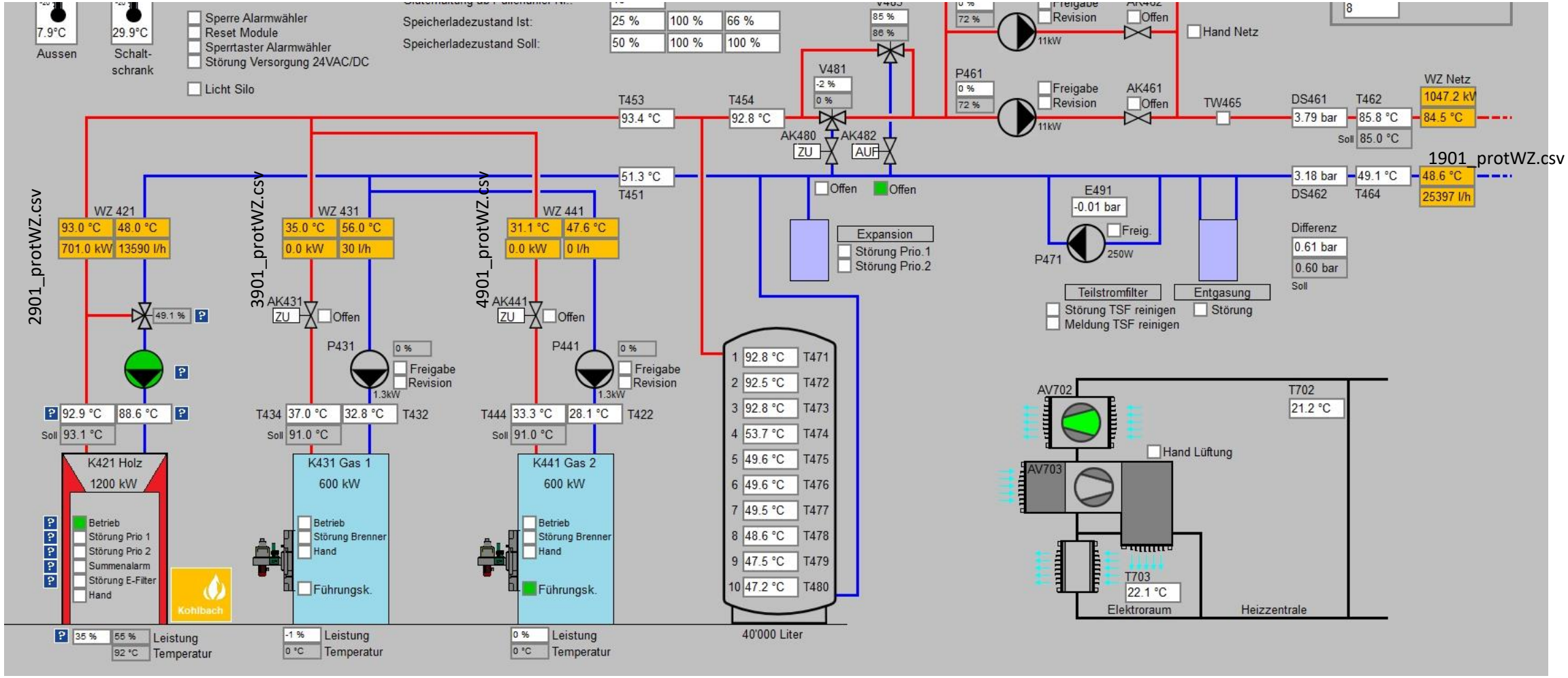
