

Industrial cooperation gave Mariestad efficient combined heat and power

Metsä Tissue and Mariestads Energi in cooperation erected a combined heat and power plant that is fired by biomass fuel and fibre sludge from the Metsä paper mill. As a result of burning the fibre sludge, the material landfilled by the mill has decreased by 60 000 dry matter per year.

Mariestads Energi in cooperation with the paper company Metsä Tissue erected a combined heat and power plant next to the company's paper mill in Mariestad. The cooperation led to the formation of Katrinefors Kraftvärme, which implemented the project and operates the plant. The plant supplies heat to the urban area, steam to the paper mill and electricity to the grid. The project is a very good example of how a waste product can become a useful resource and of how cooperation between an industrial plant and a municipality means that more energy can be utilised than would otherwise have been possible. The project was implemented with grants from the Local Investment Programme (LIP). The plant has been in commercial operation since December 2001.

POSITIVE ENVIRONMENTAL AND ECONOMIC IMPACTS

- Renewable energy replaced 27 000 m³ oil/year.
- Carbon dioxide emissions have decreased by 73 000 tonnes/year.
- The amount of sludge (dry matter) landfilled has decreased by 60 000 tonnes/year.
- The measure has resulted in 25 permanent jobs, for operation of the plant, in fuel production and in service and maintenance companies.

Photograph: Katrinefors Kraftvärme AB



IMPLEMENTATION

The Metsä paper mill produces large quantities of fibre sludge, which were previously landfilled. When the project began, the EU was on the way to prohibiting the landfilling of organic matter and Metsä was interested in replacing the oil as an energy generator.

The combined heat and power plant was the result of the discussions between the company and the municipal energy company. The recovered fibres are now fired in the combined heat and power plant, which runs 95 per cent on recycled fibres and other biomass fuel.

Handling the fibre sludge prior to burning was a new experience for both the company and the industry, which resulted in some uncertainty. The flue-gas treatment had to be rebuilt as the supplier underestimated the need for treatment.

Management of the ash is a problem. It is now landfilled, as it is not allowed to be used for example for ground stabilisation in road-building under current rules.

POTENTIAL AND FUTURE BENEFIT

Biomass replacing fossil fuels has substantial positive climatic effects. It is both financially advantageous and increases the environmental benefit of using biomass fuels that would otherwise be a waste fraction and that cannot naturally be used for anything else, such as digestion. District heating systems reduce air pollution locally, make it possible to utilise waste heat from other activities and produce combined heat and power. As urbanisation increases globally, the conditions for expanding district heating are improving.

WHY BEST PRACTICE

Burning fibre sludge and biomass fuel at the same time in this way was a completely unproven technique. Suppliers and users continuously follow the project for the experiences it provides to future projects.

The cooperation means that it is possible to utilise an unusual amount of the energy in the flue-gas condensation as the district heating can deal with the relatively low-value energy from it.

The LIP support was important for those involved to be willing to take the financial risk.

The cooperation between a municipal company and a large industrial company was innovative.

FOR FURTHER INFORMATION

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The project on the Internet:

www.kkab.com

Further information on Best Practice

www.swedishepa.se/bestpractice
www.naturvardsverket.se/mir

Contractors/providers

The main contractor was the American firm Foster Wheeler.

FACTS

LIP Mariestad 1999

Action 01

Environmental investment: SEK 220m

Grant: SEK 30m

