

# Heat recovery at hospital in Budapest, Hungary

This case study is part of a project catalogue produced by [ReUseHeat](#) to provide inspiration on how to utilize excess heat from urban sources for heating and cooling purposes. The catalogue contains 25 existing or planned projects out of which 12 cases are Danish and 13 cases are from other European countries.<sup>[2]</sup>

## Facts about this case

**Heating source:** Sewage waste water  
10-20 °C

**Heating capacity:** 3.8 MW

**Cooling capacity:** 3.3 MW

**Heat pump COP:** 6.5-7.1

**Temperatures:** Sewage water at 10 to 20 °C is heated to 32 °C. Cooling is delivered at 6 °C

**Period:** Finished in 2014

**Organization:** Thermowatt

**Link to web page:**

<http://www.thermowatt-global.com>

**Contact information:**

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Source: Thermowatt<sup>[1]</sup>

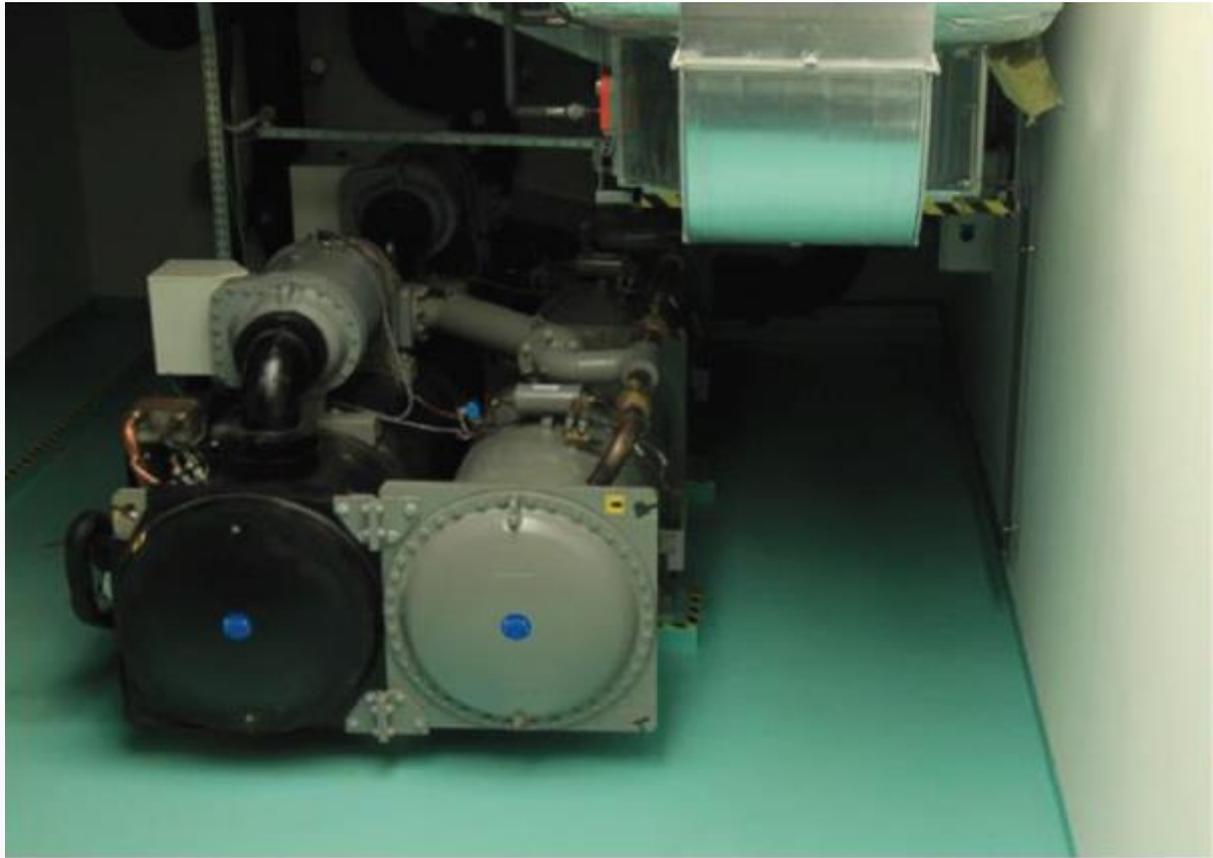
## Description

At the military hospital in Budapest, waste water from the sewage system is used for both heating and cooling purposes. The stable sewage water temperatures and a heat pump system ensure a steady and sustainable heating deliverance to the hospital.

The project of using heat recovered from the sewage system was inaugurated in October 2014. The heating and cooling extracted from the sewage water is used internally at the military

hospital. The heat pump system is developed by Thermowatt with a total cost of approximately 2.5 M Euro. Energy savings can however reduce the annual operation costs for heating and cooling purposes with approximately 340,000 Euro.

The sewage water temperature is between 10 and 20 degrees Celsius throughout the year. The military hospital is a relatively large building complex that requires heating and cooling for 40,000m<sup>2</sup>. Therefore, the heat pump system has a heating capacity of 3.8MW and a cooling capacity of 3.3MW. There are installed approximately two equally-sized water-to-water heat pumps. When sewage water is used as a heat source, a filtration unit is required to cleanse the water, before it is send to the heat pump units. Approximately 11,000m<sup>3</sup> of sewage water pass the system every day. The total system is placed in an underground car park and occupies approximately 210m<sup>2</sup>. The heating and cooling is delivered through air handling units composed of large heat exchangers. Hereby low operation temperatures of approximately 32 degrees Celsius is reached. A system-COP between 6.5 and 7.1 is accordingly reached.<sup>[2]</sup>



Source: Thermowatt<sup>[1]</sup>

## References

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1. [Thermowatt](#)
2. Handbook - 25 cases of urban waste heat recovery