


Making the district heating system of Szeged renewable with the integration of geothermal

District heating in Szeged



 Szeged, Hungary



COUNTRY BACKGROUND

There are currently 23 geothermal plants across the country with an installed capacity of 223.36 MW. These include thermal water town heating, district heating and a binary power plant. Despite having the largest potential for geothermal energy in central and eastern Europe, most of the district heating in Hungary is currently fuelled by fossil gas, with geothermal providing only 4%.

STATUS OF THE CASE

Ongoing: Construction phase

EXPLOITATION TECHNOLOGY

Deep geothermal system
(500-5000m)

USES

Heating and domestic hot water

FUNDING

Private and public

DISTRICT HEATING IN SZEGED

The District Heating Company of Szeged (SZETAV) is a 4th generation District Heating and Cooling system that utilises natural gas and, recently, local geothermal energy as its heat source. The company supplies heat and domestic hot water to 27,256 households and 433 public buildings in the Hungarian city of Szeged. The company is a municipally-owned SME with 3 departments (operations, finance, and energy) and 147 employees. The total energy output of the system is 782,514 GJ/year (547,967 GJ heat energy, 234,547 GJ domestic hot water) with a total installed capacity of 224mW. The system has 23 heating circuits with 1-20mW boilers in 19 remotely operated and 4 staffed boiler houses, 239 heating substations and 215km pipelines.



Imported natural gas had, until recently been the sole energy source of the system, making the company the single largest local emitter of CO₂. That changed with the integration of renewables into the system. Geothermal is now being introduced to the 15 largest heating circuits and solar power provides electricity to the pumps in several boiler rooms. Set off in 2019 the 63 million Euro's development co-financed by the EU and private investment is among the largest district heating system overhauls in Europe. Currently, 9 extraction wells are being drilled. As a result, nearly 20 million m³ of natural gas will be replaced with 536,298 GJ of geothermal energy annually, reducing the greenhouse gas load of the city by 68%.

Public concern is still relatively high towards the project, mainly because drilling 27 wells and laying pipelines in a densely populated city is a significant annoyance for inhabitants, and, also because utility costs of private households are state-controlled in Hungary, therefore switching to renewables do not present financial benefits for the end-users. This is why it is very important to highlight the environmental advantages of geothermal and showcase its long-term environmental benefits.