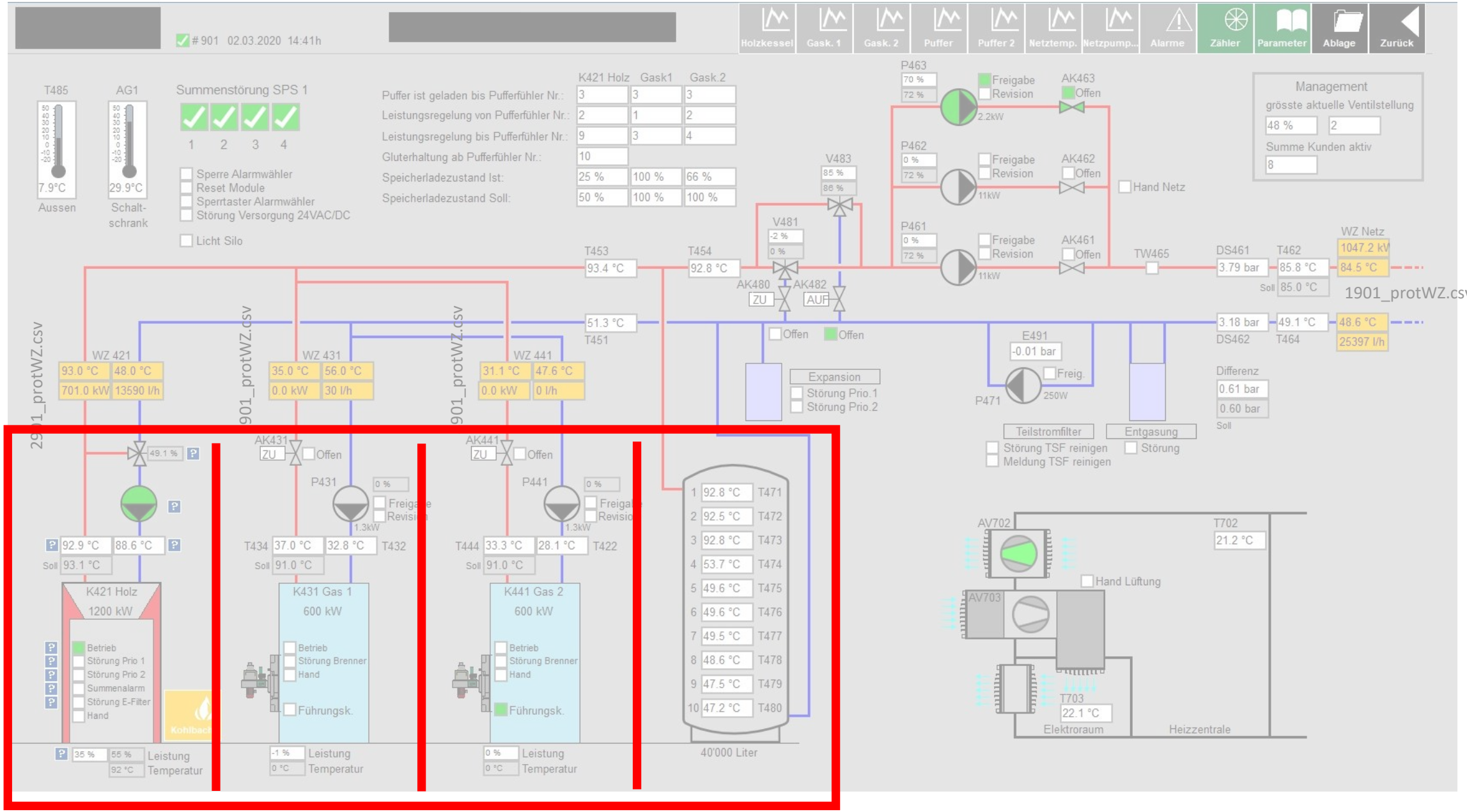
01 Optimization of District Heating

