



6th International Conference on Smart Energy Systems
6-7 October 2020
#SESAAU2020

WEDISTIRCT: Feasibility analysis of renewable DHC concepts in different climatic zones

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°857801

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Refer also to the presentation “Real-scale integrated renewable energy systems” by Frederik Palshøj Bigum

Other information can be found on the project website <https://www.wedistrict.eu/>



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WEDISTRIC Project

The WEDISTRIC project aims at demonstrating district heating and cooling concepts based on renewable energy

4 demo sites will be set up across Europe, located in:

- Alcala de Hernanes (Spain)
- Bucharest (Romania)
- Kuźnia Raciborska (Poland)
- Lulea demo site (Sweden)



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Alcala de Hernanes demo site (Spain)

Current status

CEPSA Research Center

Heating demand: 1,300 MWh/y

Cooling demand: 730 MWh/y

The current energy sources are gas and electricity:

- 3 x 378 kW natural gas boilers
- 2 x 646 kW air-cooled chillers



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Innovation Fund Denmark





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Alcala de Hernanes demo site (Spain)

Proposed solution

Proposed technology mix:

- 250 kW Linear Fresnel collectors (LFC)
- 180 kW Parabolic trough collectors (PTC)
- 250 kW Low concentration fixed-tilt flat-plate collectors (FTC)
- 1 MW Biomass boiler
- 100 kW Advanced absorption chiller
- 700 kW Conventional absorption chiller
- water storage tank
- molten salt storage (150→215 °C)

