

Case study: Husova (CZ)

Name of the project:	Jeseník, DH system Husova
Location:	50.235394, 17.208320
Name and type of the owner:	Municipality of Jeseník. Jeseník is the capital of the Jeseník district which belongs to the Olomouc Region. Jeseník has 11 579 inhabitants. The city owns total of 6 district heating systems which are operated within lease agreement with SATEZA, a.s.
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Context of the study

Based on the spatial energy policy of Jeseník, the possibility of implementation of solar heat systems in selected localities was presented to the city. The location Husova was chosen due to expiry of the life cycle of the current boiling and distribution systems. Total of 6 district heating systems are now being operated in the city.

Current state

According to the information provided by the lessee, location Husova is currently an investment priority in terms of necessary reconstruction of both distribution system and heat source. The extent of reconstructions is so large that there will basically be a new district heating system dimensioned to reflect altered boundary conditions, in particular reduction of heat consumption for heating. The Husova boiling room currently supplies 4 residential buildings.



Husova boiling room

Address: Husova 1093/4, 790 01 Jeseník

Thermal power: 2,053 MW

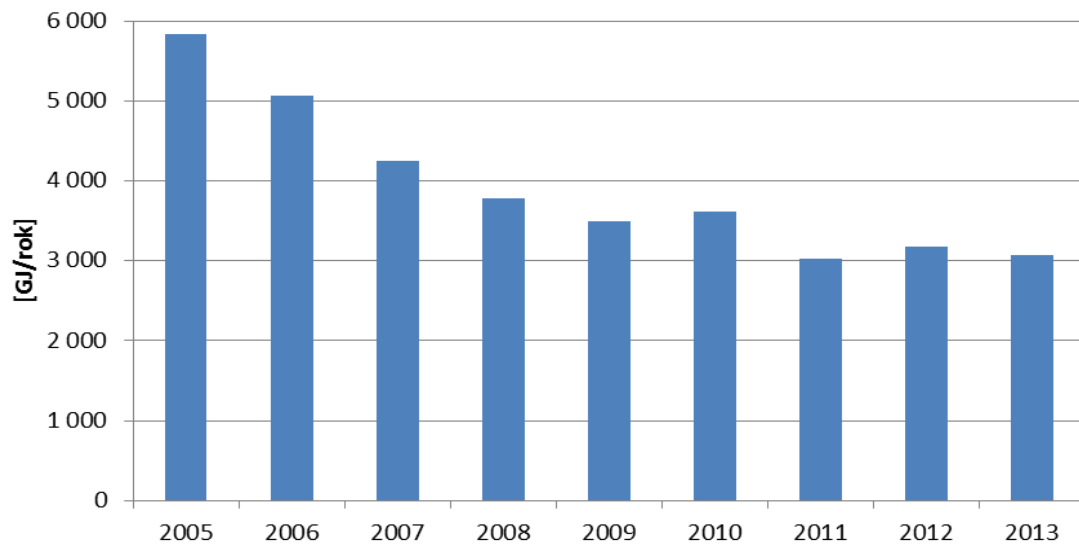
Electric power: 0,022 MW

Number of boilers: 3

Fuel: natural gas

Development of heat production

The average heat production in the past 3 years is 3092 GJ. Potential for reduction of heat demand in the supplied buildings is basically non-existent due to current level of insulation. All 4 supplied objects are fully insulated, and had the window panes exchanged.

