

Heat Pump Awards 2026

Application submission

High temperature heat pump in the sugar house

HEATEN Germany GmbH | Large Heat Pump Award

1. Application overview

Award category	Large Heat Pump
Title of the project	High temperature heat pump in the sugar house
Organisation Name	HEATEN Germany GmbH
Exact address of the project	Ludwig-Kayser Str. 1, 74254 Offenau
Funding	Private
Organisations involved in the project	HEATEN Germany GmbH, Südzucker AG
Project ending date	31/12/2027
Project website	No answer provided.
Sector of application	Industrial

2. Applicant & EHPA contact details

Full name	André Bechem
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EHPA member involved	Heaten Germany GmbH
Role of EHPA member	Technology supplier

3. Project description and benefits

Project description (goal, problem addressed, and solution provided by the heat pump)

HEATEN HeatBoosters at Südzucker Offenau – Flexible Steam Generation

Two HBL4 steam-to-steam high-temperature heat pumps have been installed in the sugar house at Südzucker's Offenau plant. Together, the two HeatBoosters deliver up to 2.8 MW of thermal power, generating approximately 4.2 tonnes of saturated steam per hour. The installation enables annual CO₂ savings of approximately 1,358 tonnes, making an important contribution to the decarbonization of sugar production. A key feature of this project is its innovative split-system design. While the heat exchangers are integrated into the sugar house, the compressor units are installed in a separate building outside the production area. This configuration demonstrates the exceptional flexibility of HEATEN's modular HeatBooster technology, allowing the system to be adapted to existing site conditions and space constraints while minimizing interference with ongoing production.

The Offenau project highlights how industrial high-temperature heat pumps can efficiently replace fossil-based

steam generation, even in challenging brownfield environments.

Expected or achieved benefits

CO₂ savings of approximately 1,358 tonnes
generating approximately 4.2 tonnes of saturated steam per hour
flexible utilisation of waste heat

Obstacles/barriers encountered during development

engineering and cost implications due to split system
complex integration in a brownfield factory by running such a project for the first time
common understanding on interfaces and process/technology characteristics

Why should this project win an award?

Integrating a closed loop heat pump in a steam/steam application including a split system approach is unique worldwide! It shows an alternative solution for integration in brown-field application with highly demanding space constraints and flexibility demand

4. Technical specifications

Capacity of unit(s)	2x1400 kW
Energy sources used	vapour of sugar boiling process (Kochbrüden)
Coefficient of Performance (COP)	3.8
Service provided	steam for industrial process, decarbonization of industrial heat
Refrigerant type	R1234 ze(E) (R515b)

Heat pump details (compressor technology, heat exchanger, system configuration)

2x HBL 4 S/S in parallel, HEATEN piston compressor (1.500 m³/h), one-stage, shell and plate heat exchangers (source and sink)

5. Renewable energy integration and grid response

Integration of renewable energy sources

n.a.

Response to energy demand / smart grid integration

HeatBooster technology in general can react very fast on load changes of process heat demand and can even be run in the 15 min EU intraday market; myPlant software can even allow a flexible operation while optimising energy costs

6. Innovation, monitoring and replicability

General (all awards)

Why the project is innovative (all awards)

Biggest piston based compressor worldwide, very innovative closed loop steam/steam heat pump, splitted system is unique, very high flexibility (20%-100% part load capability with high heat pump quality)

Monitoring approach (performance, cost, and carbon targets) (all awards)

Own AI supported myplant software

For Innovation Award**Technology/technique developed solely for this project (Innovation Award only)**

Core technology compressor is not specifically for this project, but the steam/steam approach was developed in this project and can now applied for future projects

Differentiation from state-of-the-art solutions & market maturity (Innovation Award only)

There is no similar solution on the market; stage is pilot to early commercial deployment

Regional benefits (energy savings, emissions, jobs, infrastructure) (Innovation Award only)

Future readiness of the sugar plant in Offenau even in challenging environment, investment in renewable assets will secure the operation of the sugar plant in that region for the future

Commercial potential (Innovation Award only)

direct potential > 1000 units

For Large Heat Pump or Building Solutions Award**Why the project serves as a model for others (Large Heat Pump or Building Solutions Award)**

Sugar process is worldwide similar und therefore system can be rolled out to a large number of similar factories

Potential for expansion to other locations/industries (Large Heat Pump or Building Solutions Award)

Yes, Südzucker itself has 23 sugar factories in Europe more than 50 sugar factories exist

Barriers to replication elsewhere (Large Heat Pump or Building Solutions Award)

fossil fuel to electricity ratio; relatively high investment costs

Business opportunities for expansion, licensing, or commercial production (Large Heat Pump or Building Solutions Award)

Yes, first important step to decarbonize the sugar production. With that installation 2/3 of the whole CO₂ emissions of the whole sugar process emissions can be reduced