

Climate Friendly Pellets Heating

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Photo: Albin Brönmark

Bright and cheerful is the newly inaugurated production facility which Sven-Olof Bernhoff has proudly demonstrated to a large number of visitors from 43 different countries.

It all started with a heavy sigh due to the expensive company oil heating bill and the ever-growing compost of agricultural residue from the grain production, and ended with a climate friendly innovation that has caught the attention of people worldwide. Sven-Olof Bernhoff and Skånefrö have reached their goal.

Recently, there was a grand inauguration party of Bioagro Energy – a production facility which turns husks, shells and straw residue from grains and grass seeds into energy pellets for heating.

- Yes, it feels great to have got this far, says Sven-Olof Bernhoff, Managing Director of Skånefrö.

The journey of the project has not been an easy one. Technology screwed things up and the planning permission of the factory extension had to be appealed against all the way to the Swedish Supreme Administrative Court.

It all started in 2005. Skånefrö was struggling with two specific problems that were growing more and more acute. The price of oil heating skyrocketed and the grain residue which so far had been turned into compost, now had to be deposited at the local waste recycling plant.

- Globally, 16 billion metric tonnes of agricultural by-products are produced annually. Consequently, there is no lack of raw material.

A third reason for the company to invest in Bioagro is the environment.

- Today, Skånefrö is "carbon dioxide neutral". We use our own pellets for all our heating and for the grain drying operations in the Autumn as well.

Local production

The production facility is the result of a four year, 50 million SEK, LIFE project which is financed by EU commission with 22 %.

In the future, the Bioagro facility has three main uses: :

To produce pellets of raw material that is not food and is unfit for human consumption.

To be a platform for research and development of both the technique and use of other biomass residue..

On a consultancy bases make learnt experiences available to other companies.

A non-profit association for district heating in Tommarp has been formed and approx. 50 households in the local village are interested in connecting to the distribution grid of Skånefrö's heating plant.



Shells, husks and straw residue are turned into biopellets in the climate friendly Bioagro production facility.

Testing of combustion properties

The bioenergy consultancy company Åfab was involved in the project to test the combustion properties of different kinds of pellets. Skånefrö and Åfab founded the chemical innovation company Ecoera to optimise various pellets formulas.

- Various additives are needed to be mixed in for the pellets to perform as well as possible. For example, to minimize the hydrochloric acid and sulphuric acid formed during combustion. This would otherwise corrode the equipment.

The whole production facility can be managed from just one control room. Which pellet formula that is to be used is also computer controlled. The raw material is collected from one of the 13 "pockets" or silos where the various types of biomass residue are stored. From there, the raw material continues to a hammer mill which hammers the residues into smaller pieces and passes it on to a mixer via four micro containers where various additives are mixed in. The raw material is then pressed into pellets and is stored in a silo before being feed into the furnace burner.

Research and development

Hotab, who is still working to perfect the boiler performance, designed the furnace boiler. The production facility is designed to double as a platform for research and development in the field of biomass combustion.

- It is also possible to burn residue from the forestry industry or other similar operations. For example, a man called who had rice husks which he wanted to test burn.

After the grain residues have heated Skånefrö's facility, the ashes are returned to the local fields as nutrients. The environmentally friendly loop is closed. The international interest shown in the pellet production facility is great.

– Representatives from 43 different countries have been here to visit, says Bernhoff.

And more study visits are expected. Next in line is a visit on Dec 11 when representatives from the International Climate Conference COP15 in Copenhagen are invited to study a sustainable energy solution first hand.

The EU project will finish in January.

–During our time as a EU project, we have just been able to test and develop this technique. After the project is finished, a company fully owned by Skånefrö is going to be formed in order to start commercialising the operations.

There have been many enquiries from people who want to purchase biopellets.

- The Bioagro facility has a capacity to produce 3 metric tonnes of pellets per hour. Skånefrö's grain operations result in 800 metric tonnes of biomass residue. Consequently, our own by-products are used up in just a couple of weeks. The development potential in this sector is great.



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