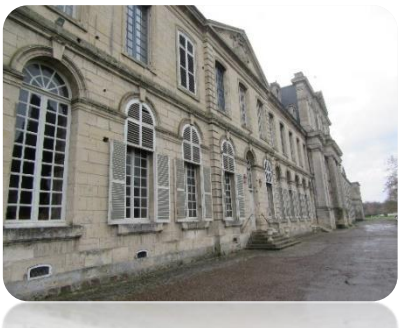
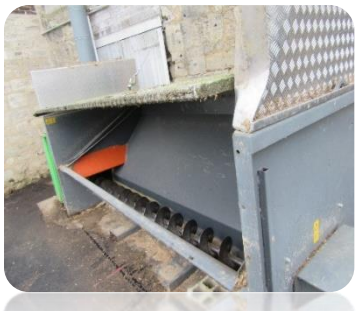
Success case factsheet

Notre-Dame de Ourscamp Abbey, France

Heating of a historical abbey building (founded in 1129) using miscanthus planted by local farmers

Heat for water heating system
Abbey Notre-Dame de Ourscamp, France
170 t/year of miscanthus
Date of commissioning: February 2015





THE STORY

Established in 1129 by Saint Bernard, Notre-Dame d'Ourscamp became one of the most important Cistercian monasteries in northern France. Still in use today, the 3,000 m^2 of the historic building required 60,000 litres of heating oil per year. In 2014, Father Bernard began thinking about replacing this fossil fuel with renewable energy from local biomass.

Located in a wooded area and in the immediate vicinity of the Ourscamp-Carlepont national forest, the project first turned to wood chips as a potential fuel. As forests already have good crushing outlets, the wood energy sector is relatively underdeveloped in this sector. A quick survey with a supplier made it possible to estimate the cost of the forest chip around 140 €/ton, excluding VAT and ready for use.

At the same time, two local farmers, located 6km from Pimprez and 18km from Frétoy-le-Château, and having planted miscanthus, offered a contract at €120 €/ton, excluding VAT. Around 170 tons of miscanthus were estimated to be needed. Since the heating value of miscanthus exceeded that of the wood chips, Father Bernand opted for the most economically interesting fuel in his case.

Being classified as a historical monument, the modification of the buildings was difficult to envisage. In addition, a meeting room project being planned on the ground floor of the future boiler room, it was decided to build the silo on the 1st floor of an existing building. Since there was no handling equipment, neither tractor nor bucket, a vertical screw was chosen as the fuel conveying mode.

A thermal demand study was carried out by Father Bernard in conjunction with Saelen, the importer of the German brand Heizomat (www.saelen-energie.fr). Special care is made to ensure that the boiler is properly maintained and that regular ash cleaning takes place to avoid any operating issues.

FACTS

Challenges

- Sustain the envisaged supply and guarantee fuel price stability over the long term
- Make the most of existing buildings and the secondary hydraulic network and reduce cost

Keys of success

- Selection of a suitable technology
- Time spent of engineering study and design
- Appropriate management and maintenance of the boiler
- Ensuring that fuel deliveries meet certain quality specifications (moisture < 15 %, granulometry of 45 mm with limited dust)

Technology

- 400 kW multi-fuel boiler by Heizomat
- No buffer tank because of lack of space in the boiler room, the footprint of the boiler being large, but having a large volume of water (1.6 m3)
- Feeding the 140 m^3 silo required the installation of a specific conveying system with an 8 m high vertical screw, an incorporation hopper and freeing up sufficient space for unloading access

Economics

- Nearly €23,000 in annual savings
- €6,000 in aid via Energy Saving Certificates
- 7-8 years of return on investment

Community

- Gather parishioners in a virtuous place vis-à-vis the environment
- Neighbouring residential houses have been connected to the biomass boiler and have replaced heating oil
- Diversification of the local farmers activity

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