BEST PRACTICE

RENEWABLES NETWORKING PLATFORM

with the support of

Renewable and circular city

Kněžice, Czech Republic - 400 inhabitants

Mapping RES – circular city – heating & cooling

Czech municipalities with size similar to Kněžice have long been facing the problem of local heating plants: due to increasing prices of natural gas, households in towns with gas installation are returning to coal boilers. That causes pollution during the heating season. Kněžice decided to go in another direction in order to build a centralised heat supply in this small town, which will be 100% based on renewable sources.

Project in a Nutshell

The initiator and investor of the whole project is the municipality of Kněžice. Most of the funding for the project came from EU financial support schemes, a smaller part consisted of a loan from the bank and from the State Environmental Fund. The investment cost of this project was CZK 117 million (around 5 million Euro), without VAT, and has 123 connection points. This project is comparable to some of the far more intense investments in the Czech energy sector.

Construction works started in November 2005, the biogas plant was put into operation in 2006. The total investment consisted in the construction of: (i) biogas stations with a cogeneration unit; (ii) wood waste incineration plants; and (iii) heat conduit from pre-insulated pipelines around the town. The latter will transport to almost every home in the town the heating and domestic hot water, coming from the boiler room and from the biogas plant throughout the year.

The boiler room mainly burns grain, linseed straw and energy sorrel in giant packs as well as small wood waste. It then delivers heat to the central heating system (CHP). Ash from wood and straw burning is used as a fertilizer for agricultural land. The boilers are in operation only during the heating period, when the excess heat from the biogas station is not enough to cover the heat demand in the CHP system. Mainly organic waste from a local farm, livestock manure, as well as bad and old biomass (silage, grass, grain, etc.) serve as an entry to the biogas plant. The station further elaborates and ecologically eliminates the sober content of the septic tanks and cesspools from Kněžice and its surroundings.

Impact & Next steps

The benefits of the Kněžice project are twofold: firstly, they lie in saving of fossil fuels and the reduction of harmful emissions in the municipality. Secondly, the amount of electricity produced by the cogeneration unit in Kněžice will not be produced in Czech coal power plants. Overall, about 11 000 tons of CO2 emissions will be saved per year. One-year financial benefit for the municipality as a heating plant operator will be about 4.2 million CZK (166 000 euro). Therefore, despite the relatively high purchase price of electricity from a biogas plant and considering the payment of the loan, the return on investment will occur in about 15 years.

Replicability: Challenges & Success Factors

In order to launch a similar project, the municipality recommended:

- to have a long-term vision of community development and its future energy performance;
- to ensure long-term supply of raw materials for BGS at a favourable price;
- not to underestimate the communication of the technology and the overall project to citizens;
- to emphasize the benefits in the form of user comfort and quality environment.

Share & learn more!

www.obec-knezice.cz
bec@obec-knezice.cz