

Company case study 1 from Sweden

Collaboration between a heat plant and a sawmill for securing decreased use of fossil fuels in heat production

The municipality owned energy company “Alvesta Energi” and the private sawmill “VIDA” has found a model to cooperate with the consequence of decreased need of fossil fuels. It is a good example on how two companies dealing with high amounts of energy may use each other.

The municipality of Alvesta

Alvesta municipality has 20,000 inhabitants, of which most live in one of the six urban areas - Alvesta is the largest. The population density is 20 inv / km² and the area is 978 km².

The municipality is on the surface a "miniature Sweden" – 80 kilometers long and 20 kilometers wide - and has cultural history roots that extend far back in time.

By the extension of the railways, which is the main railway in Sweden connecting Stockholm and Copenhagen, the old villages of Aringsås and Alvesta grew into a more urban-oriented society. Most of the communities within the borders of the municipality are located along the railway lines, something that today forms the basis for the municipality of Alvesta as the “municipality of communication”.

The three biggest communities in the municipality are Alvesta (8 600 inhabitants), Moheda (1890 inhabitants) and Vislanda (1880 inhabitants).

The municipal company Alvesta Energi

Alvesta Energi is the municipal company producing and selling heat via a grid. It was established in 1996 and has approximately 20 employed. It has a subsidiary which is responsible for the power grids. The background to the energy activity is ultimately the electrification that the municipality participated in within its geographical area. The business has since that time been directed towards more energy and environmental policy goals, with the development of district heating. In 2003, in cooperation with an adjacent municipality another company was formed for the expansion of IT infrastructure with broadband.

Alvesta Energi has heat production facilities in the three biggest communities, Alvesta, Moheda and Vislanda. The total heat production was 158 GWh under 2015. 99.5 % of the fuels for the production was bioenergy. 1 GWh was produced with fossil oil as fuel.

The owner's business idea, the municipality, for Alvesta Energi can be summarized with:

- Facilitation of implementation of the municipality's climate and energy plan
- Profitable, well-managed company that give the municipality a return both in terms of utility

and financially

- The company shall act on a commercial basis
- Encourage to a reduced energy use and to more environmentally friendly energy production
- Development of IT infrastructure for data and telecommunications, thereby improving the municipality's attractiveness and development capabilities

The company VIDA

With some 900 employees at 16 production facilities, VIDA is Sweden's largest privately owned sawmill company. One of the sawmills is located to the community Vislanda, "VIDA Vislanda Ltd". It manufactures spruce construction timber. The main markets are the UK, Asia and North America.

Every day, about 55 trucks with a trailer are being unloaded here. They contain spruce timber. The stocks are measured and quality classified by personnel from an independent measurement association. This measurement / classification is the basis for payment to the forest owner. The average distance for the transports from the forests to the sawmill is 80 kilometers. The timber is sorted by diameter and length in 37 saw classes.

The saw process begins with a 3-dimensional measurement of each fir log. Based on this, computers calculate how the log is to be sawn to achieve the highest value. The saw line produces 80 m³ sawn timber per hour, in average. The saw line runs two-shift, giving approximately 1,300 m³ sawn wood products per day. About 55% of the log's volume becomes sawn wood products, about 18% sawdust and bark and about 27% cellulose used for the pulp industry.

Sawdust and bark from the process are used as fuel for the heating of the premises and for the wood dryers. The fans for wood drying blow 80 degree hot air through each batch of the timber products for 2-4 days, depending on the dimension.

