

Heat Upgrade System based on a Double-Stage HTHP for Steam Generation

Demosite Overview: Felix Schoeller GmbH & Co. KG



Location: Weißenborn (Saxony, Germany)

Sector: Paper industry

Employees: ~700

Annual production: ~100,000 tonnes of paper

Energy supply: On-site CHP units (3 gas turbines, 1 steam turbine)

Steam generation: At 4.5 bar(a) and 8 bar(a)

Process details

Heat Source: Waste heat is recovered from the production areas via three air/water-heat recovery systems

Heat sink: Condensate from the paper production process will serve as feedwater for the steam production.

The **double stage heat pump** will provide slightly overheated steam

In the **low temperature** circuit the R515B refrigerant is used with a Bitzer screw compressor

Partners involved



Expected Impact



Gas Savings

Gas savings of approximately 453,000 m³/year.



CO₂ reduction

Around 231 tonnes of CO₂ emissions are avoided annually.



OPEX Savings

Depending on the energy prices, the OPEX savings account for around 108.000 €/a.



Heat Availability

Waste heat is available for at least 4,800 hours each year at temperature ranges from 45°C to 55°C.



is an EU-Funded project that aims at addressing the technical, economic, and regulatory barriers that prevent heat upgrade technologies to be widely deployed. It is doing so by scaling up four different heat upgrading technologies to optimise their efficiency and economic performance.



Scan to learn more!

HEAT SOURCE

HEAT UPGRADE TECHNOLOGY

HEAT SINK

Two stage High-Temperature Heat Pump Process

Waste heat from the drying process at 50°

1.2 MW steam production at 2.2bara

Compression stage 1

Compression stage 2

In the **High temepature** circuit the R1233zd refrigerant is used with a SPH piston compressor

Overheated **steam** is generated for paper production



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