

COPELAND

Steam Generation Using a Heat Pump: The First Real Installation in Spain

4.11.2026 Dr. Tim Hamacher

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Técnica para el ahorro de energía

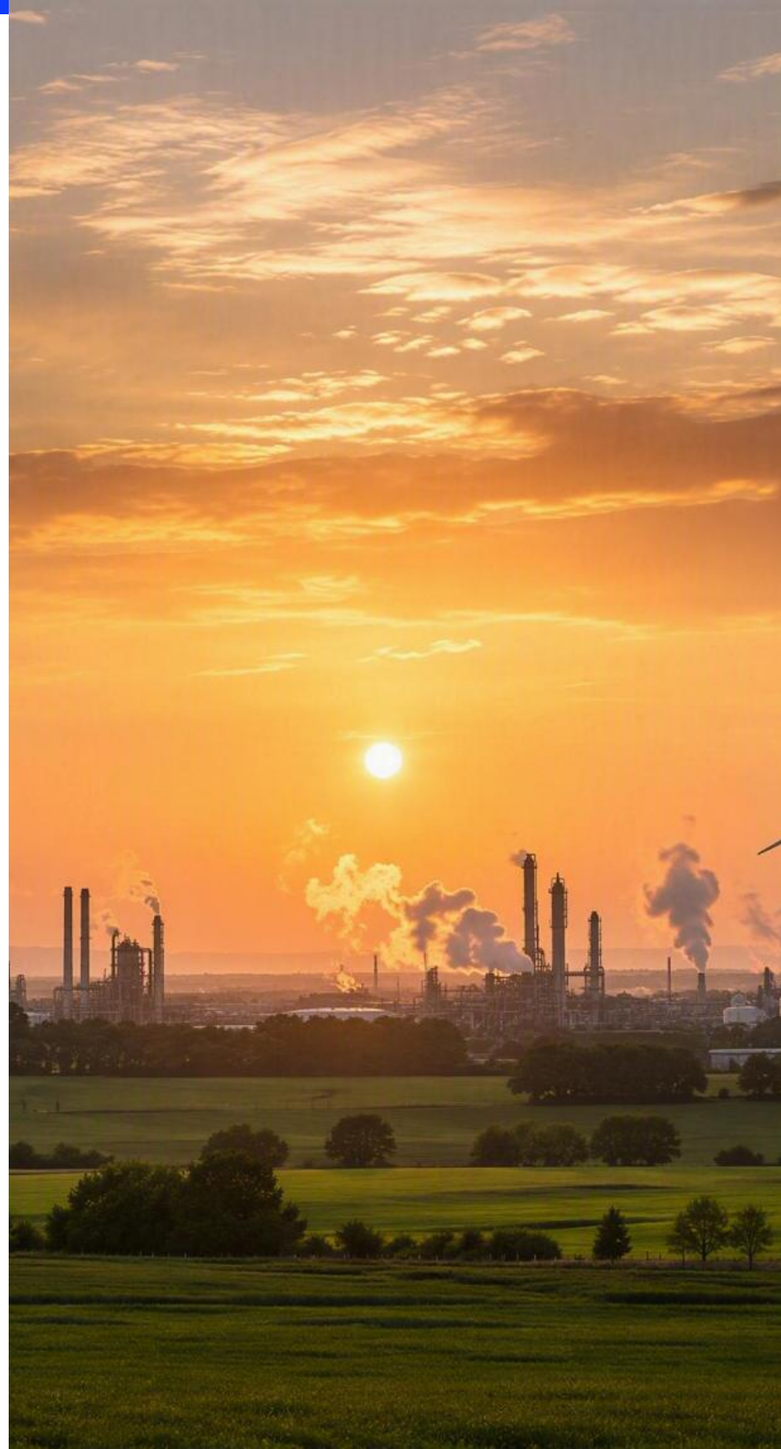


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SPH becomes Vilter

2020	**Founded**
2021	**European Family Office Invests**
2022	**Compressor, heat pump and test facility development**
2023	**Awarded** WIRTSCHAFTSPREISE RHEINLAND Gewinner 2023 | Gründung
2023	**First ThermBooster to industry**
2023	**Partnership with Sedical Técnica para el ahorro de energía for Spain & Portugal**
2024	**Spirax Group Strategic investor**
2025	**10+ units in operation**
2025	**Copeland acquires SPH**

VILTER
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SPH Sustainable Process Heat

VILTER by COPELAND

40+ employees located in Overath (Germany) + Copeland specialists

A Global Leader in Sustainable Climate Solutions

VILTER

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An industry leader with annual sales of nearly $5B, offering a comprehensive suite of precision-engineered compression technologies and controls solutions for the HVACR and industrial markets.*



Commercial and Industrial



Residential



Cold Chain

* 2025 Fiscal Year, October through September

Sedical

Specialists in Energy efficiency



SINCE 1977

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Technique for Energy Saving

We integrate products, systems and services to improve installation efficiency and reduce energy use

Almost 50 years applying technology to energy saving.