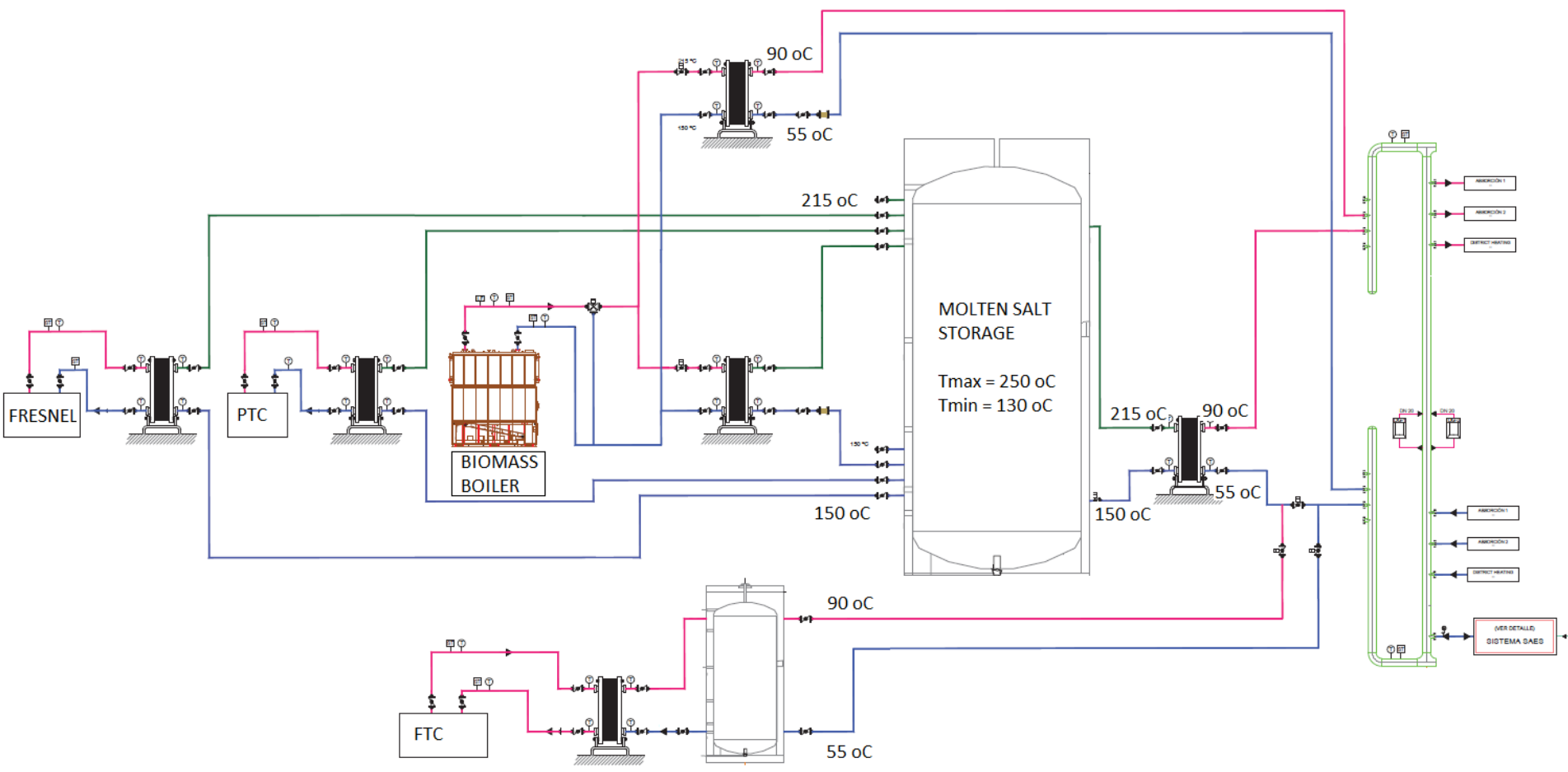


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Bucharest demo site (Romania)

Current status

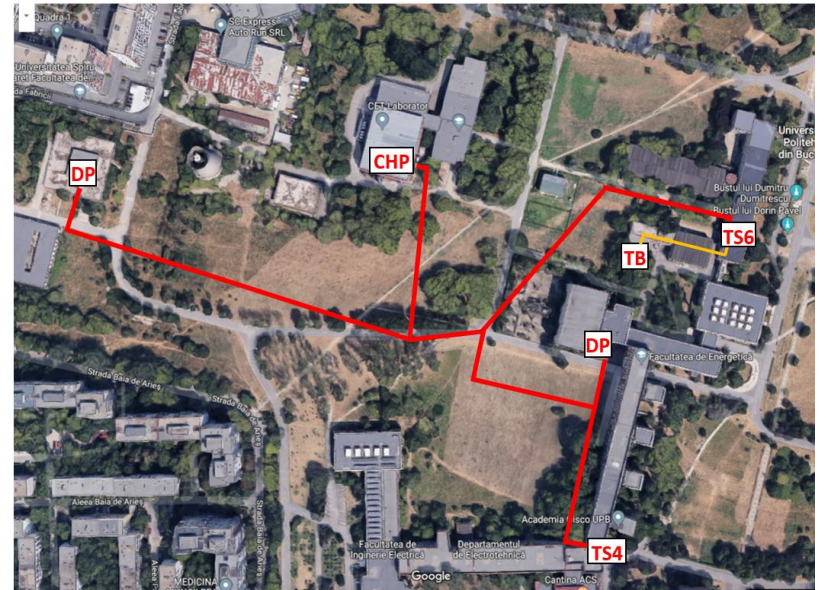
“Target Building” (TB) in the University of Bucharest

The Campus is currently supplied fossil-fuel based DH, but the TB has it own supply:

- gas fired boiler
- Electric heaters
- Individual electric air-conditioning

Heating demand: 130 MWh/year

Cooling demand: 13 MWh/year



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Bucharest demo site (Romania)

Proposed solution

Proposed technology mix:

- 20-30 kW PV system + 30-45 kWh battery
- 60 kW geothermal HP
- 4.5 m² solar thermal system



