Focus on a DBDH member company

Waste is used for district heating

By Mr. Jesper With, Journalist

Every year 1 million ton of waste is being managed at Denmark’s biggest waste management company Vestforbrænding. This creates heat for district heating.

In Copenhagen incineration of waste and district heating are closely connected. This is due to the fact that Vestforbrænding uses the heat produced in the waste incineration process in the company’s own district heating network. The heat that the company cannot use itself is then being transferred to two other heat transmission companies in Copenhagen, CTR and VEKS. Copenhagen is heated almost 100% by combined heat and power plants, and within this system heat from waste incineration has the highest priority.

“...In this way we use the heat in an environmentally friendly way. If we didn’t use it like this, the heat would just dissapare into the air,” Project Manager Mr. Per Wulff says. He is convinced that it is the smartest way to deal with the produced heat, since the heat would otherwise have to be produced by burning more gas or coal at power plants. In other words, this process means lower CO2 emissions.

New efficient plants

The reception area of Vestforbrænding covers about 870,000 people. Within this area Vestforbrænding handles around 45% of all waste. The waste is transported directly to Vestforbrænding by truck as well as to other treatment plants in the area. According to Per Wulff, the company is dealing with all kinds of waste treatment, like recycling, incineration, landfill deposit and sorting and handling of hazardous waste.

In Denmark the authorities expect waste to be recycled or used with the least possible impact on the environment. This objective is incorporated in the national waste management plan which also contains a number of requirements. This means among other things that the citizens should sort their waste into different categories to facilitate recycling and that companies should reduce and/or reuse the waste that they produce. Today, 85% of the waste amount is being deposited, 65% is being reused and 27% is being incinerated.

The national waste management plan at the same time puts special duties upon Vestforbrænding, being the largest waste management company in the country. These duties are to apply the latest technology, to take the greatest environmental care and to initiate new initiatives that will lead to a minimisation of the overall amount of waste and increase recycling, thus acting as a role model for others.
Vestforbrænding was established in 1970. The company is owned by 29 municipalities in the Copenhagen area.

The company is handling 500,000 tons of waste annually, which is being incinerated, and 500,000 tons that is being reused or deposited.

300,000 MWh hours or 30% of the produced heat is being used in the company's own district heating network. The rest is transferred to other district heating companies in the Copenhagen area.

Almost the entire area of the Danish capital Copenhagen is being heated by combined heat and power plants.

Therefore over the last 10 years, Vestforbrænding has invested in two new waste treatment plants, which are constructed as combined heat and power plants. They handle 500,000 tons of waste per year and are so efficient that they produce the same amount of heat as the old power plants, which were heat-only plants. "The produced electricity – 1 million MWh per year – is an extra bonus for us and for the environment", Per Wulff says. The next step is on its way. The company is investing in a flue gas cleaning system which will raise the produced amount of heat with 250,000 MWh and at the same time save 55 tons of CO₂ emissions annually compared to a coal-fired power plant.

More cooling in the future

District cooling is on the priority list of the company as well. In the two warmest summer months in Denmark, a large amount of surplus heat is not being used, and Per Wulff thinks it would be a very good idea to use this heat for cooling purposes since it is being produced anyway. "Waste has to be incinerated all through the year, so why not use the surplus heat for comfort cooling in industries or big supermarkets", Per Wulff asks rhetorically. The customers for comfort cooling have to invest in an absorption cooling machine instead of the well-known compression cooling machines, which use electricity. He knows that his own company will earn more money if the industry starts using absorption cooling, but also seen from a society point of view this is the best way. Compression cooling demands extra generation of electricity. According to Per Wulff the choice of the industry is dependent on the price. He thinks district cooling will become interesting for the industry because every new client is an advantage for the waste management company no matter that the price paid does not cover all the costs. A solution for Vestforbrænding is to invest in and install absorption chillers at the customers in order to spread the idea. At the moment, the Copenhagen district heating companies VEKS, CTR and Vestforbrænding are discussing intensively how to promote this cooling solution.

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