



Digital refurbishment of District Heating Systems: the case of Bolzano within SINFONIA project

Helsinki

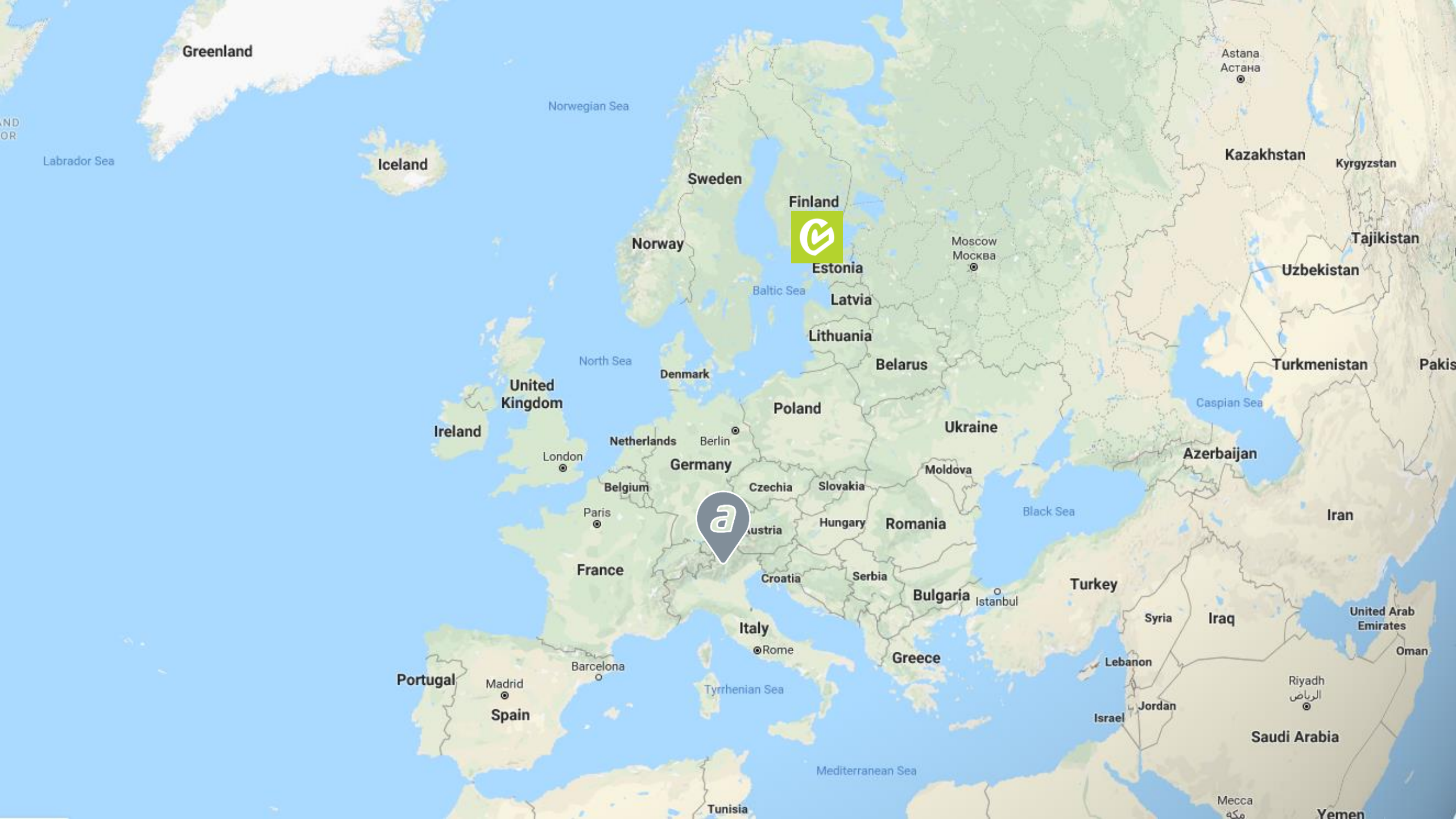
26th September 2018

Technology: Making DHC Great Again! Upgrading Networks for