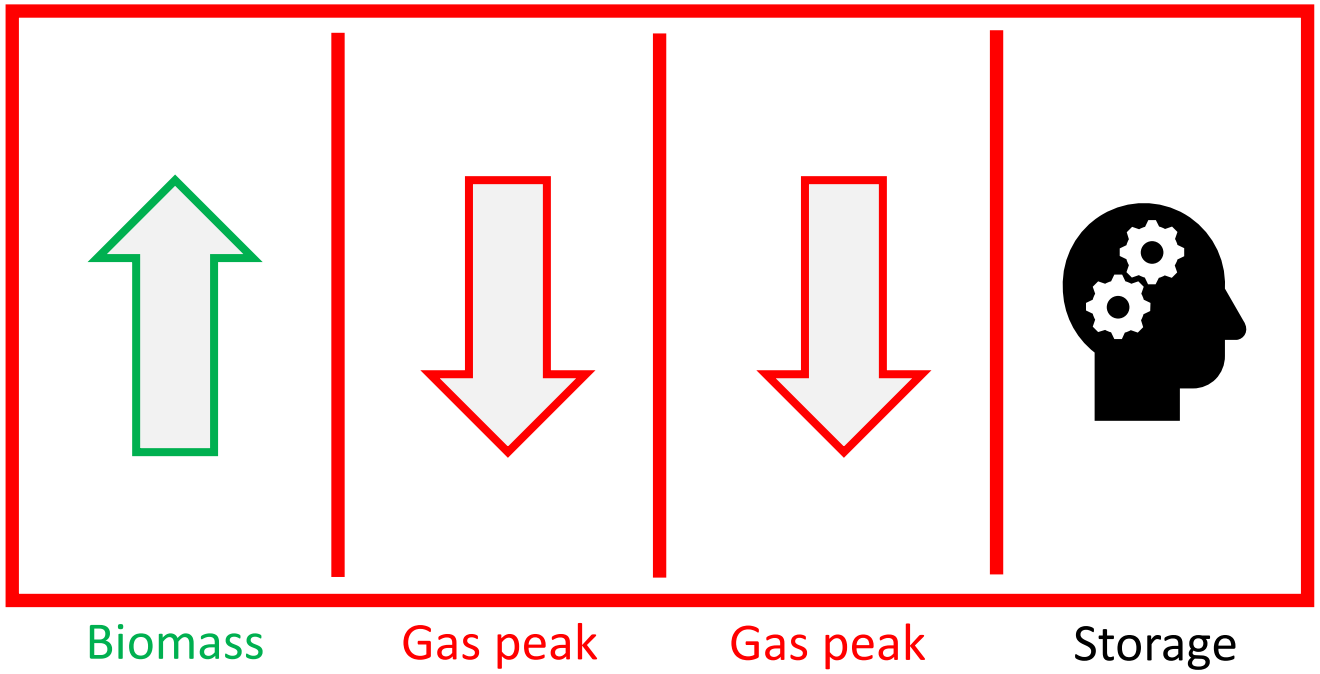




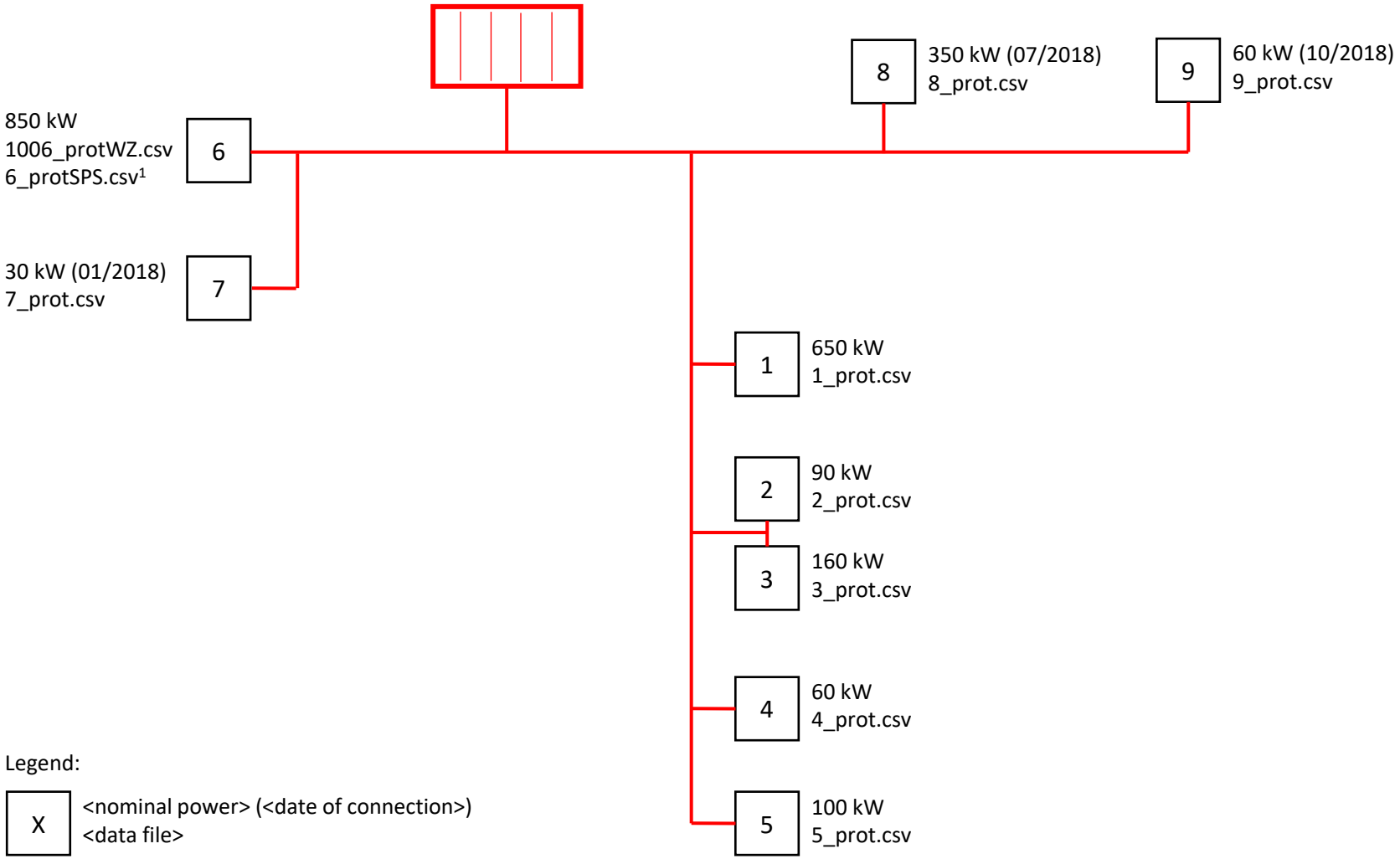
Biomass Gas peak Gas peak Storage

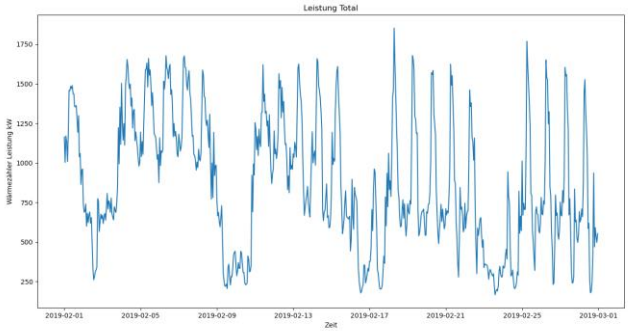
Challenge

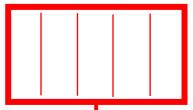
Decrease gas peak boiler runtime due to better storage operation



3. better storage operation
2. improved storage control
1. heat demand forecast


850 kW
1006_protWZ.csv
6_protSPS.csv[1]
6
30 kW (01/2018)
7_prot.csv
7
8
350 kW (07/2018)
8_prot.csv
9
60 kW (10/2018)
9_prot.csv
1
650 kW
1_prot.csv
2
90 kW
2_prot.csv
3
160 kW
3_prot.csv
4
60 kW
4_prot.csv
5
100 kW
5_prot.csv
Legend:
X
<nominal power> (<date of connection>)
<data file>