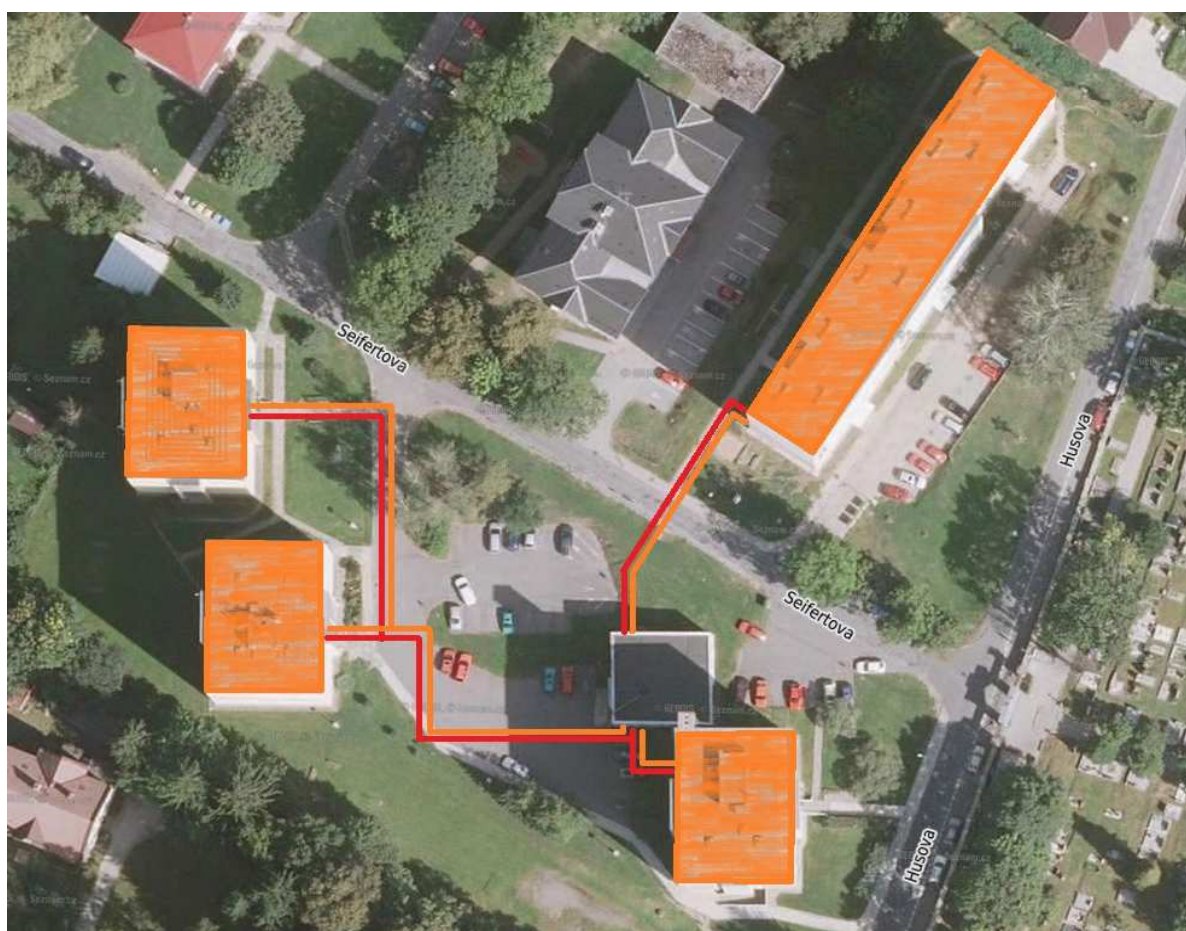


SDH plant

The solar heat system will be evaluated as a supplement to the main heat source which is the new natural gas boiling room according to the currently designed solution.

SDH system concept

Due to lack of space in the locality, the collectors have to be placed on the roofs of the supplied buildings. It is assumed that the full area of the roofs will be used. Central connection of the particular solar arrays and the main source is assumed in the simplified calculation.



SDH technical data

The calculation was performed in the on-line calculator tool (<http://www.sdh-online.solites.de>). The roofs of the objects can carry approx. 250 m² of solar collectors. The volume of the storage tank calculated from the minimum solar heat price is 50 m³.

SDH energy balance (MWh)

Total heat production	MWh	850
Collector area	m ²	250
Storage volume	m ³	50
Solar heat production	MWh	64
Solar fraction	%	8
Specific solar gains	kWh/m ² .rok	315
CO ₂ reduction	t/rok	15 920
Investment costs	EUR	144 000
Solar heat cost	EUR/MWh	158

SDH economics

The current end-user heat price from the DH is 593 Kč/GJ. In case of building the new central boiling room with condensing boilers, the heat price is expected to remain more or less the same as the energy loss in the heat source and in the distribution system will be reduced. The heat price from the above described solar system is not competitive.

SDH plant opportunities & threats, benefits & limits

The potential realisation of the solar system within complex reconstruction of the district heating system is possible only with receiving of appropriate subsidy for covering the difference between the production heat price. Detailed conditions of particular calls of the new operation programmes are not yet set up. The real co-financing rates in the similar projects vary between 50 and 70 % which would reduce the heat production cost to 356 - 592 Kč/GJ. Clear limitation to the solar system size is the roof area of the connected objects, and the impossibility of placement of the collectors in the terrain around the heat source.

Photos



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