



HEATBOOSTER HEATEN



Figure 1: HeatBooster HBL4- Water/Water

Summary of technology

Heaten's HeatBooster is a very high temperature Heat Pump with the patented piston compressor as the core technology.

By using electricity as the driving energy, the HeatBooster turns waste heat into process heat with a value and it's the only closed loop heat pump with a piston compressor that can provide an output temperature up to 200°C.

- The heart of the heat pump is the biggest piston-based compressor on the market. The HBL4 has a maximum swept volume of 1,476 m³/h. The HBL16 has a maximum swept volume of 5,904 m³/h
- The HeatBooster HBL4 and HBL16 are closed-loop heat pumps in three different variations, water/water, water/steam, and steam/steam which could be installed in systems as two-stage, parallel or cascade.
- The suitable heat transfer fluid on the source and sink sides is water or steam. The temperature range for the heat source is 10 – 150°C, and the temperature range for the heat sink is 90-200°C
- Performance – Coefficient of Performance (COP):
The COP has been determined and documented for different use cases, both in operation and those scheduled to start in the coming months as follow:
 - COP values have been calculated (not for demonstration case).
 - COP values have been measured on an operating plant in a final installation.
 - COP values were measured on an operating plant in a laboratory/final installation and are validated by the end user
- Development status: Demonstration plant, 10 -15 units sold
- The HeatBooster is designed to handle both water and steam
 - Active lubrication system
 - Working fluid charge: 150-200 kg/MW
 - Part load capabilities: from 30 % up
 - Market availability: Europe, North America, Asia, South America etc.
- Safety concept: Compliance with Standards IEC/EN safety standards.
- Plate and shell HEX for water / water and steam / steam applications.

All information were provided by the supplier without third-party validation. The information was provided as an indicative basis and may be different in final installations depending on application specific parameters.



- Start-up time from ambient temperature is 10-15 minutes. Flexible operation from full to part load, start up and shut down times are less than 1 min.
- Sound power level < 103 dB
- Sound pressure level 1m LP < 77 dB
- Electrical connection 400 / 690 VAC, frequency drive

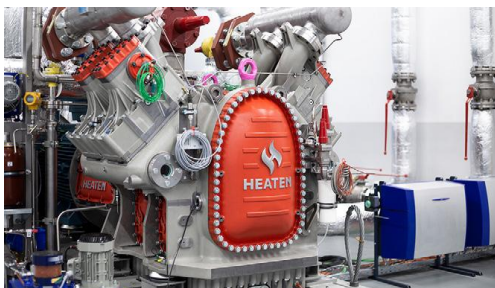


Figure 2: HeatBooster, type HBL4.

Table 1: Performance.

T _{source,in}	T _{source,out}	T _{sink,in}	T _{sink,out}	COP _{heating}
[°C]	[°C]	[°C]	[°C]	[-]
25	20	45	95	3.2
102	100	128	130	6*
70	55	110	125	3.6
40	35	95	120	2.5*

*Steam applications

Project example

The heat pump is applied for the efficient recovery and utilization of waste thermal energy within the process.

- Source: 70/55°C. Sink: 110/125°C.
- Input: 2.55 MW_{th}.
- Output 3.3 MW_{th}.
- El power: 0.91 MW
- COP: 3.6
- Payback time < 4 years.
- CO₂ savings: 6274 t/a
- Modular system design allows scaling of heating/cooling capacity according to process demand.
- Integration of variable-speed compressors and pumps enables flexible operation under partial load.
- Planned installation autumn 2026

FACTS ABOUT THE TECHNOLOGY

Heat supply capacity: 0.8- 50 MW

Supply Temperature, max: Heat pump 200°C, Compressor 215 °C

Temperature lift, max: [80 K]

Working fluid: HFO such as R1234ze(E), R1233zd(E). HC such as R290, R600a, R600, R601 and R601a

Heat carrier: Input; water or steam. Output; water or steam

Compressor technology: Piston

Specific investment cost for installed system without integration: Typical 400 – 700 €/kW_{th} (depending on the application and the version of the heat pump).

TRL level: 9 (Actual system proven in operation)

Operational hours achieved: Accumulated > 100000 hours with the first HeatBooster version. The latest version has accumulated > 5000 hours.

Expected lifetime: 20 years.

Size: (L x W xH) 9.0 x 2.4 x 2.5 meters

Contact information

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