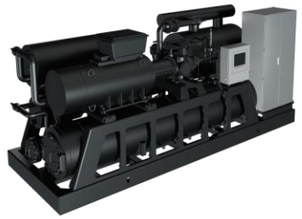
Technology, quality,
Efficiency and proximity

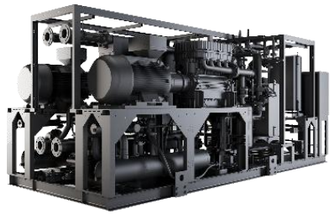
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One VQ Platform. Every Industrial Heat Application.

Three platforms, matched to your delivery temperature





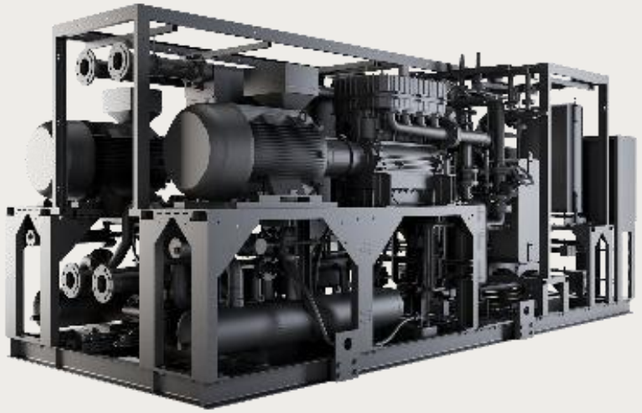


VILTER PLATFORM	VQ95	VQ145	VQ180
MAX LEAVING WATER TEMP	95°C	145°C	180°C
HEATING CAPACITY	1 – 7 MW	1 – 3 MW	0.3 – 2.5 MW
STEAM CAPABILITY	—	117°C / 1.8 barA	175°C / 9 barA
COMPRESSOR TYPE	Single Screw	Single Screw	Reciprocating
REFRIGERANT	Ammonia	Ammonia	Hydrocarbons and HFO's