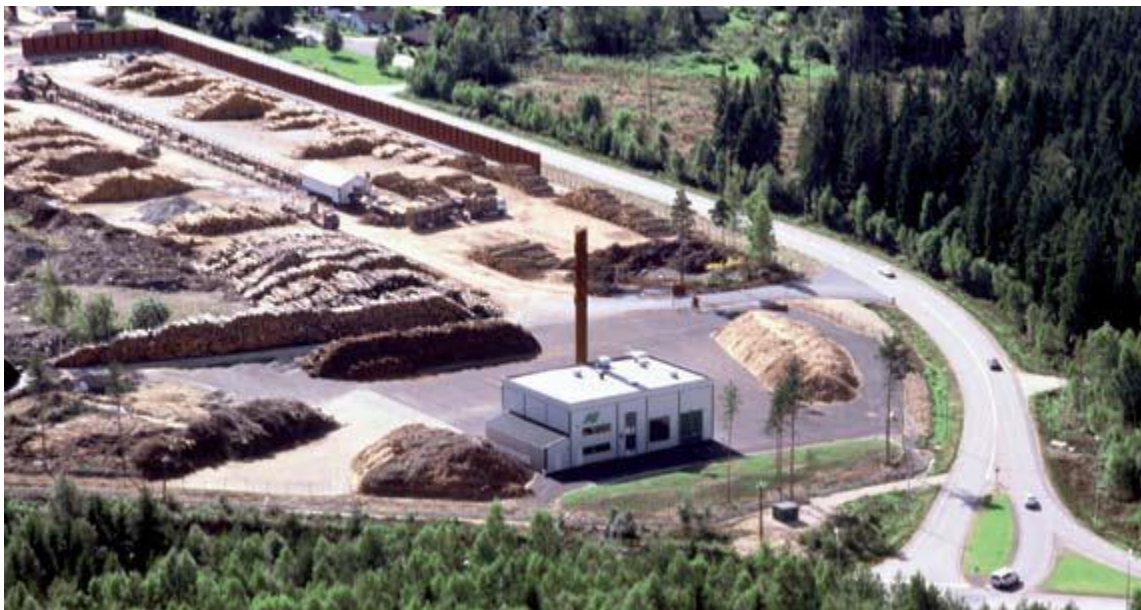


Figure 1: The sawmill and the heat production plant of Alvesta Energi. Picture from Alvesta Energi

District heating in the community Vislanda

Alvesta Energi built a district heating plant with district heating networks for the connection of industries and residential properties in the Vislanda community. The project started 2000 and ended up 2003. They have successfully reduced the use of fossil fuels for heating, by taking advantage of local conditions. The district heating project is a successful example of conversion to biofuel. When it was completed in 2003, 117 villas and 17 rental properties were connected to the district heating network. Five years later, there were 218 villas and 27 commercial properties connected to the district heating network. 14 out of 16 industries have signed district heating agreements and accounts for more than 90 percent of the industry's energy use in Vislanda. All industries in the community have had the opportunity to join.

By location of the boiler near the sawmill of VIDA, there is the possibility of exchanging heat between Alvesta Energi and VIDA. In summer, Alvesta Energi makes use of the surplus of heat from VIDA and reduces its use of oil. In winter, the company supplies heat to VIDA when their own heat plant is not sufficient for active drying of the sawn wood products. Another success factor is that the customer only pays a variable fee for the district heating deliveries, which stimulates energy savings and is also easy to understand. For a common customer, an owner of a villa in the community, has a conversion from, for example, heating with oil to district heating resulted in up to 50 % less operating costs. Alvesta Energi has also installed automatic sweeping in the biofuel boiler which increases the efficiency of the plant and minimizes maintenance needs. That's why they have even less need of fossil oil. All ash from the combustion process is returned to nearby woodland.

The project benefited from the established knowledge and experience of district heating in Alvesta municipality and that Alvesta Energi is a well-known brand. Close cooperation with, the local plumbing company was helpful. Collaboration with the sawmill VIDA provides good environmental effects. During the summer when the sawmill has a surplus on thermal energy, the sawmill deliver heat from its facility to the local district heating network.

District heating systems based on biofuels reduces air pollution locally, enables the use of waste heat from other activities and enables cogeneration of heat and power. District heating systems based on biofuels have a big market potential. In line with the increased urbanization globally, the conditions are improving for the expansion of district heating.

Sources:

Alvesta energi

www.vida.se

Naturvårdsverkets Goda exempel

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