



Biomass for Fronius - A Third Party Finance Project Fronius International GmbH, Austria

Summary

Fronius is a technology and market leader in the fields of welding, battery charging systems and solar electronics with more than 1,500 employees worldwide. A new production and logistic centre for more than 600 employees in Sattledt/Upper Austria was built in 2006. For this new production facility and office building with a total heated area of 37.000 m², space and process heat is provided by a wood chips heating system. As the management of Fronius preferred not to have the responsibility for the construction and operation of a biomass heating plant, they chose the possibility of a third party financing scheme, where the financial and technical risks are taken over by an ESCO. The total investment costs for the heating plant were 556,000 Euro.



End-user area

- New buildings
- Refurbishment of buildings
- Transport and mobility
- Financial instruments
- Industry
- Legal initiatives (regulations, directives, etc)
- Planning issues
- Sustainable communities
- User behaviour
- Education
- Other

Target Audience

- Citizens
- Households
- Property owners
- Schools and universities
- Decision makers
- Local and regional authorities
- Transport companies
- Utilities
- ESCOs
- Architects and engineers
- Financial institutions
- Other

Technical

- Energy efficiency
- Heating
- Cooling
- Appliances
- Lighting
- CHP
- District Heating
- Solar energy
- Biomass
- Wind
- Geothermal
- Hydro power
- Other

Context

The family-owned company, which was established in 1945, manufactures advanced products for welding technologies, battery charging systems and solar electronics and has its headquarters in Upper Austria. Among others, it is a partner of the international automotive industry where high quality is a major concern. In the field of solar electronics, especially solar inverters, Fronius is the number 2 in Europe. Due to the rapid company expansion, Fronius decided to build a new production and logistics centre in Sattledt/Upper Austria where production will in early 2007. The space and process heat will be provided by a wood chips heating system which is planned, operated and financed by a third party financing scheme. For the energy supply of the plant a 600 kW photovoltaic unit is foreseen.

Objectives

The aim of the project was to supply the new production and logistics centre with a cost-efficient and environmentally-friendly heating system using locally available biomass for both space and process heat. The



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company management decided not to construct and to run the biomass heating plant themselves, but to choose the option of a third party financing scheme, where an ESCO takes over all financial and technical responsibilities.

- Supply of the new production and logistics building with space and process heat
- Use of locally available biomass
- Decision in favour of wood chips as it was most cost-efficient and creates regional added value
- No technical and financial risks
- Predictable energy costs for 15 years

Process

Due to shortage of space in all Austrian production facilities, Fronius decided to build a new production and logistics centre in Sattledt/Austria. In the year 2000, Fronius bought a land area of around 100.000 m² and a building with a total heated area of 37.000 m² was planned. In the early project stage, a heat supply by natural gas was considered, but soon Fronius came to the decision that their choice for heating would be regional biomass, however, only as a TPF project. "Our know-how is in the field of welding technologies, battery charging systems and solar inverters, but for the construction and operation of a biomass heating plant we need a specialist" says Herbert Mühlböck of Fronius. Therefore an ESCO was selected that is responsible for the whole planning, financing, the construction and the operation of the plant. The official project start for the biomass heating plant was in November 2005 and the construction stage was from March to July 2006. In August 2006, the start up of the plant was done.

The ESCO "Ing. Aigner Wasser-Wärme-Umwelt GmbH" planned, financed and constructed a biomass heating plant with two boilers with 1,200 kW for the heat supply in winter and 350 kW in summer, as well as a peak load gas boiler with 1,300 kW as a backup system at the new site of Fronius. The heating system includes the feeding system for the fuel, the flue system, flue gas cleaning, safety system, control and remote control systems. The total length of the micro grid for the heat supply is 80 m. The annual heat demand is about 5,000 MWh. The ESCO buys the wood chips directly from local farmers. The heating system as well as the boiler room and the wood chips storage room are built under the ground, which was considered as a very attractive solution by Fronius.



Financial resources and partners

Within a third party financing scheme, an ESCO undertakes the whole financing, planning and construction and also the future operation and servicing of the heating system. A heat supply contract is made between the ESCO and the client of the third party financing scheme. In this contract a long-term price for heat supply is fixed. The investment costs of the ESCO are re-financed by selling heat to the third party financing scheme client.

The whole heating system was constructed and financed by "Ing. Aigner Wasser-Wärme-Umwelt GmbH" acting as the ESCO. The whole investment costs of the third party financing scheme were at 556,000 Euro. An application for national and regional subsidies around 260,000 Euro for the biomass heating system was made and there will be a special support from the region of Upper Austria for the use of the TPF scheme of around 26,000 Euro.

Results

With the support of O.Ö. Energiesparverband, a decision in favour of biomass heating was taken which has not only a positive impact on environment protection and climate change but also creates regional employment and added value as the wood chips are bought from local farmers. Fronius itself did not have any investment costs



nor any maintenance costs as this included in the heat price paid to the ESCO. A remote control systems as well as a tele-monitoring ensures 24 hours-maintenance of the ESCO.

A heating plant with a total capacity of 2.850 kW was constructed (one 1.300 kW and one 350 kW biomass boiler, one 1.300 kW gas boiler as a backup system). For the annual heat demand of around 5.000 MWh, around 7.800 m² (2230 t) wood chips are needed. The design of the heating system with two separated boilers with different capacities of 1.200 kW for winter operation and one with a capacity of 350 kW for summer operation results in an optimised efficiency during the whole year. The installation of a peak load gas boiler with 1.300 kW as a back up system is also important.

A contract between the ESCO and Fronius for the delivery of space and process heat and for the heat price was concluded for a period of 15 years, with an option of renewal after that.

The biomass heating saves around 1,000 tons of CO₂ per year compared to a heating system with natural gas. 95 % of the annual heat demand of Fronius can be covered by biomass.

Lessons learned and repeatability

Already during the construction phase, it became evident that the cooperation with an ESCO that is specialised in planning and operating a biomass heating system in that capacity range was a very good option to choose for Fronius. The ESCO is not only able to the planning in a very short time period but also the construction and the commissioning went very quickly and without any technical problems.

Also for the operation of the plant, the TPF scheme has a number of advantages: the ESCO as a specialist in this field can ensure a cost-efficient and timely supply of biomass which also meets the right quality criteria. The Fronius staff can focus on their core business activities and rely on a continuous heat supply at calculable costs.

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