Previously known as ThermBooster

VQ180 Specifications

Customized High-Temperature Heat Pump



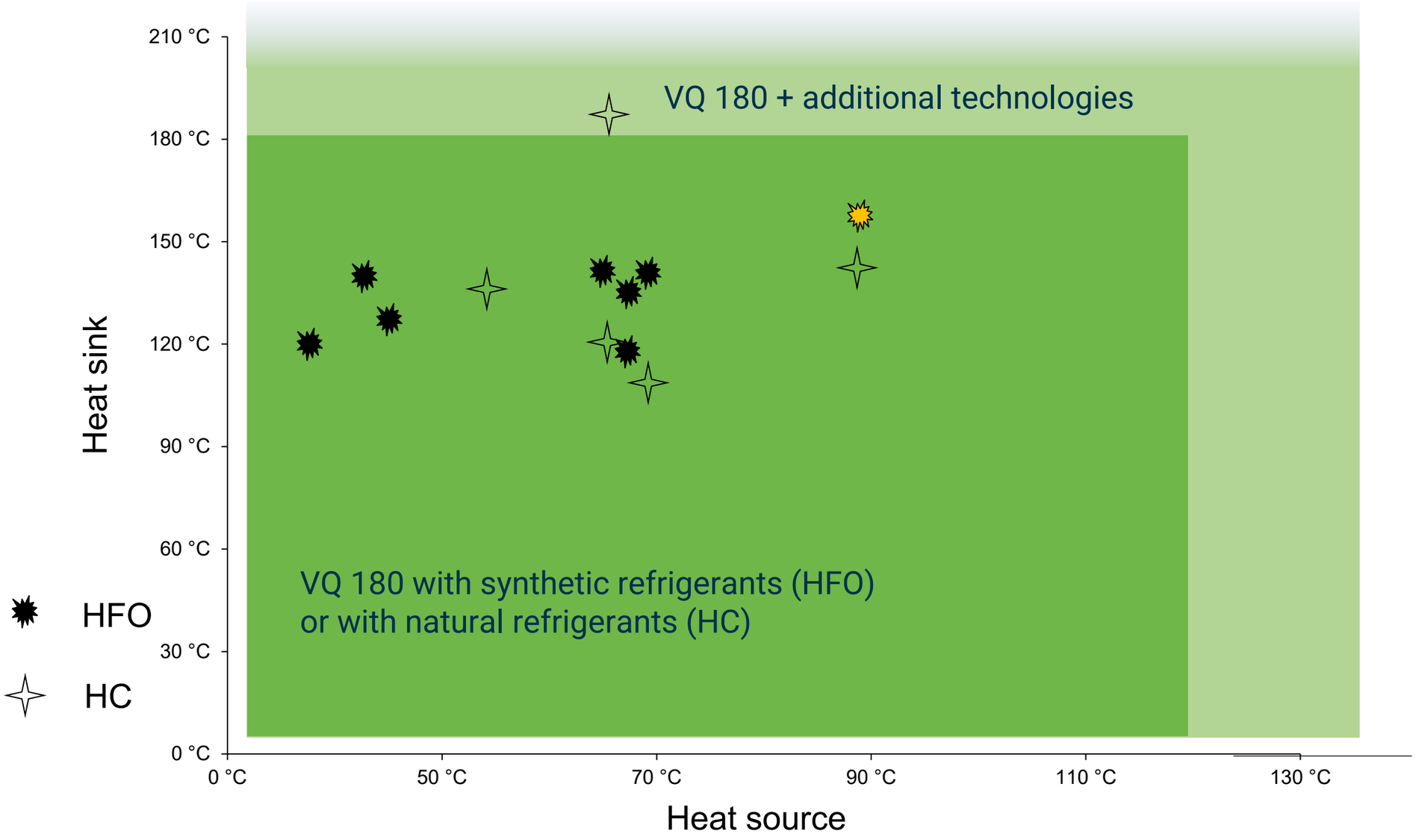
Medium heat source	Water, Water-Glycol, Thermal oil, Steam
Temperature heat source	5 – 150 °C
Medium heat sink	Water, Thermal oil, Saturated steam
Temperature heat sink	Up to 180 °C (175 °C, 8.9 barA sat. steam)
Temperature lift per stage	Up to 80 K (160K MAX)
Design	1- or 2-stage, liquid-to-liquid or liquid-to-steam HP
Source circuits	1 or 2, Serial / Parallel pr HP
Refrigerant / Class	HC (Natural) and HFO (Synthetic) / A3, A2L and A1
GWP	1 – 4
Capacity per module	300 kW up to 2.5 MW per boundary conditions
Modular	Up to 10 MW
Power control	33 % up to 100 % stepless per compressor
Heat exchanger	Plate / Tube bundle / Plate & Shell
Control / Communication	Siemens S7, SG-ready, Remote monitoring

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VQ 180 references



Industrial sectors

- Food and Beverage
  - Juice production
  - Whisky distillery
  - Meat processing
  - Snacks
  - Brewery
- Paper
- Cosmetics
- Plastics
- Consumer goods
- Pharmaceuticals
- Chemical

Initial Situation

- Customer producing packaging material for high quality cosmetics
- Main sources of heat consumption are the anodizing processes
- Heated by steam at around 6 bar(a), 160°C
- Currently heated by natural gas steam boilers
- Steam demand up to ~1700 kg/h
- Customer wants to lower the CO2 foodprint of their products
- CO2 neutral heat source available at ~90°C



