazardous waste prior to recycling or disposal with a waste feed capacity of 30 tonnes per day.

Ownership
Aalborg Portland A/S is 100% owned by Aalborg Portland Holding A/S, which is 75% owned by Cementir España S.L., Spain and 25% owned by Globo Cem S.L., Spain. The companies are part of Cementir Holding S.p.A, Italy and the ultimate owner is Caltagirone S.p.A., Italy.

Management
Environment, energy, quality and health & safety:
Michael Lundgaard Thomsen, Managing Director
Henriette Charlotte Nikolajsen,
Environment & Energy Manager
Birgit Jensen, Quality, Health & Safety Manager

Principal environmental approvals

15 April 2015
Limits for atmospheric emissions and internal control.

21 January 2015
Environmental approval to modify existing installation for supply of alternative fuel to Kiln 87.

10 October 2012
Recycling of microfiller for rehabilitation of chalk pit.

10 October 2012
Permit for excavation of chalk.

10 October 2012
Amended conditions relating to changed use of alternative fuels and raw materials.
Environmental approval for co-combustion of non-hazardous waste on Kiln 85.
Changed emission limits and continuous measurement of mercury on Kilns 85 and 87.

7 April 2010
Use of meat and bone meal as fuel on Kiln 76.

18 December 2009
General environmental approval and review – comprising environmental approval of expanded activities at recycling site and review of 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
Permit for excavation of chalk.

28 July 1992
Establishment of on-site landfill.

29 November 1991
Final permission for water extraction.

29 June 1990
Permission under the Environmental Protection Act to send waste water to the municipal treatment plant.

Aalborg Portland is not covered by the Ministry of Environment's regulations for the safe storage, handling and transport of materials that may give rise to serious environmental hazard in the event of accident

Terminology

Alkali
Alkalis used at Aalborg Portland are sodium and potassium compounds.

Alternative fuels
Combustible waste products which replace fossil fuels and consist of a reprocessed fuel product, meat and bone meal, dried sewage sludge and tyre chips.

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

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

Cement mill
Facility which grinds cement clinker to cement.

CO
Carbon monoxide. A result of incomplete burning of fossil fuel. Converted in the atmosphere to CO_2.

CO_2
Carbon dioxide. Formed by burning of fuel and calcining of chalk. CO_2 emission is calculated according to EU guidelines.

dB(A)
Noise is measured in decibels, 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).

EMAS
Eco-Management and Audit Scheme. EU scheme for the registration of environmental management systems.

Emission
Release of noise or gas. In flue gas emission the volumes released are metered continuously, except for CO_2 – see under CO_2.

Environmental Impact Assessment (EIA)
EU directive prescribing that installations having material potential environmental impact cannot be established until the procedure in the directive has been implemented, including preparation of an EIA Report, holding of a public hearing, etc.

Filtrate water
Waste water formed in heat recovery boilers by condensation of flue gases.

Flue gas desulphurisation gypsum (FGD)
Gypsum formed by the desulphurisation of flue gases.

Fly ash
Material produced by scrubbing of flue gases in an electrostatic precipitator.

Fossil fuel
Coal, petcoke, oil and natural gas.

GJ
Gigajoule, a unit of energy equal to 1,000 MJ.

HCl
Hydrogen chloride.

Hg
Mercury.

Household energy consumption
Average annual consumption per household is:
Electricity: 4000 kWh. Space heat: 50 GJ.

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

ISO 14001
Standard issued by the International Standards Organisation with guidelines for establishment and maintenance of environmental management systems.

ISO 50001
Standard with guidelines for establishment of energy management systems.

Life Cycle Analysis (LCA)
Method for assessing the environmental and other impacts which a product has on its surroundings from raw material extraction until final product disposal.

Material flows
Description of the resources which Aalborg Portland uses in the production of cement, the volumes which are produced, and the emissions and discharges which the production entails – see pages 38-39.

Microfiller
A filler material with particle size < 50 μm.

Mineralised operation
Addition of small amounts of fluoride and alkali, which together with sulphur from fuels form highly reactive cement clinker.

NH_3
Ammonia.

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

OHSAS 18001
International guideline for establishment 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 the handling of all matters relating to environment, energy, quality and health & safety at the company takes place in a uniform manner and in accordance with policies, targets, guidelines and rules.

PRTR
European Pollutant Release and Transfer Register.

PSO levy
Levy charged on electricity purchase, which supports producers of green energy.

Pyrite ash
See iron oxides.

Raw meal
Cement clinker and incompletely burned raw materials. Raw meal may result from e.g. kiln stoppage.

SC7 production
Production of Sand/Chalk clinker takes place on Kiln 87, hence SC7, and is used for LOW ALKALI SULPHATE RESISTANT cement.

SO_2
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, substitution of clay by fly ash.

tTCE
tonne Total Cement Equivalent. A standard unit for the production which is obtained by calculating the equivalent cement tonnage if clinker sales and changes in clinker stocks had been processed into cement. Each type of clinker is therefore multiplied by a factor that expresses addition of other materials for production of cement.

WA
Workplace Assessment.

Environmental Report 2015
Environment and Health & Safety

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

Responsible under Danish press law
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