

The Chepson community: The installation of a heat network powered by miscanthus and/or wood chip

Development Plan Summary (Malonne, Belgium)

Overview: The community known as ‘Chepson’ is made up of 40 private homes, a home for people with disabilities (22 beds), a public site, the IMP, which includes, in particular, a school with its infrastructure and a community swimming pool (27°C all year-round).

This project seeks to install a heat network connected to a locally-produced biomass-fired boiler and which would help to better reduce energy-generation costs.

Two types of biomass are being studied for this project: wood chip and/or miscanthus, and SRC and VSRC (very short rotation coppice).

To respond to this request, the first stage has been to consider the feasibility study as the other two points are dependent on it. Engineering consultants CORETEC were subsequently asked to carry out a technical-financial feasibility study.

Project detail

The project initiator is seeking outside support on the following points:

- A feasibility study for installing the heat network as well as the biomass boiler
- Characterisation of biomass using composting rejects with a view to possible development
- Help seeking funding to support the project
- Approaches to consider the Chepson project as a pilot, which may benefit from subsidies.



CORETEC's task consisted of:

- Determining the required heat production and its equivalent in litres of heating oil, as well as average losses from the heat network
- Determining the optimum power of the biomass boiler being installed, as well as its coverage rate
- Proposing a layout for the heat network
- Presenting a budget for investment in the centralised boiler-room and the heat network
- Assessing the project's financial plan
- Conducting a preliminary study into the fuel: a mix between miscanthus and wood chip on the one hand, and the wood chip alone on the other
- Analysing a composting rejects-type biomass deposit with possible development in the boiler-room.

Outcome

On the basis of the analysis carried out by CORETEC, the heat network project in the Chepson community and IMP is profitable.

Installation of the 2400m heat network and two boilers (600kW + 400kW) represents a net investment (excluding financial support) of €1,850,000 excluding VAT.

A payback period of eight years for the project is realistic, based on the observation of certain criteria:

- The location of the boiler in a new building at the centre of the network
- Shutting down the network during the summer to reduce the financial losses resulting from heat loss
- Subsidation of at least 45% to interest third-party investors
- The possible split of connection to homes into two phases
- The IMP taking responsibility for carrying out certain works on site
- The use of miscanthus for up to 20% of the total fuel, equal to 17 acres
- The use of unconventional wood fuel at an advantageous price
- The use of wood chip from compost rejects as an alternative fuel requires sifting the material. This is because plastic waste can be found in this.

This development plan is part of BioenNW, a €7.9m strategic initiative of the INTERREG IVB North West Europe Programme (2011-2015). BioenNW is led by the European Bioenergy Research Institute at Aston University, UK and sees 11 partners working together to deliver small-scale bioenergy schemes throughout North West Europe.

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