



ATMO sphere





Cooling of a plastic molding process with a R718 chiller

Industrial Refrigeration Panel

Dr.-Ing. Juergen Suess
Dipl.-Ing. (FH) Florian Hanslik
efficient energy, Feldkirchen, Germany

Case Study: Cooling of a plastic molding process

Key facts:

- Location:
Gerstetten (near to Ulm), Germany
- Application:
Cooling of extruded plastic tubes
- Cooling capacity requirement:
30 kW constantly
- Chilled water temperature requirement:
20 °C constantly
- Outside heat exchanger:
Air cooled dry cooler
- Second system installation date June 2017
- Initial system installation date March 2016

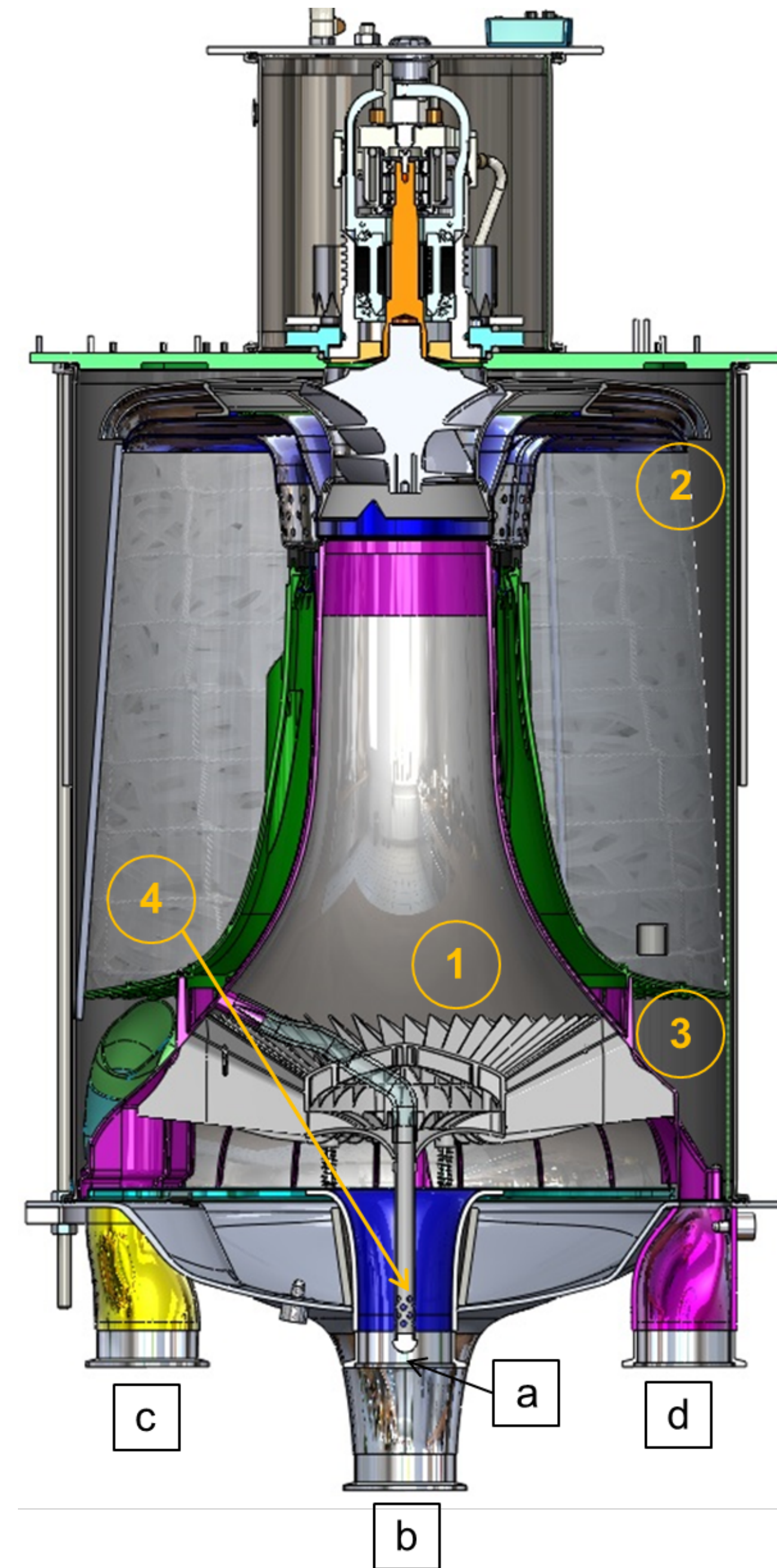
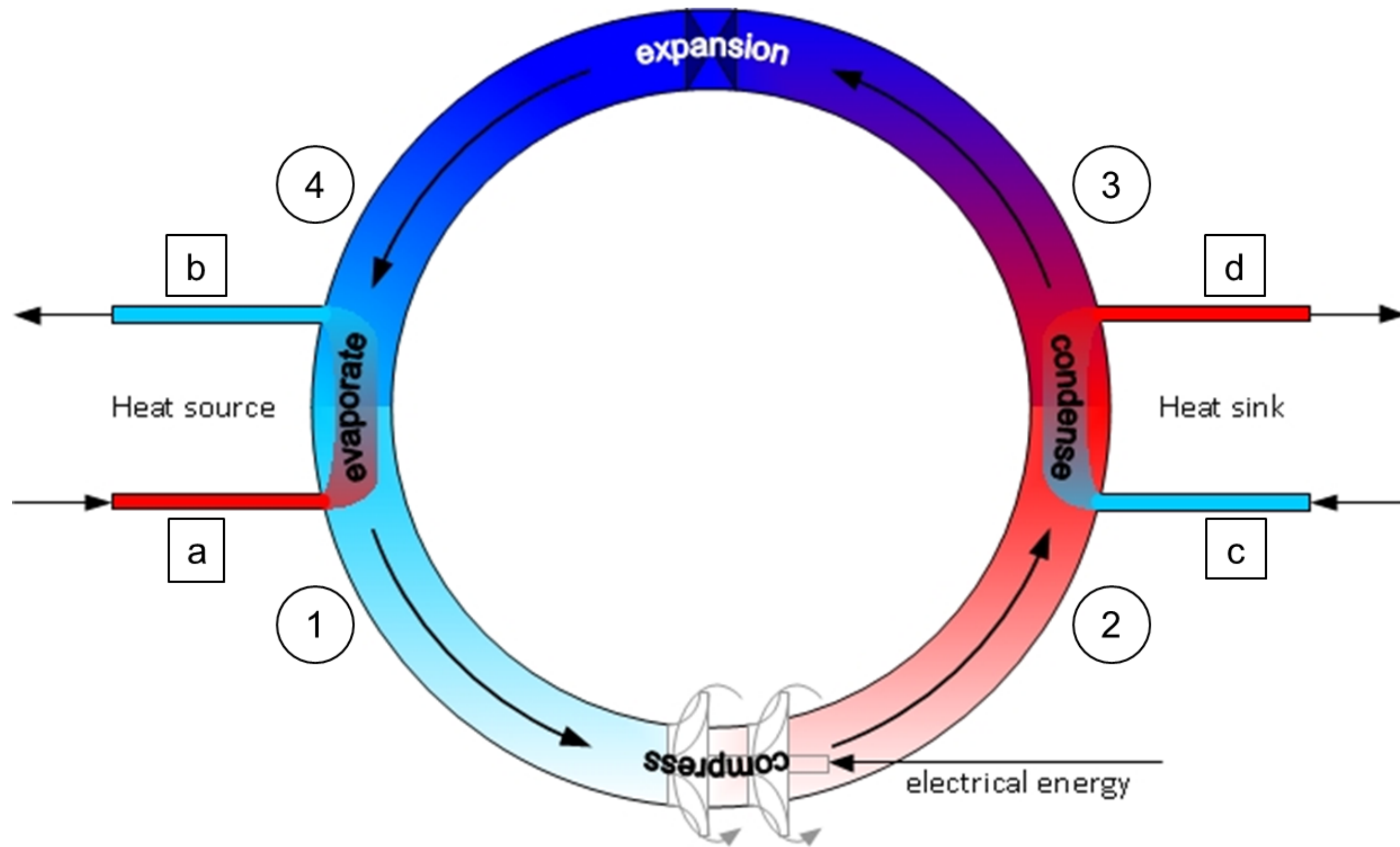