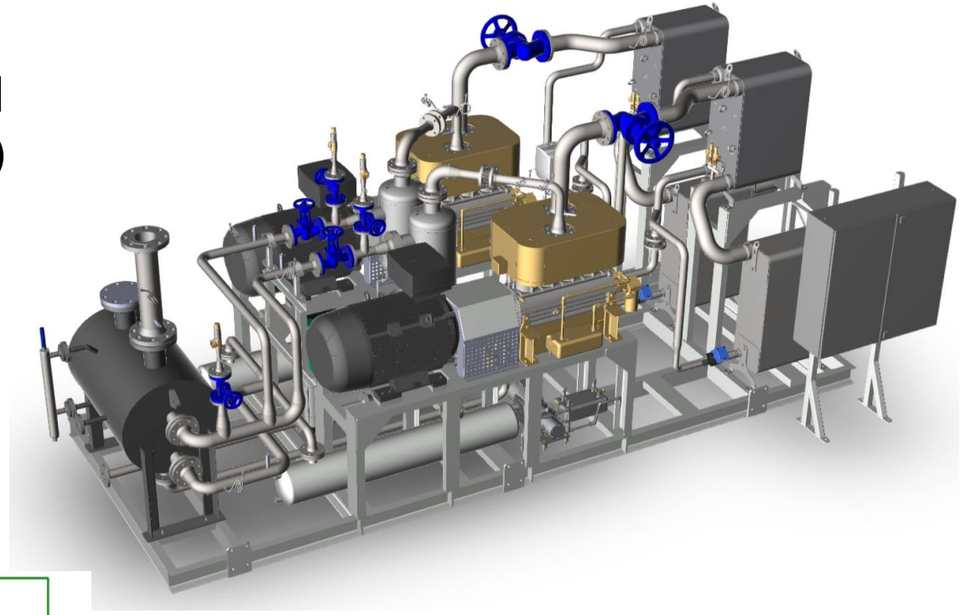
Solution:
2 x ThermBooster LS2

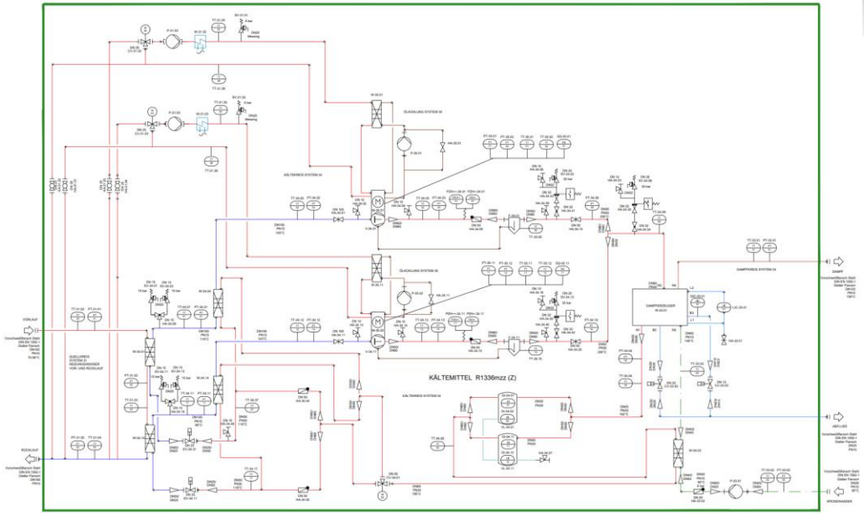


The Heat Pump

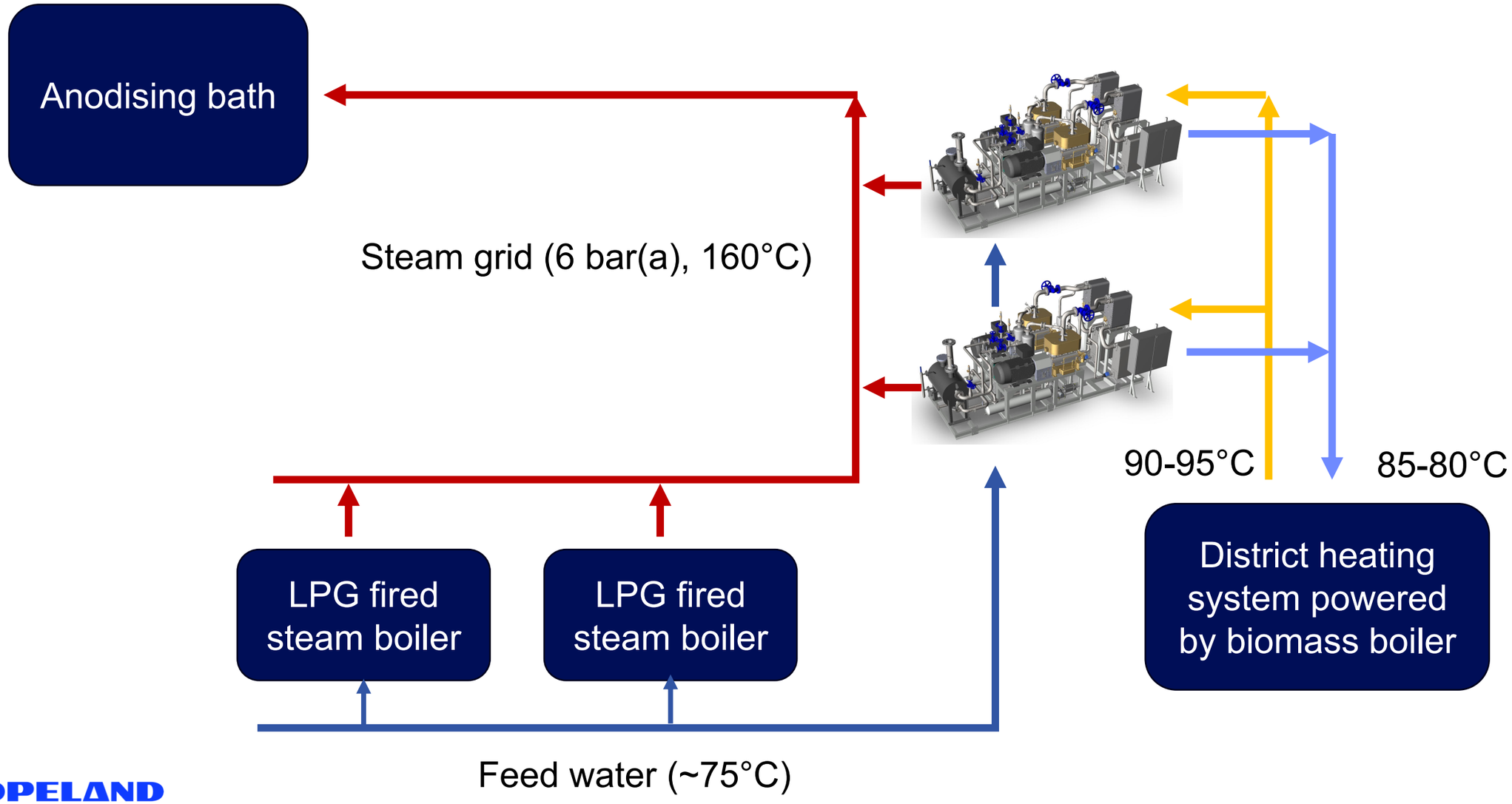
Facts ThermBooster (VQ180) LS2 :

- 1-stage compression heat pump with 2 compressors in parallel
- Refrigerant: R1336mzz-Z (non-toxic, non-flammable, GWP ~2)
- High efficiency through:
  - patented piston compressors, developed for HTHPs
  - Direct steam production in condenser (no flash tank)
  - Feedwater preheating by subcooler
  - VSD driven motors for optimal part load efficiency
  - Siemens S7 industrial PLC system with remote access
- 530 kW thermal output
- COP 2,5-2,8