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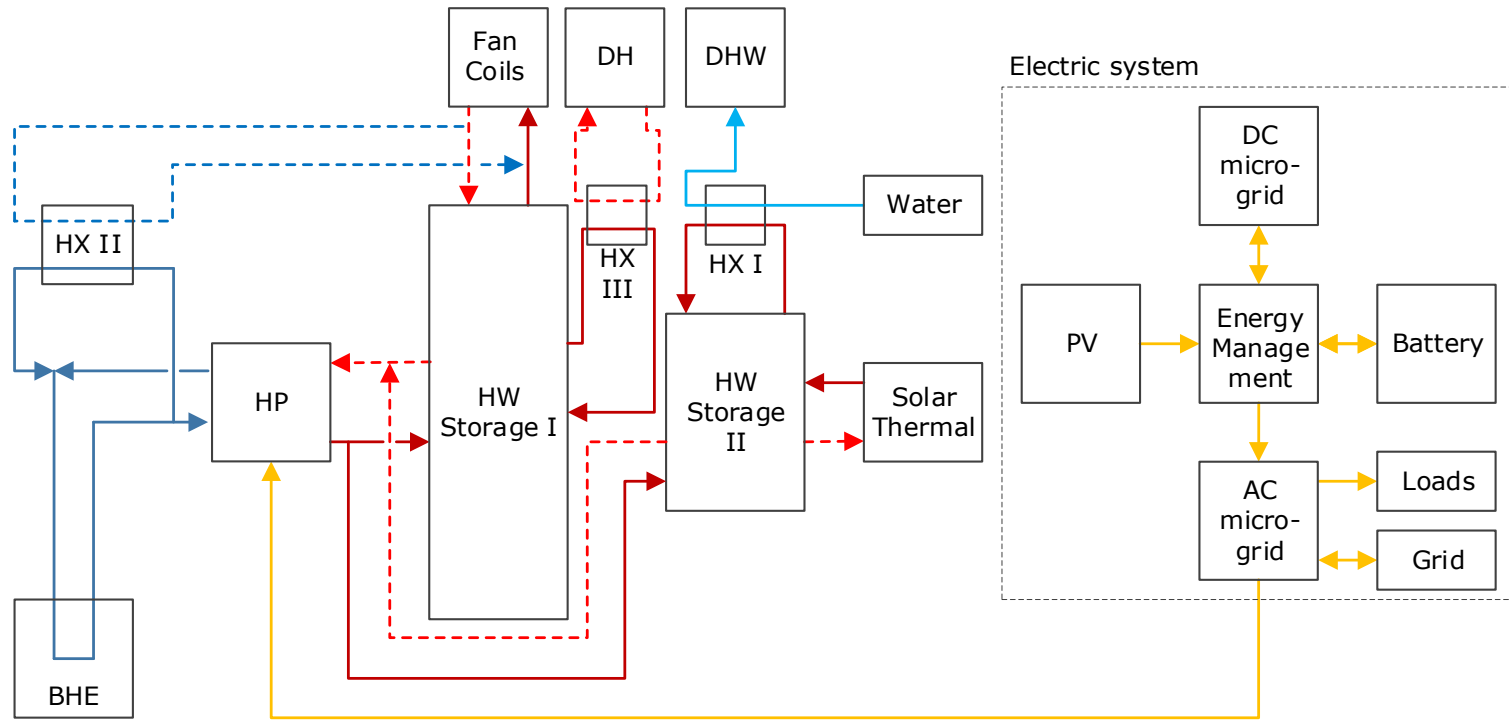




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Legend

- - - Hot water return
- Hot water supply
- Electricity
- Geo-fluid loop
- - - Cold water loop
- Tap water

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Kuźnia Raciborska demo site (Poland)

Current status

Kuźnia Raciborska: 5,400 people.

