

CESME

Aalborg Portland – Industrial symbioses in cement production

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Brief description of good practice

A creative recycling is taking place as the waste products from electricity production is used as a raw material producing cement.

In short Nordjyllandsværket produces electricity. During this process electrostatic filters remove fly ash in the flue gas and a plaster system that removes sulfur. The gypsum is sold to Aalborg Portland as a raw material in producing cement. The fly ash is also used as an additive to cement.



Finally the heating left over from the production of cement is used to heat the city of Aalborg.

Problems/challenges and how they were overcome

Aalborg Portland is one of the largest cement producers in the Northern part of Europe. The company is one of the world leaders in energy-efficient production of high-quality cement. Furthermore, they are the world leading producer of white cement.



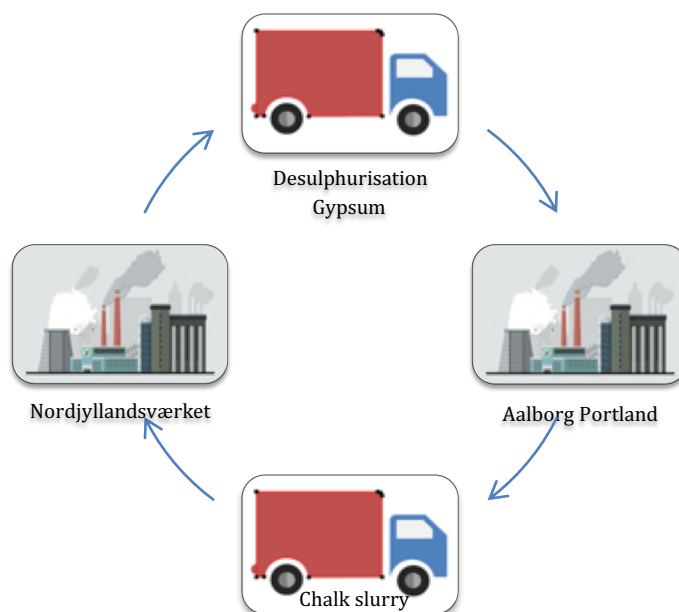
White cement is very popular among American architects. Aalborg Portland ships more than 1m tons of white cement to USA each year.

High temperatures and unique process conditions make cement kilns ideal for the use of alternative fuels and raw materials. Fossil fuels, particularly coal and petcoke are increasingly being substituted at Aalborg Portland by CO₂-neutral biofuel such as meat and bone meal and wood waste. All constituents in these alternative fuels are fully utilised and no new by-products are formed.

The Symbioses

Aalborg Portland began using fly ash in cement production more than 30 years ago. Fly ash is a by-product of electricity production at power stations. A number of other by-products have since been included in the cement production.

Under a longstanding partnership, Aalborg Portland supplies chalk slurry to a local power station (Nordjyllandsværket), which uses it in the flue gas cleaning process. This process in turn produces desulphurisation gypsum which is used by Aalborg Portland as a replacement for natural gypsum. The circle is thereby complete:



Furthermore, production of cement takes place at very high temperatures. Aalborg Portland cleans the flue gases from the kilns and uses the high temperature of the flue gases to heat the residents of Aalborg city. The heat supplied corresponds to the annual heat consumption of around 21.000 households. This heating is also used for the company's own factory and offices.

Consumption and emission

The products supplied by Aalborg Portland make a useful and key contribution to society's climate challenge. However the focus on sustainability and environmental responsibility also extends to product development and production. This has required significant investments.

Production of cement results in CO₂ and other emissions. For many years significant investments has been made in reducing emissions, particular CO₂, SO₂ and NO_x Since 2010 approx. 15m EUR has been spent on climate and environmental improvements.

These initiatives are set to continue as Aalborg Portland plans to install as many as 10 large wind turbines, which will potentially replace approx. 40% of the company's existing power consumption with renewable energy. Around 40% of the company's power consumption is already based on renewable energy.

Environmental openness

Aalborg Portland's energy and environmental conditions are disclosed openly in annual environmental reports.

It is also directly visible to the buyers of company products. Environmental product declarations exists on the cements.

Finally all the products from Aalborg Portland can be recycled and all the constituents can be fully utilised.

Impact from Good Practice

Since 2010 Aalborg Portland has invested EUR 15m in climate and environmental improvements and reduced emission by 135.000 tonnes for CO₂ by 32% for SO₂ and by 47% for NO_x. And these initiatives are set to continue.

Lessons learnt from the Good Practice

The symbioses between Nordjyllandsværket, Aalborg Portland and partly the city of Aalborg by providing heat to the residents is a strong evidence that recycling among industry and society can go hand in hand.

Recommendation you want to stand

Be aware of your local business environment in order to seek waste products you might be able to use as raw materials. Furthermore, investigate whether your waste products is worthwhile to another business before you discard it.



For more information

Please check the following link:

www.aalborgportland.com