High Performance



*wir sind
südtiroler
energie

siamo
l'energia
dell'alto adige*



PLANIMETRIA ZONA EX SEMIRURALI

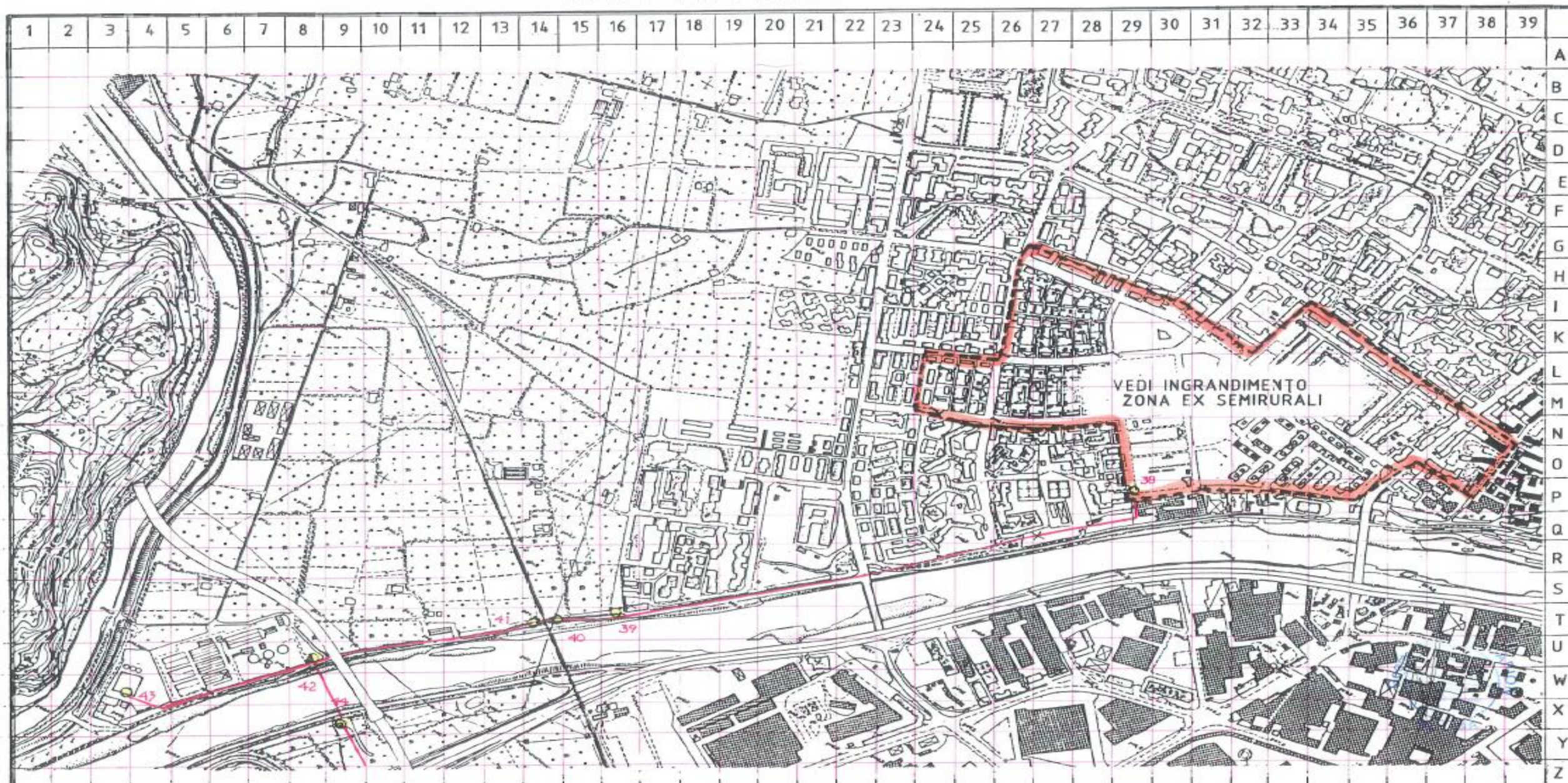
SCALA 1 cm = m 79,25

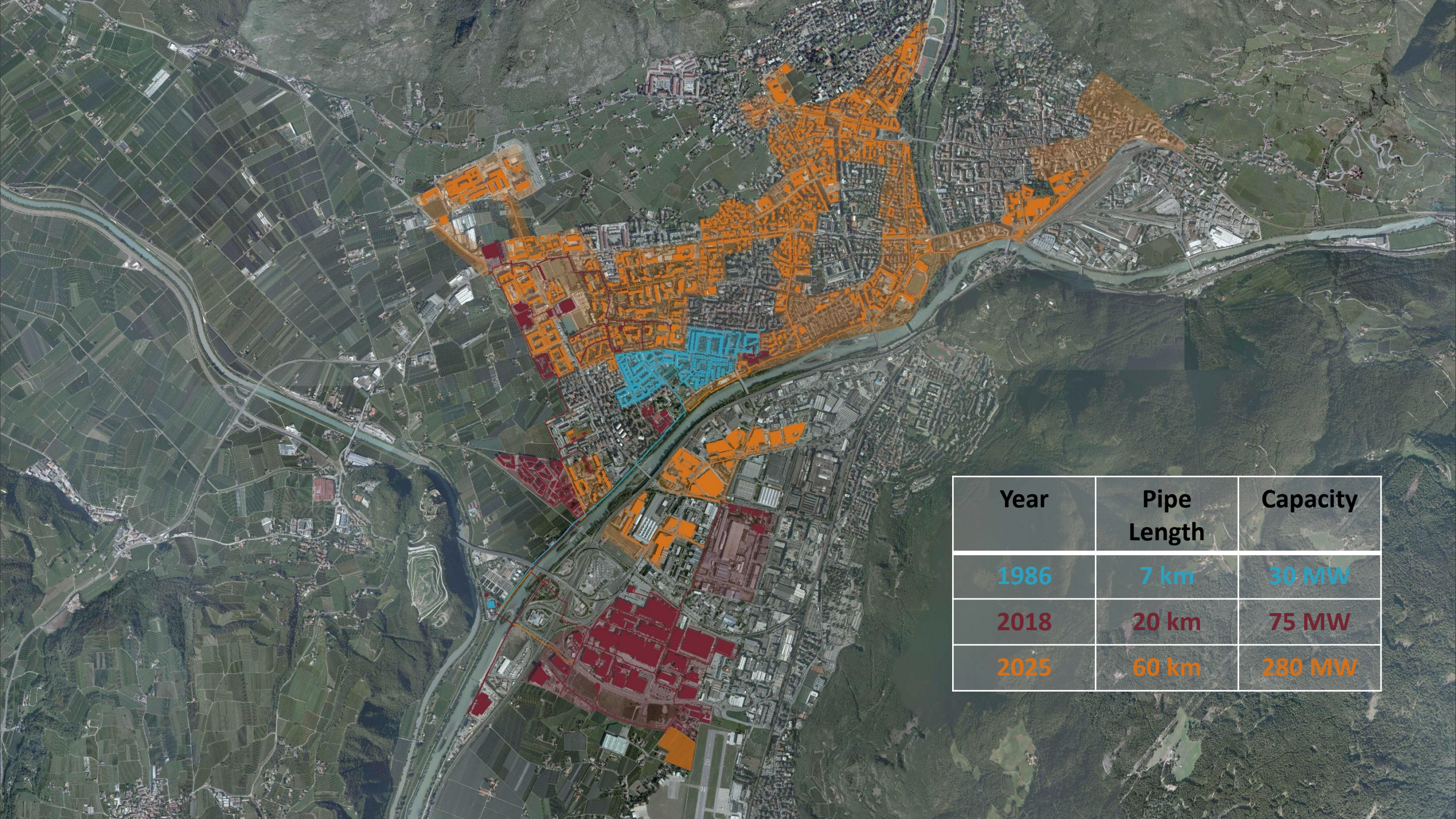
SARACINESCHE:

○ SARACINESCA PRINCIPALE

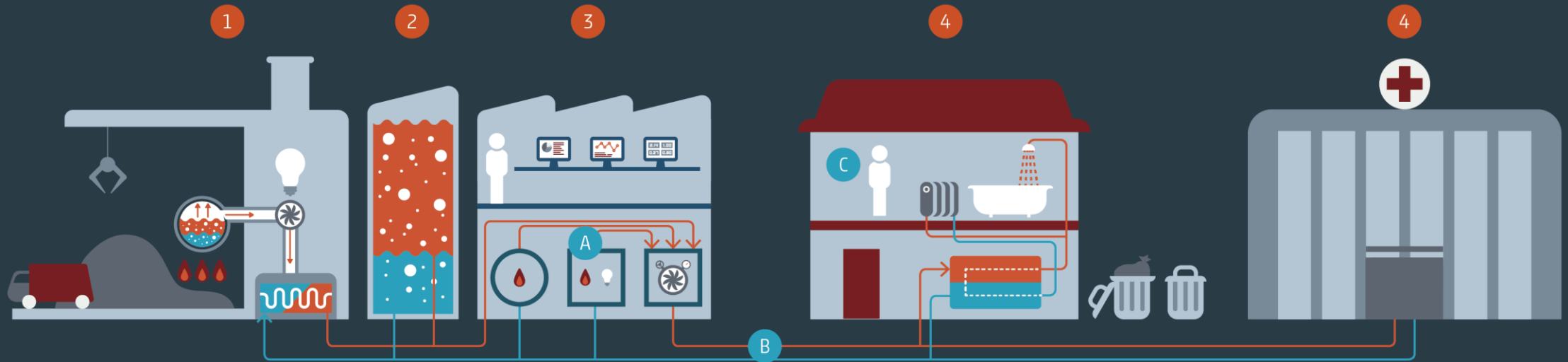
38 NUMERO DELLA SARACINESCA

co. G. Benelli





Year	Pipe Length	Capacity
1986	7 km	30 MW
2018	20 km	75 MW
2025	60 km	280 MW



- 1 Waste to Energy plant
- 2 Thermal energy storage
- 3 Boiler and CHPs plant
- 4 Users

Actions within Sinfonia project:

- A Fossil fuels reduction by using H_2 as alternative fuel into CHP unit
- B Network heat losses and electric consumption optimization with real time monitoring and operation model
- C Real time heat consumption monitoring and optimization of consumers' energy use

The Digitalisation process

Bolzano DH: Previous architecture



How was it?