Coal-based DH system supplies 20 buildings, for a yearly heating production of 5000 MWh



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Kuźnia Raciborska demo site (Poland)

Proposed solution

The aim of the project is to decarbonize the heat production making use of the renewable resources locally available:

Proposed technology mix:

- 2x 500 kW biomass boiler
- 100 kW PV
- 300 kW air-to-water heat pump



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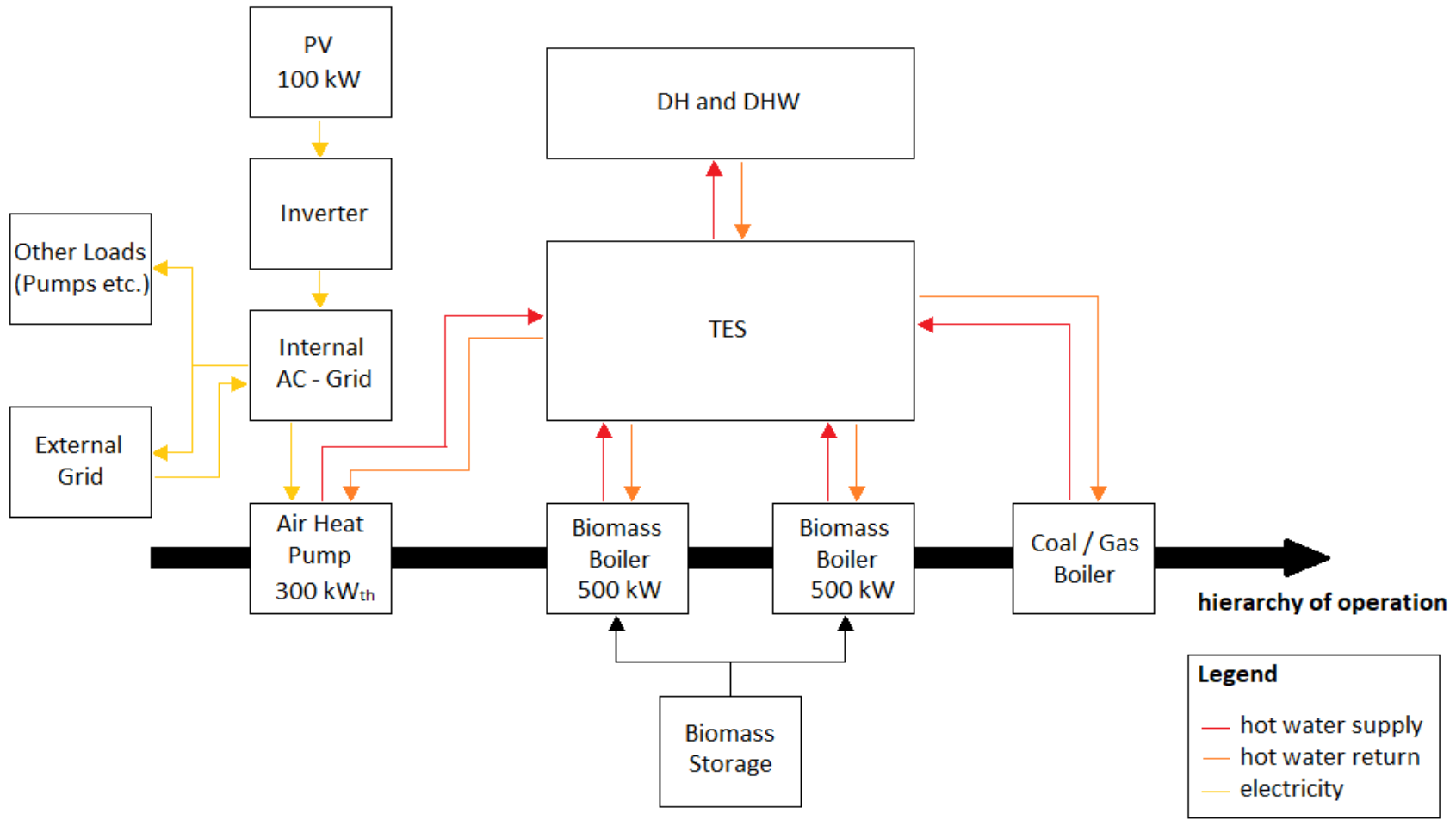




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