The Implementation



The Heat Pump

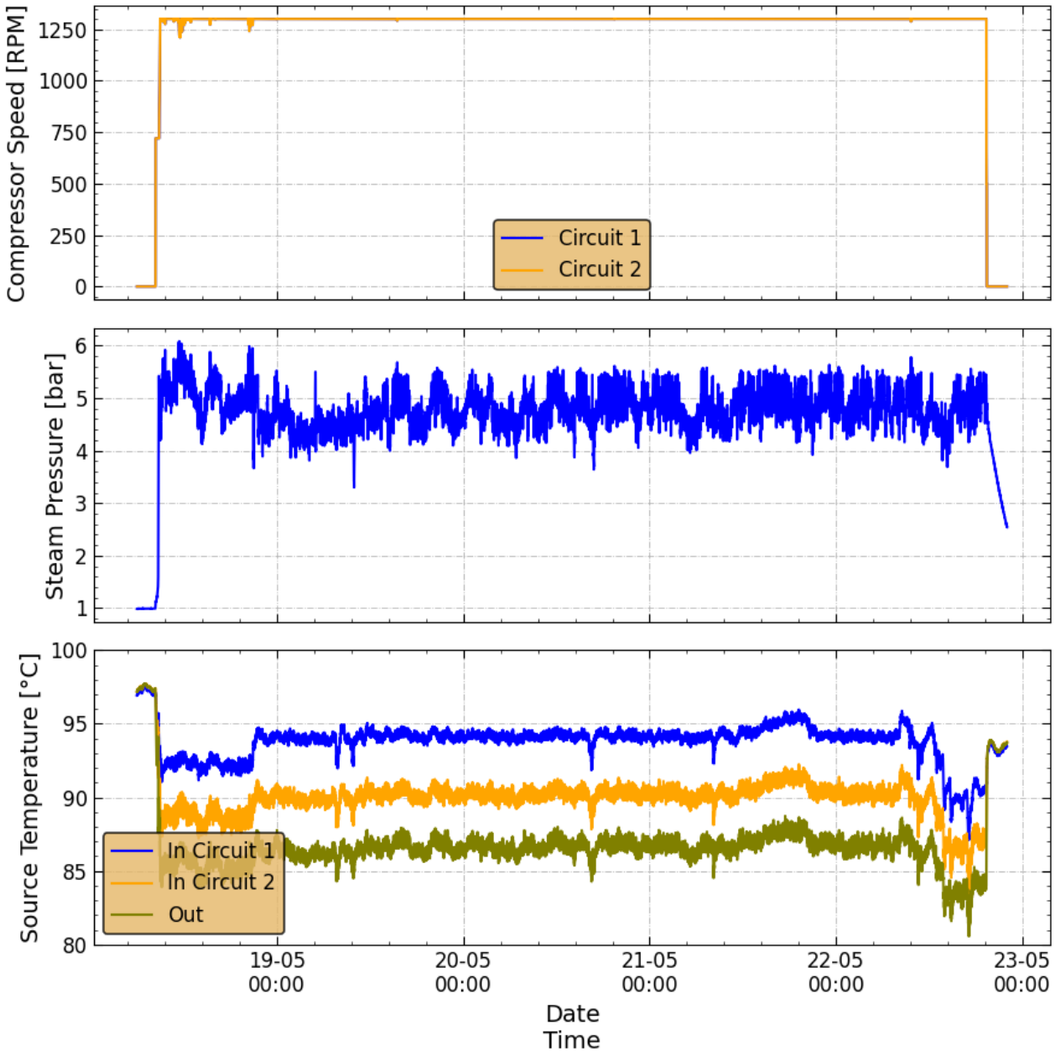
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