- Many data monitored
- Plant operation use

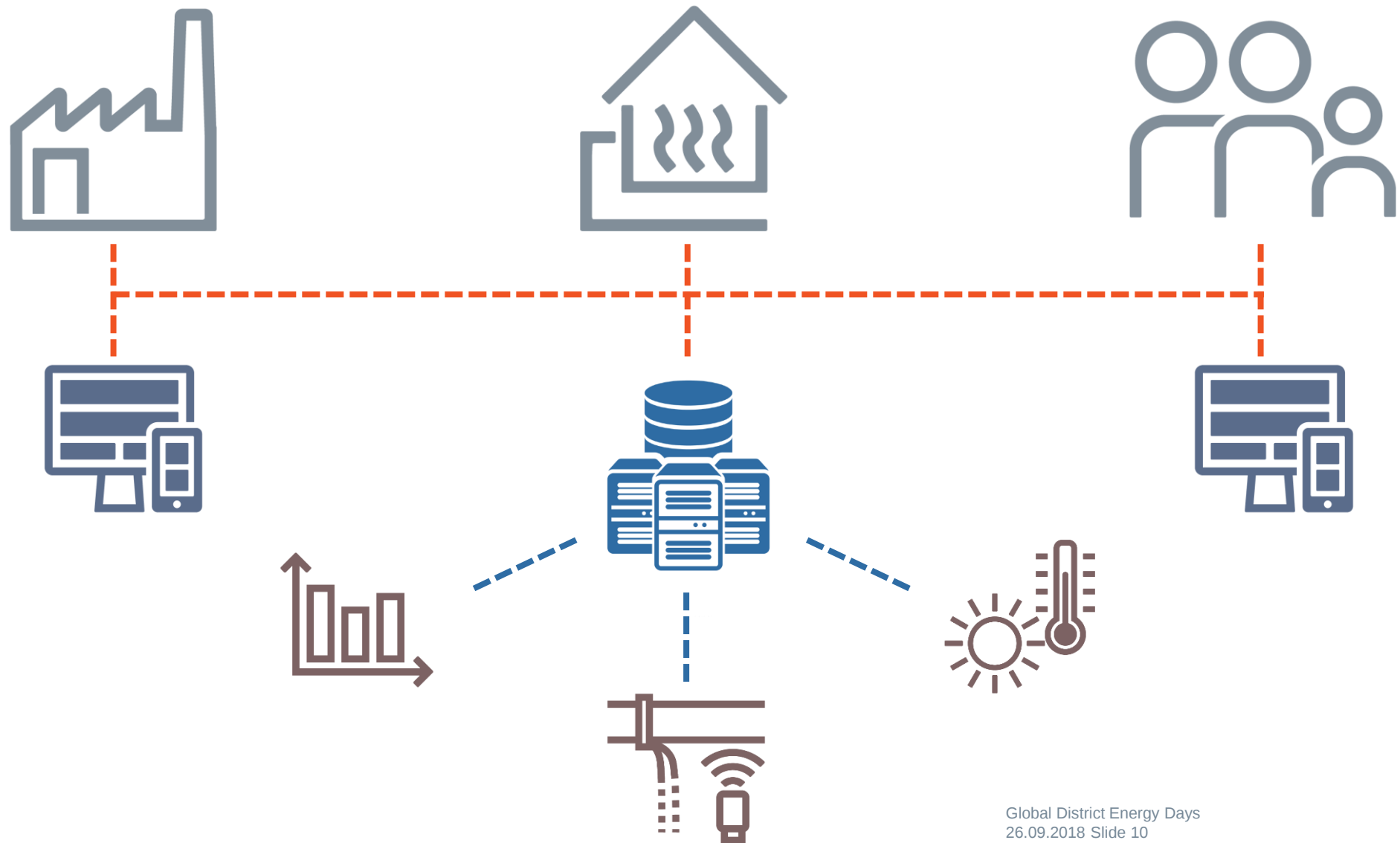


- No monitoring
- No control



- Few data
- Hardly usable

Bolzano DH: Current architecture



How is it?