Installed unit – the eChiller

- Efficient system for process cooling
- R718 as refrigerant
- Operation in vacuum: from 10 to 150 mbar
- Operating modes:
 - Free Cooling
 - 1 & 2 stage
depending on ambient temperature
- Heat sink & source decoupled by BPHX

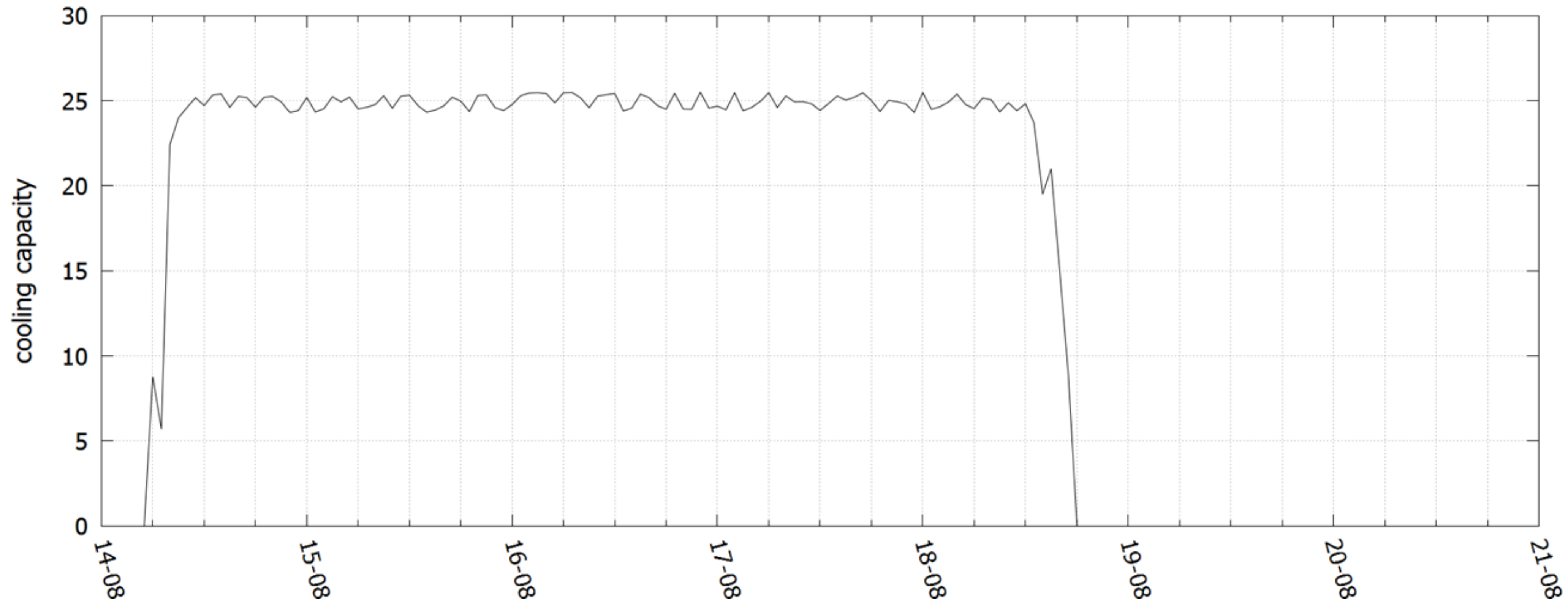


eChiller – the process

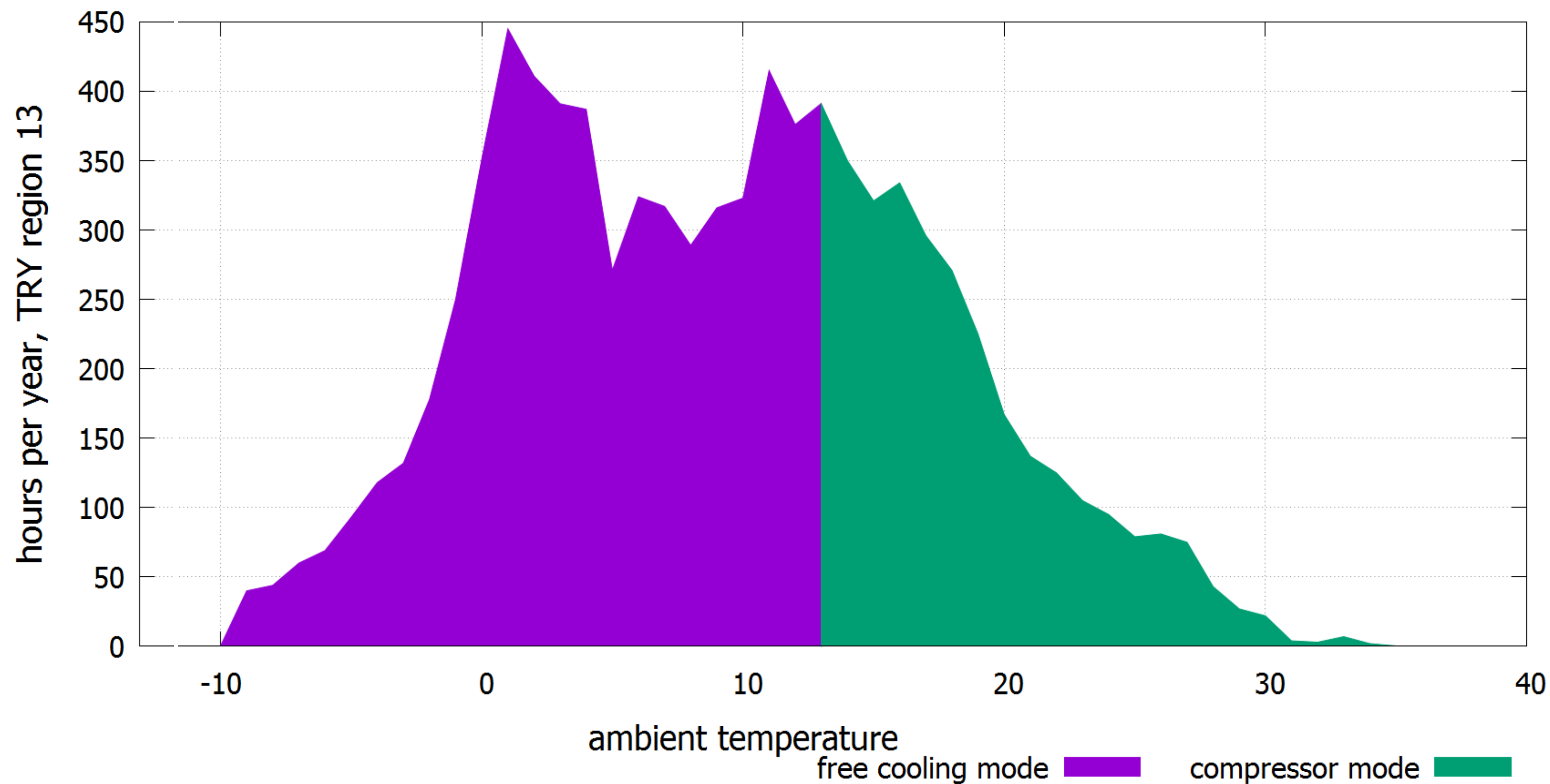


The moldings process

- Three-shift operation with constant cooling capacity from Monday to Friday, „0“ during weekends
- Constant chilled water temperature with minimum deviations



