

Pre-Feasibility Study

Examination of the potential of utilizing renewable energy in the Kecskemét district heating

Executive Summary

District heating has an important role in the energy supply of the city of Kecskemét. About one third of the City's population is supplied with heat and domestic hot water by Termostar Heat Supply Co. which is owned by the City of Kecskemét and EDF DÉMÁSZ Zrt. The heat distribution system of Termostar may be considered state-of-the-art, and could be further improved by very large investments only. The most important focus area of the district heating system modernisation in Kecskemét is to switch to renewable energies in heat generation.

Termostar currently generates 100% of its heat from natural gas. The installed capacities of the system are 93.7 MW heat-only gas boilers and 6.6 MW_{th} gas engines. Due to the changes in the Hungarian regulatory framework the gas engine based energy generation has become rather difficult and in addition to that, district heating prices were also strictly regulated. Favourable economic conditions are provided for those district heating companies only which decide to utilise renewable energies. Although not the entire legislative framework for the utilisation of renewables has yet been created, the documents approved so far suggest that especially favourable support system will be provided for all initiatives which will use renewables for district heating.

In the Kecskemét district heating system biomass, particularly solid biomass has the best opportunities. The current study reviews why solar, wind, geothermal, hydro or biogas energies are not attractive for the Kecskemét district heating system.

According to the survey of Termostar, biomass suitable for energy generation is available from the vicinity of the City. The state-owned forestry that operates in the county would be ready to supply around 50-60 000 tons of woodchips a year. Further investigations are necessary to decide whether the by-products of the region's agriculture are suitable and available for being used as fuel for heat generation in the Kecskemét district heating.

Solid biomass can be used either in a heat-only boiler plant or in a combined heat and power (CHP) generation facility. The study has found both options worthwhile to be investigated further, noting though that the feasibility of the individual options will heavily depend on the future regulation of the green power support system. As said earlier, the various Hungarian energy strategy-related documents put strong emphasis on supporting bio-power generation that supply heat for district heating. At the time of preparing the current study it is not yet known how this strategic objective will appear in the concrete future legislation.

The study identifies Termostar's Szultán Street plant as the best location for the heat-only option. This version could have 25 MW thermal capacity which could then cover 72.6% of the heat demand of the City. An important precondition of this, however, is that the two separate district heating subsystems of the City would be connected.

The potential site of the CHP option would be the industrial zone in the outskirts of the City which would have to be connected to the Szultán Street plant by a dedicated heat supply pipeline. The CHP option could cover 91.7% of the heat demands. This option could only be attractive and feasible if the future regulation of green power provides such sufficient bonuses for biomass-based power generation which could make it possible to supply heat at considerably lower prices than that of natural gas generated heat.