- Heat Load forecaster
- Optimal production control
- Production scheduling



- Real time monitoring
- Temperature optimization
- Pumps use optimization

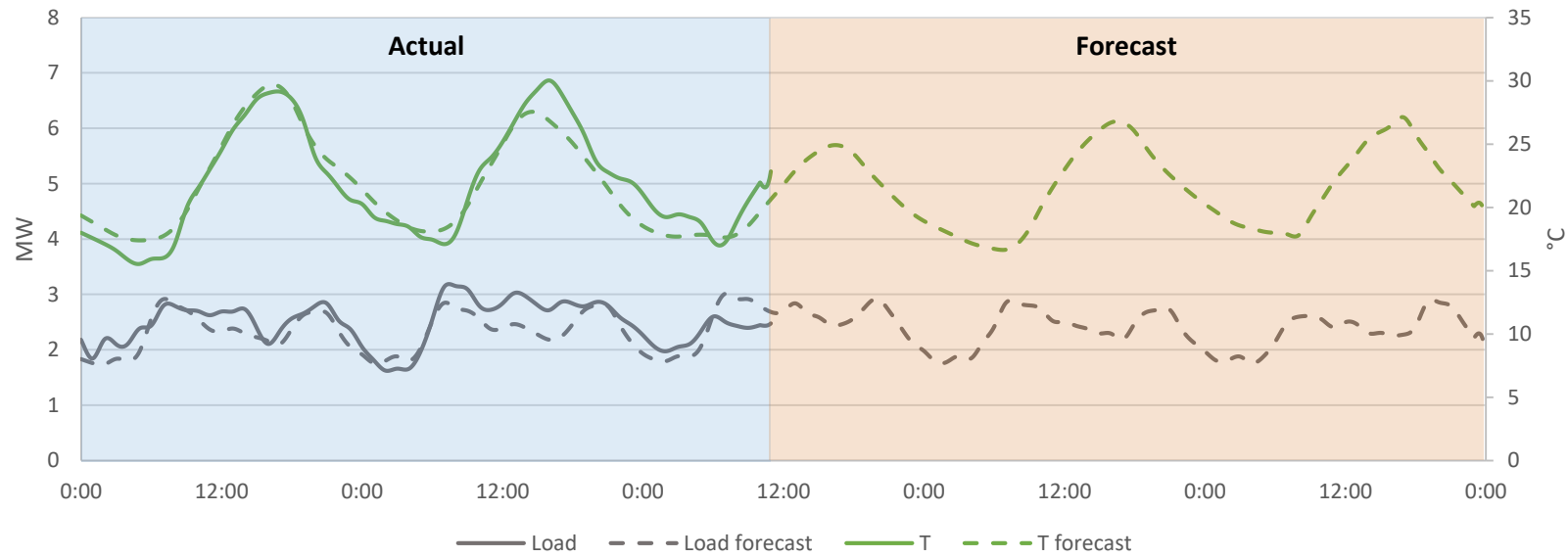
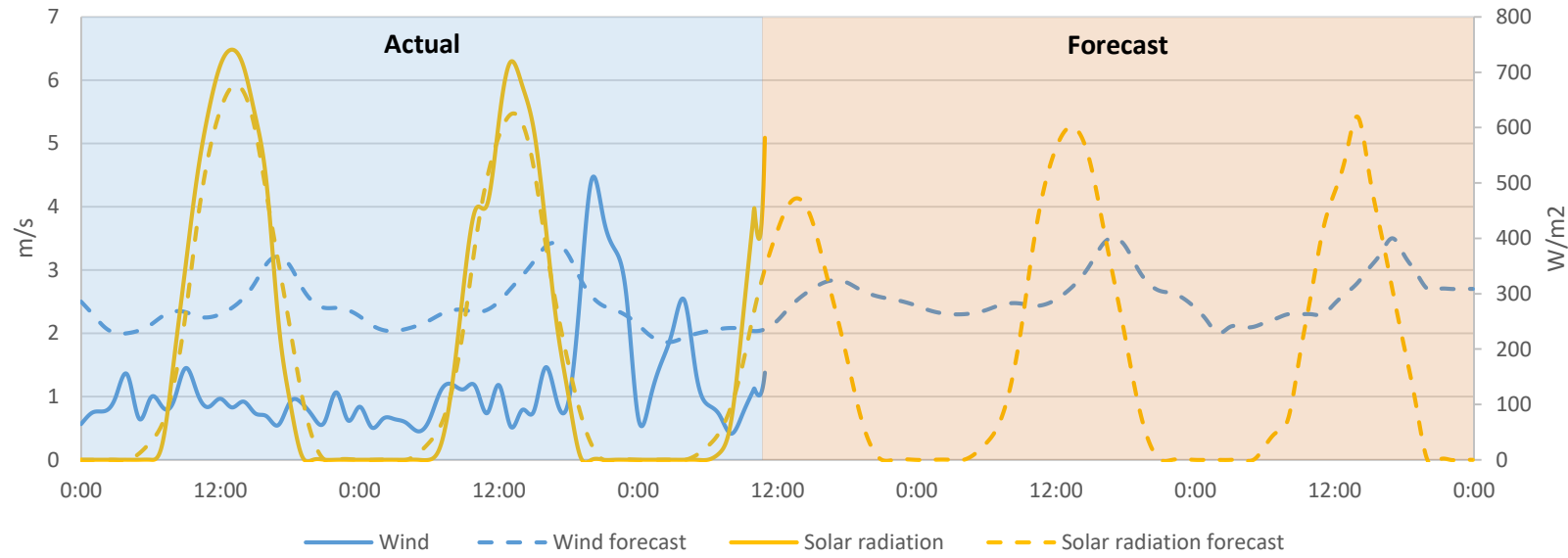