System performance



- 62 % free cooling with a power consumption of 250 W

average COP ≈ 120

- 38 % of compressor operation with an average power consumption of 2,8 kW

average COP > 10

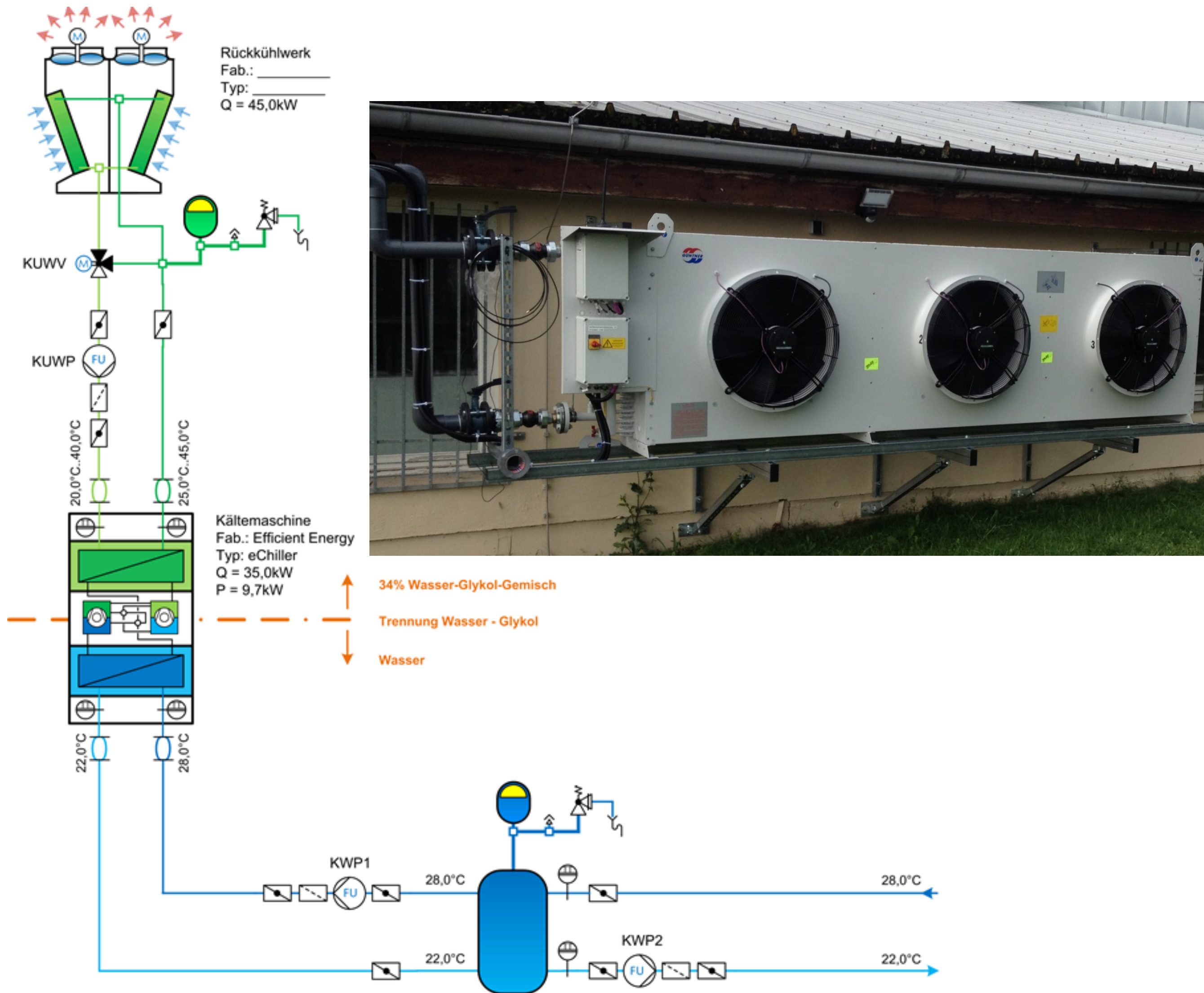
- Cooling capacity of 261 MWh/8700h requires 10,7 MWh/8700h electrical power

average COP ≈ 24,4

Potential power cost reduction compared to standard air cooled chiller (COP = 4):

➤ **9800 €/a @ 0,18 €/kWh**

No additional cost to cover compliance requirements with F-Gas-Directive



Hydronic system integration



eChiller awards





ATMO
sphere

Thank you very much!