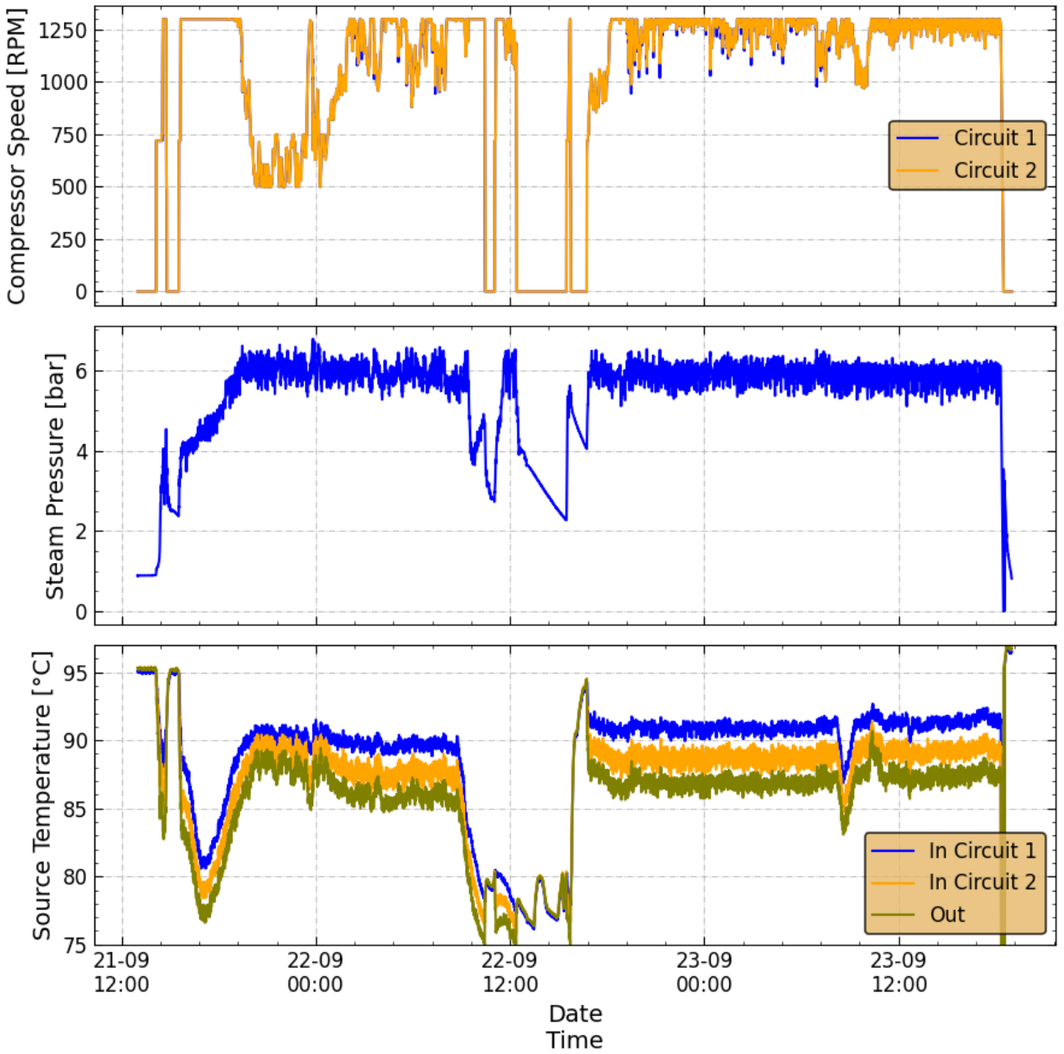
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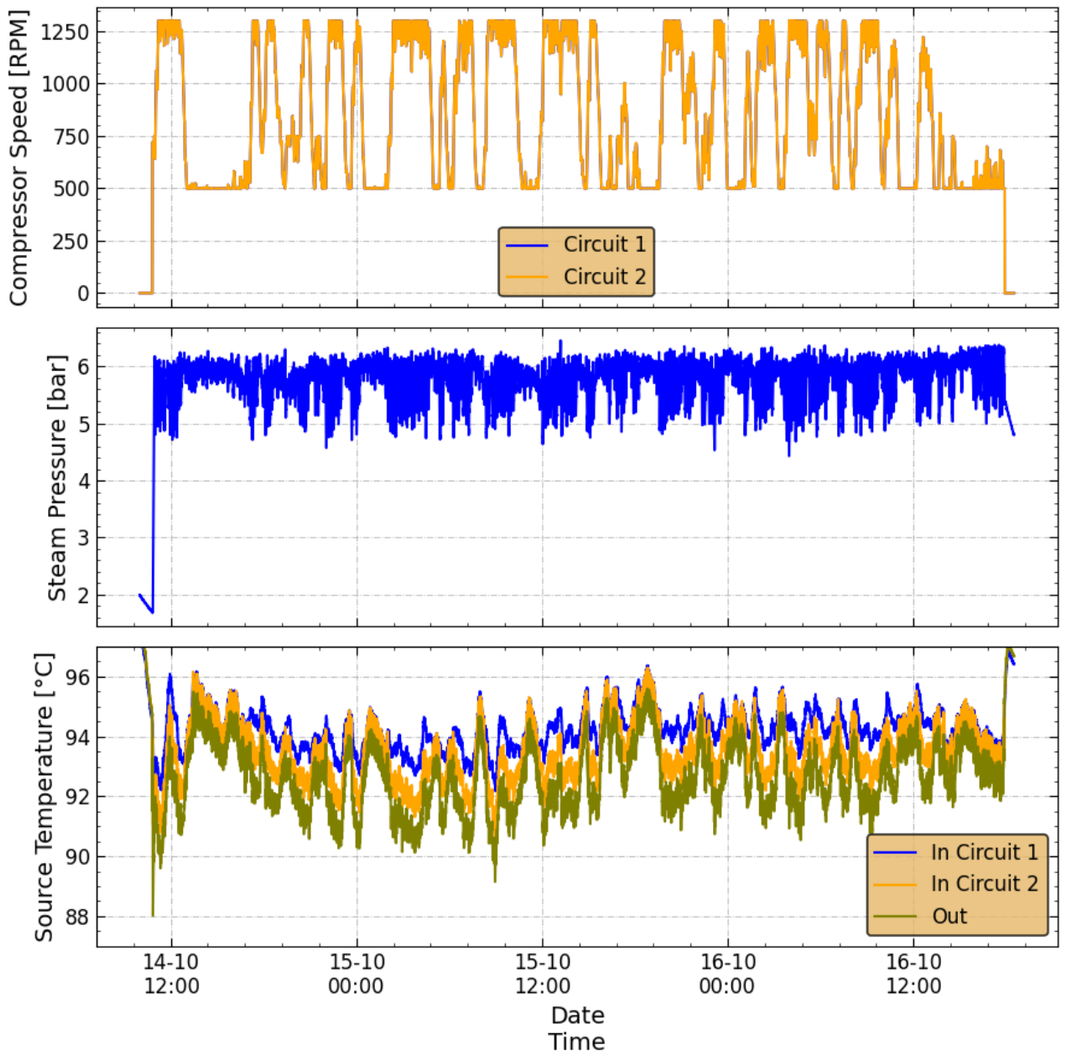