- Real time overview
- Easy data analysis
- Consumers awareness

First Results

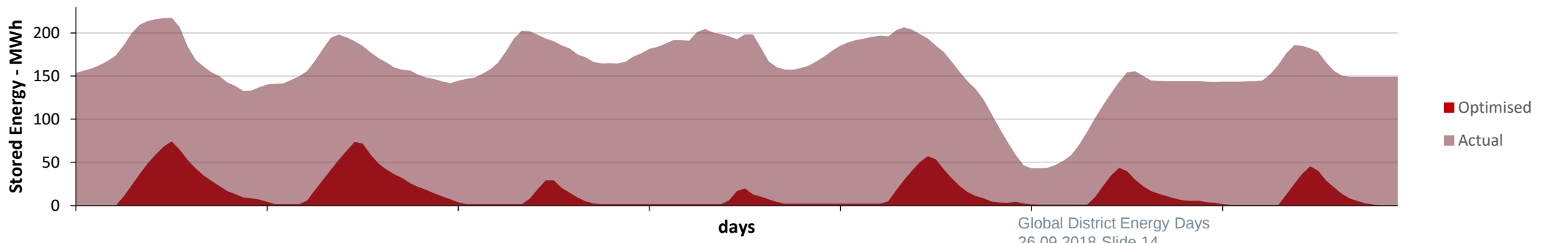
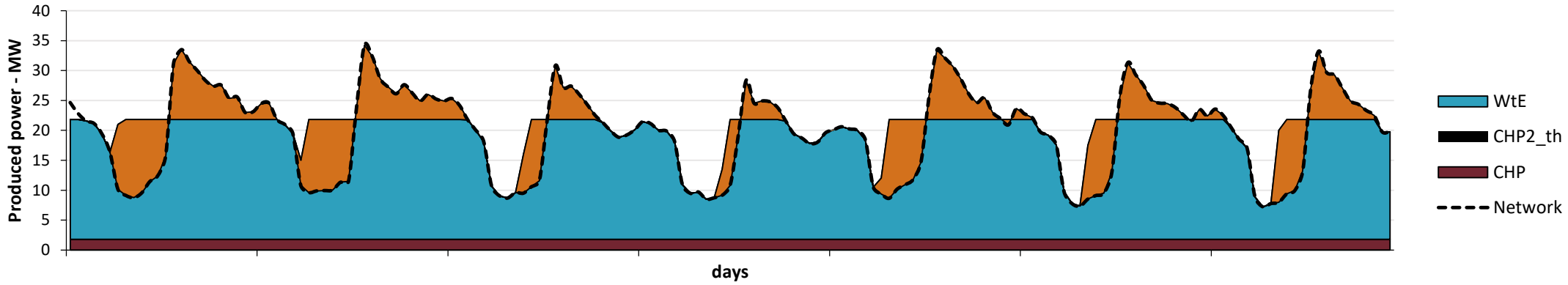
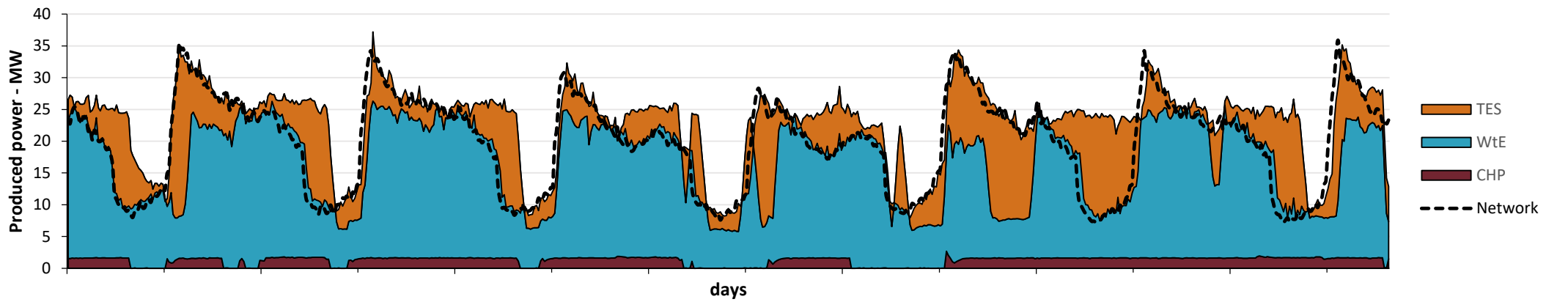


