

HeatBooster

SEPM-CrossING Oct.23

Industrial Very High Temperature Heat Pump



Developed industrial-size heat pump

Mar 2020
Heaten AS
founded, VHE
assets
acquired

May 2021
Seed investment
for
large heat pump
design

Jan 2022
Round A for detail
design &
functional testing of
large heat pump

Jun 2022
Detail design freeze
& production pilot
units

Mar 2023
First orders
secured with major
European
industrial player

Jun 2023 •
Demonstrated
operation



Headquarter in Kristiansand, Norway

- Heaten is a start-up which develops, produces and sales high temperature heat pumps
- Heaten was founded in 2020 and has assembled a team of 19 experts
- Heaten has ambitious plans for the growth of the company
- Sales Engineers are needed to cover the massive amount of incoming requests



Testbed in Remscheid, Germany

Testbed, Remscheid

Very-High-Temperature Heat Pump
Based on an efficient, durable and highly flexible piston engine technology.

- Very high output temperature (up to 200°C)
- Direct steam supply up to 12 bar
- 1-8 MW_{th} per HeatBooster
- HeatBooster systems enable up to 50 MW_{th} +
- Unique flexibility
- HFO and HC working fluid with very low Global Warming Potential (GWP) of $\ll 10$
- Low maintenance, long service life



Strong partner and investors



The largest independent motor development company in the world



Source: AVL.com ; <https://www.rga.de/lokales/bergische-wirtschaft/sportwagen-herz-remscheid-4171764.html>



Norwegian State
Climate investment
company



Created by Prime
Coalition



The corporate venture
capital arm of Shell



Norwegian investment
company.

Industrial heat demand – an untapped market opportunity

Energy efficiency of processes can be increased up to 85%

Saving energy, costs and CO₂

Food, Beverage & Ingredients

- Drying
100–200 °C
- Sterilization
100–140 °C
- Boiling
120 °C



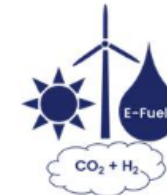
Chemical Industry and Refineries

- Distillation
100–200 °C
- Concentration
120–140 °C



Carbon Capture and Power-to-X

- Process heat
80–150 °C



District Heating

- Temperatures
100–130 °C
- Energy storage
in the net



Pulp and paper

- Drying and curing
120–180 °C



Drying processes

- Paint shops
- Spray drying
- Brick drying



Examples on industries requiring heat up to 200°C – more are identified

What can ONE HeatBooster do per year?

Up to **100%** independence from fossil fuel.
Electrifying your industrial heat and cooling supply.



ENERGY SAVINGS

Up to **1,050,000 €/y**

up to **11,500 MWh/y**

Energy savings up to **80%**



CO₂ EMISSION SAVINGS

Up to **2,800 t/y**

CO₂ costs up to **210,000 €/y**



PAYBACK-TIME

Short payback-time

Typically **1-3 years**

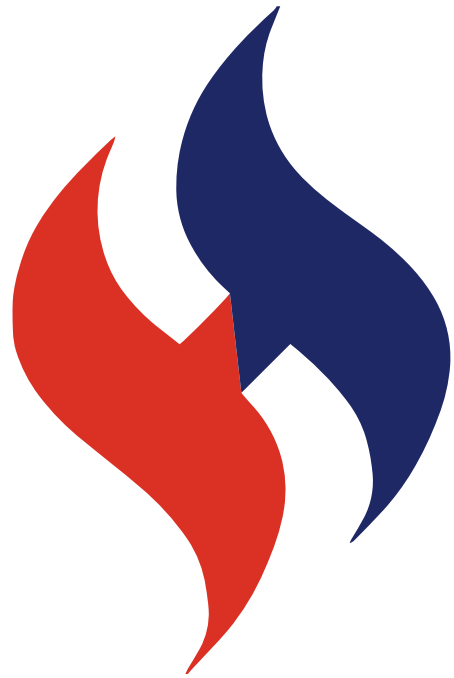


WATER SAVINGS

Up to **15,000 m³/y**

water costs up to
53,000 €/year

*FOR COOLING TOWERS ONLY



HEATEN