Leistung Total
Wärmezähler Leistung kW
Zeit



6

7

8

9

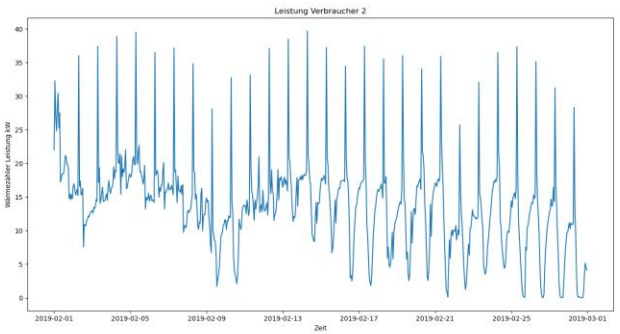
1

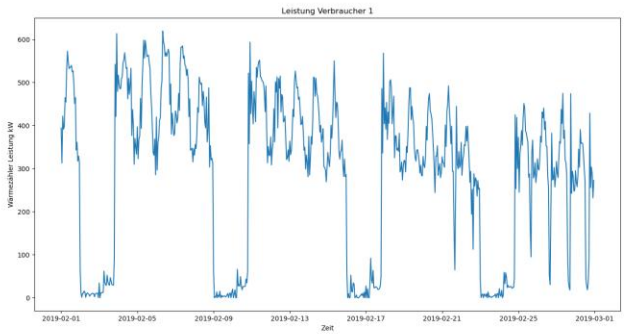
2

3

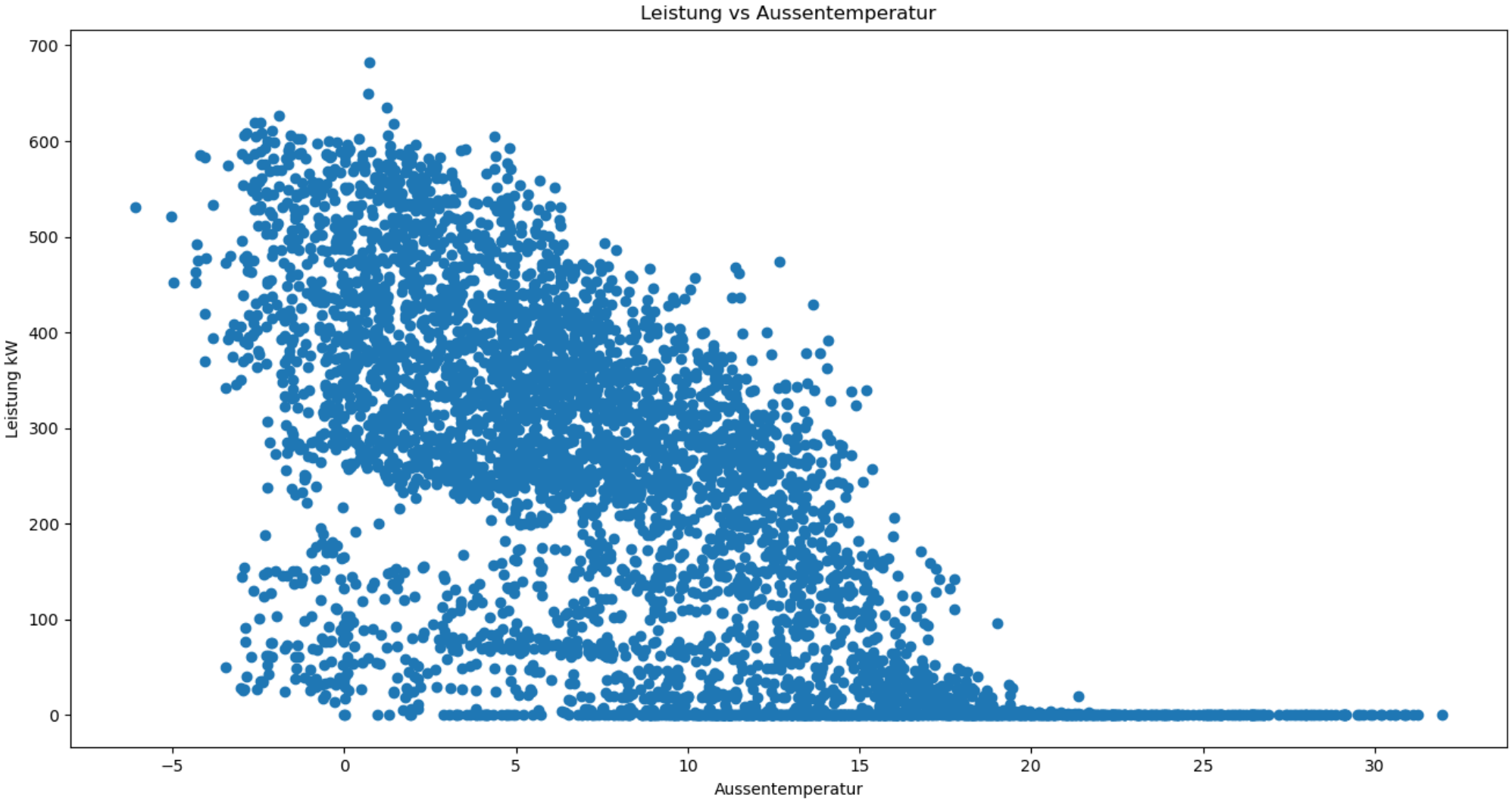
4

5

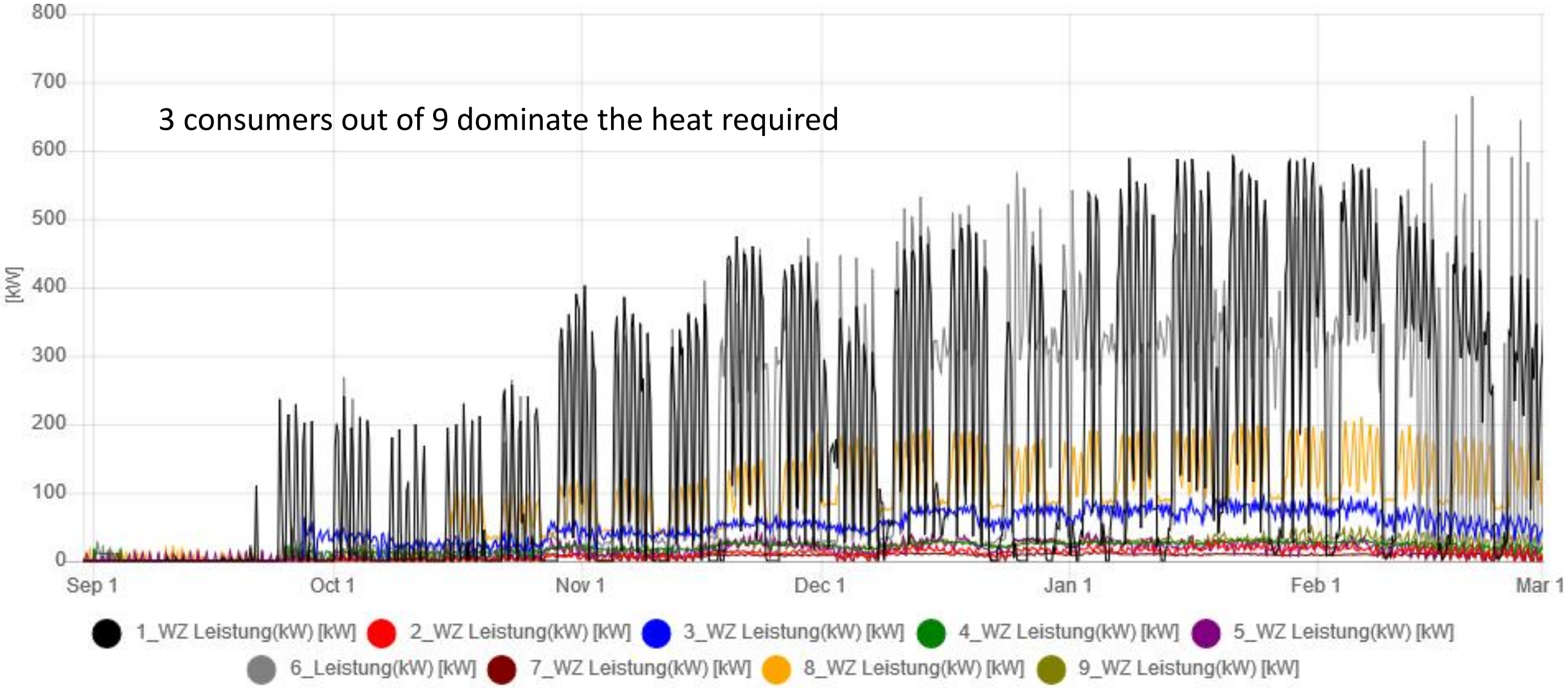

Leistung Verbraucher 2
Wärmezähler Leistung kW
Zeit


Leistung Verbraucher 1
Wärmezähler Leistung kW
Zeit