Supply: Forecast



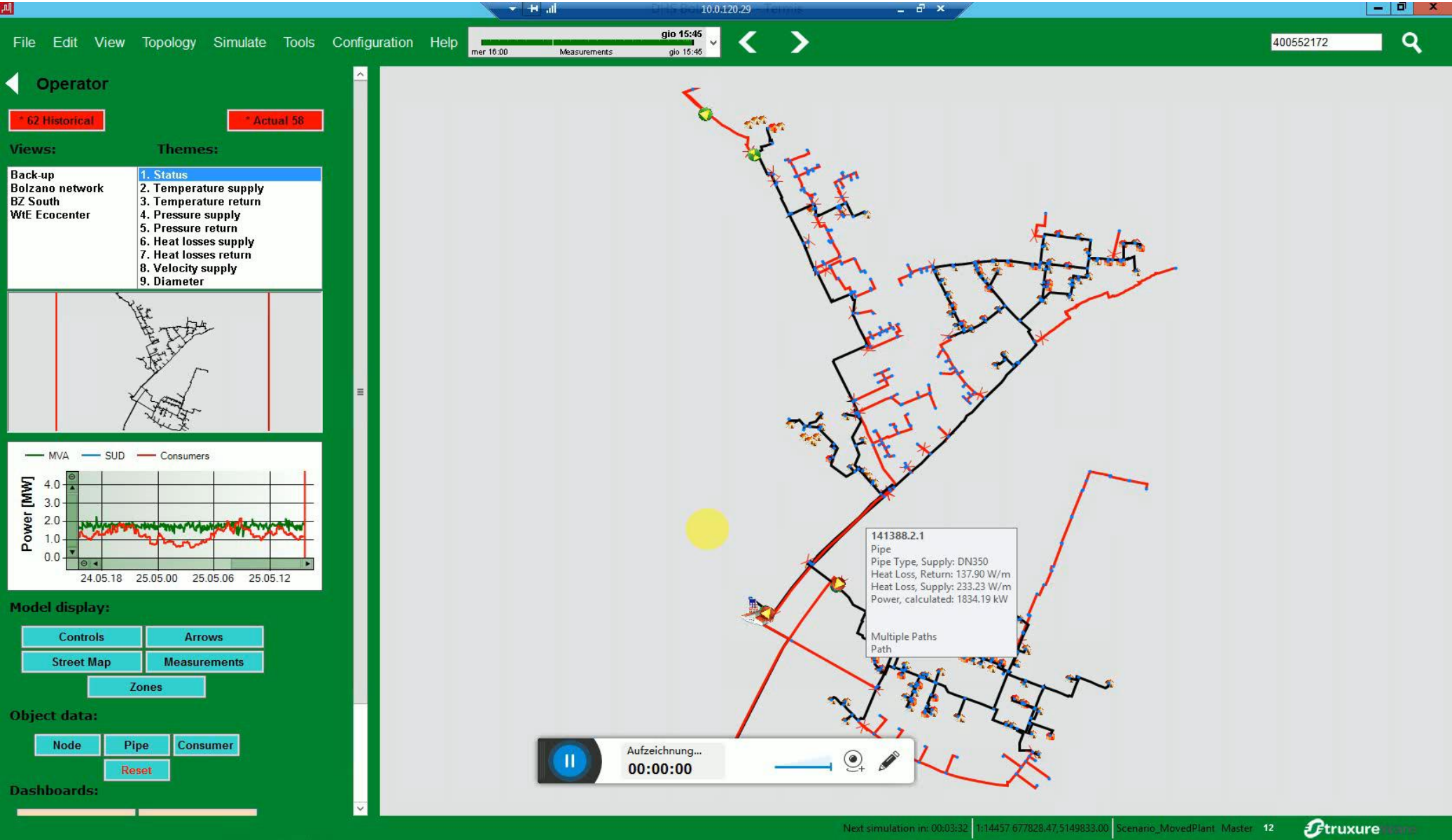


Supply: Scheduling



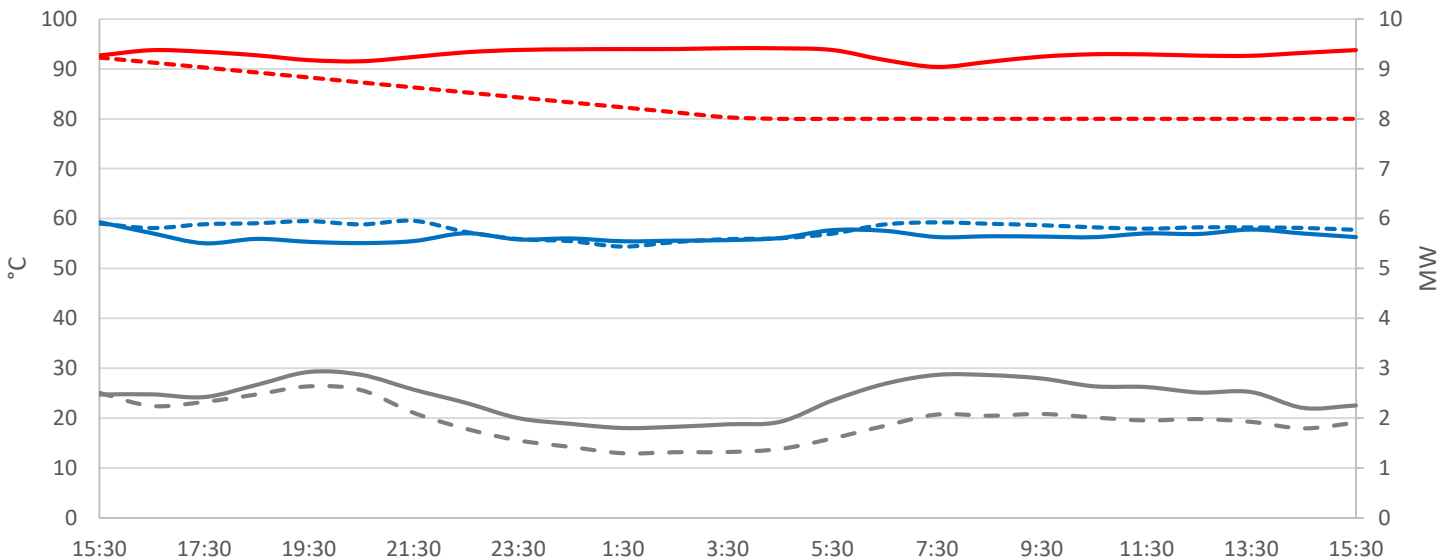


Distribution: Monitoring





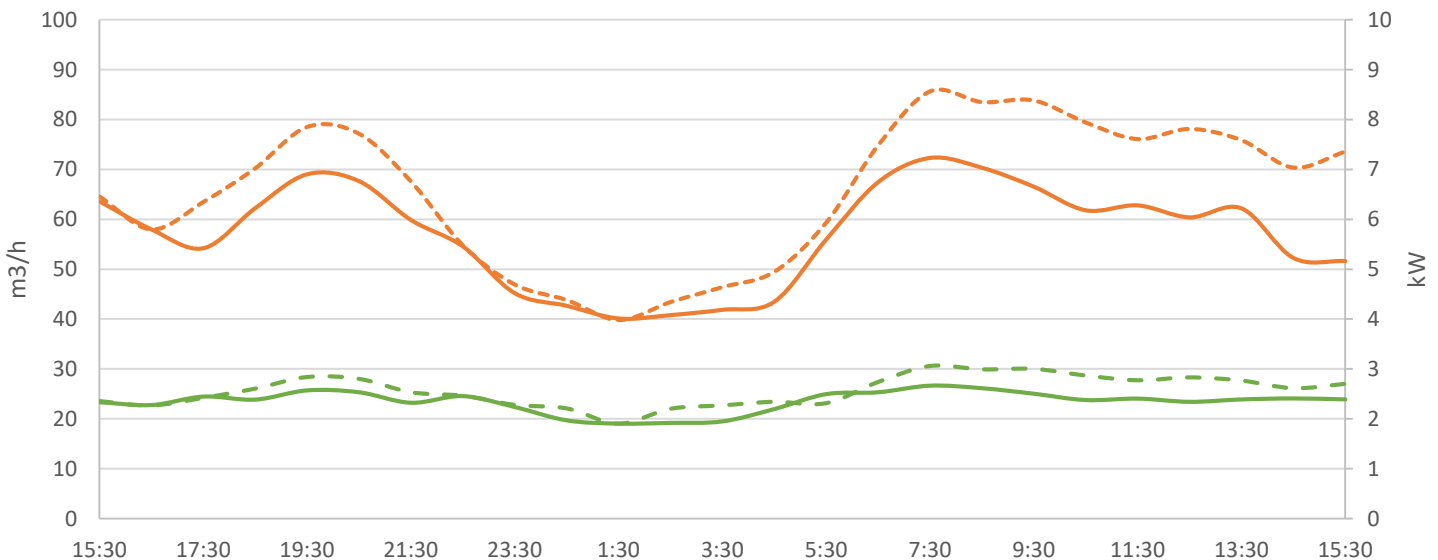
Distribution: Optimization



- 17,7 %



+ 4,4 %

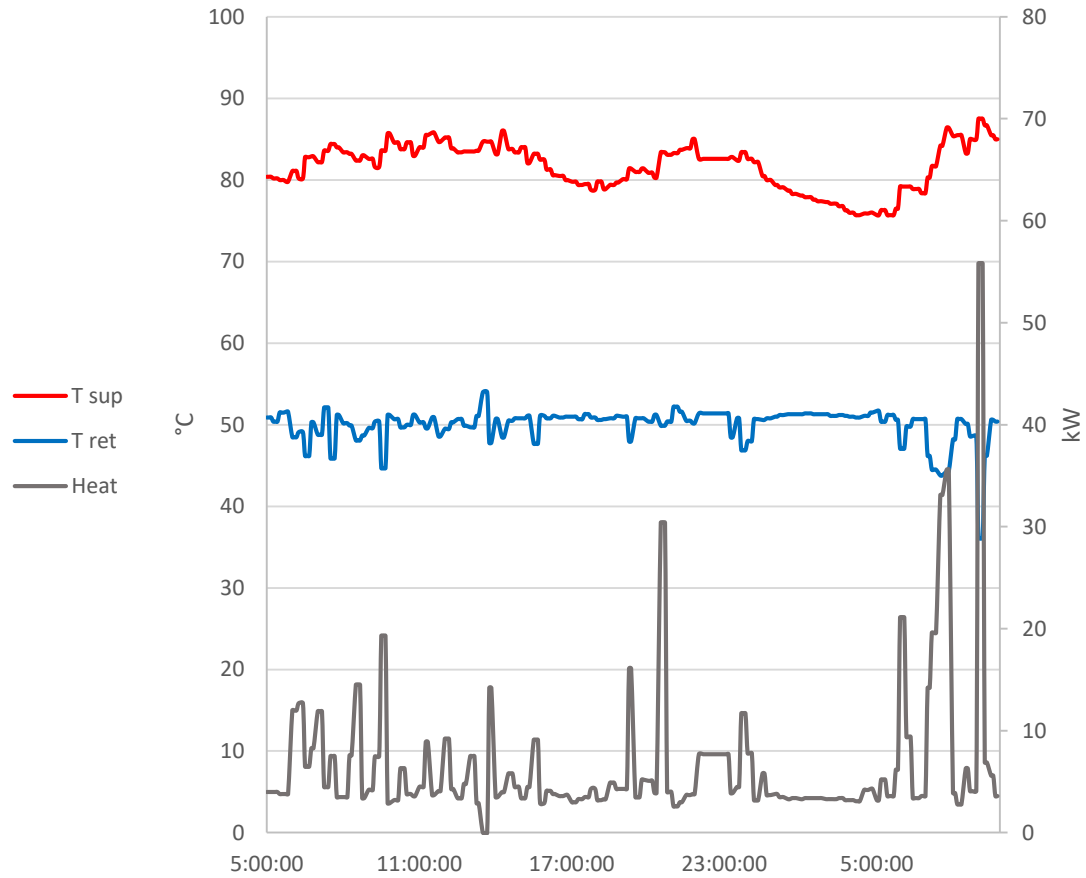


- 17,4 %



Demand: Control

alperia





Demand: Alarms



Reduced temperature supply on consumer



Target temperature on consumer not met



Decreased differential temperature on consumer



Too low differential temperature on consumer



High peak heat load on consumer

So what?

So what?



- **Load forecasting**
 - Production Scheduling
 - Optimisation of supply units



- **Monitoring**
 - Control of operation
 - Optimisation of distribution parameters



- **Real time data**
 - Improved consumer satisfaction
 - IoT integration

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