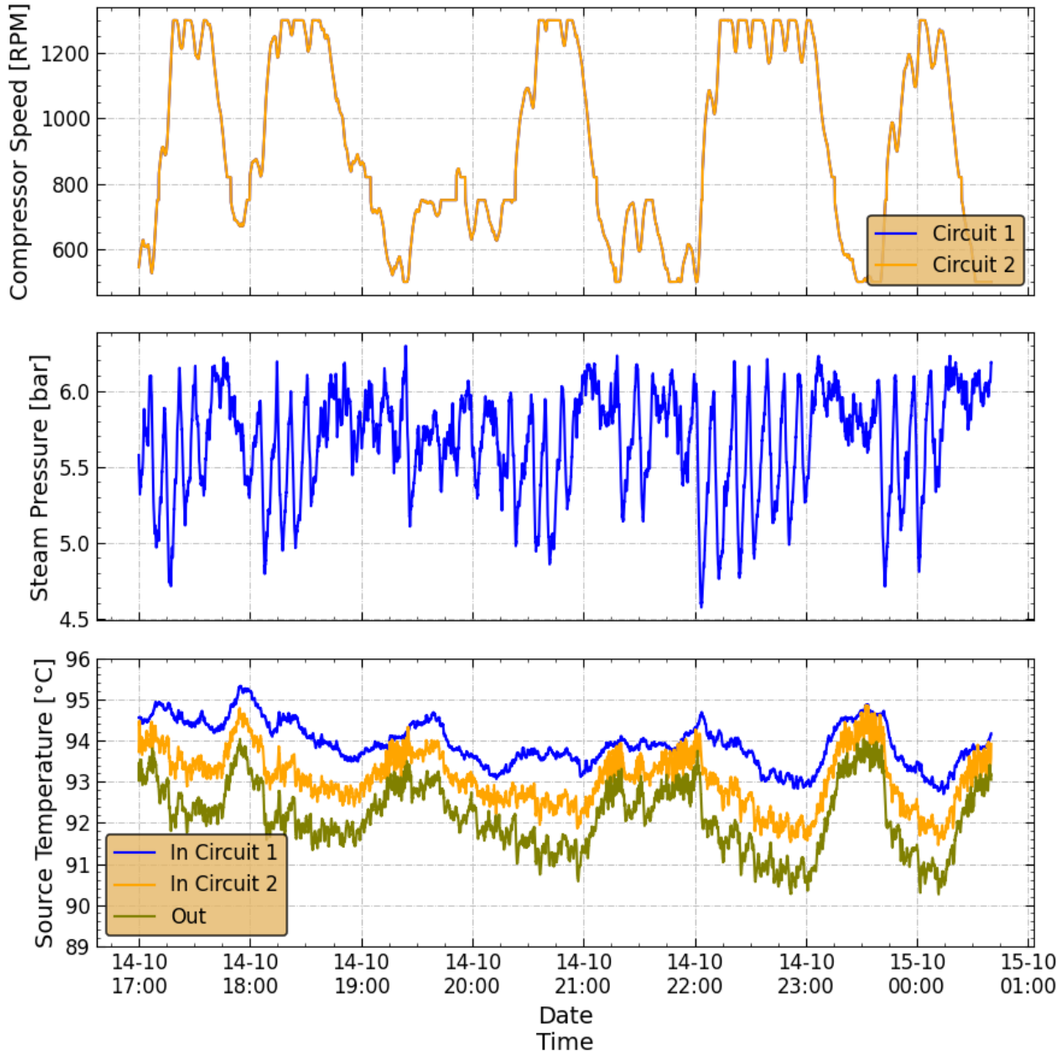
Operational Data





Operational Data





Summary

Success Factors for High Temperature Heat Pump Integration:

- **Pre-engineering**
  - Heat Source as high as reasonable possible
  - Heat Sink as low as reasonable possible
  - Load profile investigation (how much power for how much hours per year)
  - Electrical and Control Integration
- **Heat Pump**
  - Efficiency is key for Lifetime costs
  - Part Load performance and flexibility (if needed)
  - Robustness for changing conditions (e.g. steam pressure fluctuations)
- **Installation, Commissioning and Service**
  - Local Service Partner with HTHP experience
  - Remote Access for manufacturer and service partner
- **Customer**
  - Ready to learn: a heat pump is not a 1:1 boiler replacement

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Engineered for Sustainability

In Cooperation with

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