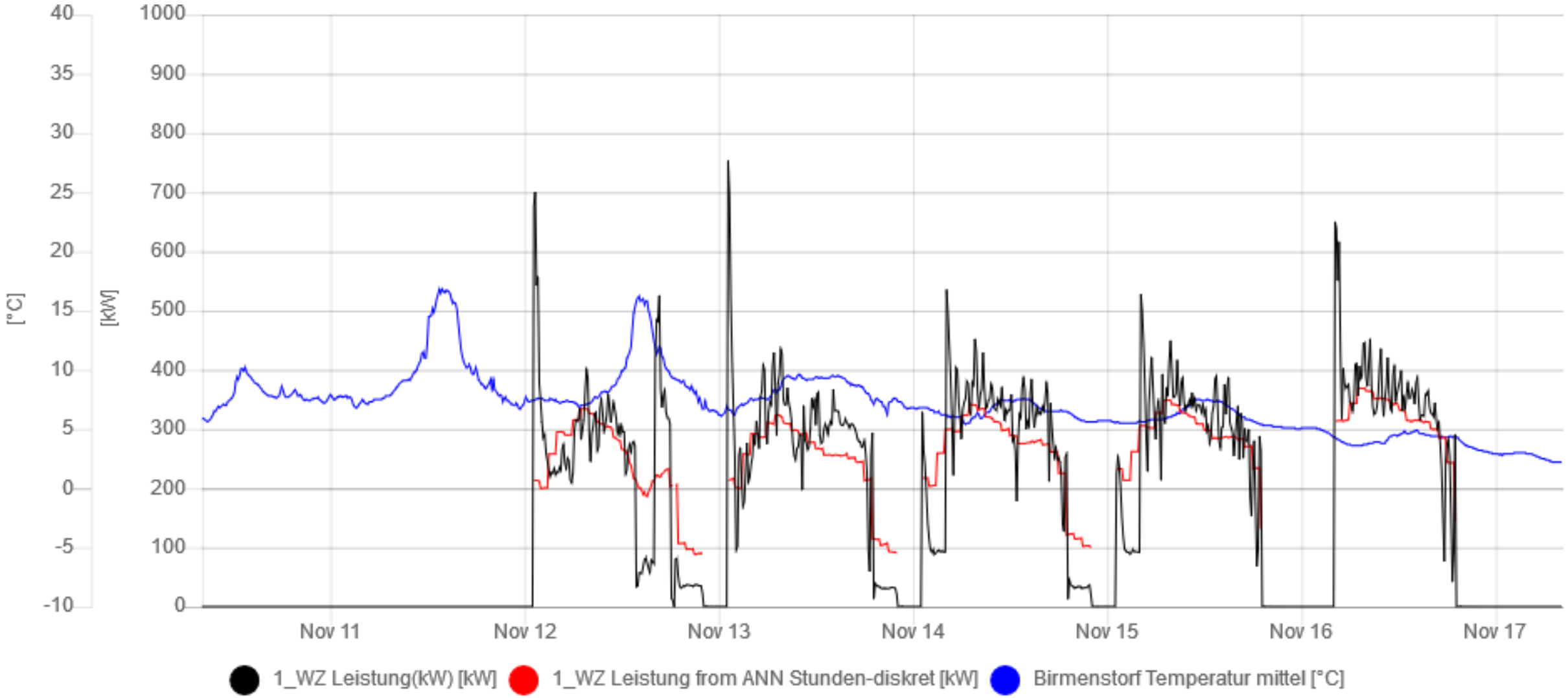
Correlation heat demand vs. ambient temperature



Main consumers heat demand



Forecast vs. measured heat required | biggest consumer



Further proceeding

- Finalize forecast algorithm (main consumers, load profiles, parameters)

- Develop concept for new control settings
  - Set point biomass boiler + set point storage vessel

- New control settings implementation
  1. Simulation with existing data: do new settings make sense/savings?
  2. Run new settings manually
  3. Run new settings auto

- Transfer to other CH district heating systems

01 Optimization of District Heating

Team

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Wolfram Willuhn