

Waste Heat Recovery

Project: Knauf Hobro - Installation of Danstoker Fluegas cooler/condenser for recovery of waste heat from plasterboard manufacturing.



Process description

Plasterboard is manufactured from a wet plaster mass which is dried by natural gas burners in an oven.

The flue gas from natural gas burners is circulated over the plaster mass until the water is absorbed by the flue gas.

The flue gas now contains water from the plaster drying process, the combustion air, and the natural gas.

Without Waste Heat Recover the flue gas would be lead out of the chimney and not be utilized.

Utilization of waste heat

The high amount of energy in the flue gas will be used for heating of district heating water.

In the Waste Heat Recovery ECO the flue gas is cooled below the dew point with the cold return water from the district heating net. The water in the flue gas is condensed and extracted from the flue gas and energy from the condensing process is transferred into the district heating water.

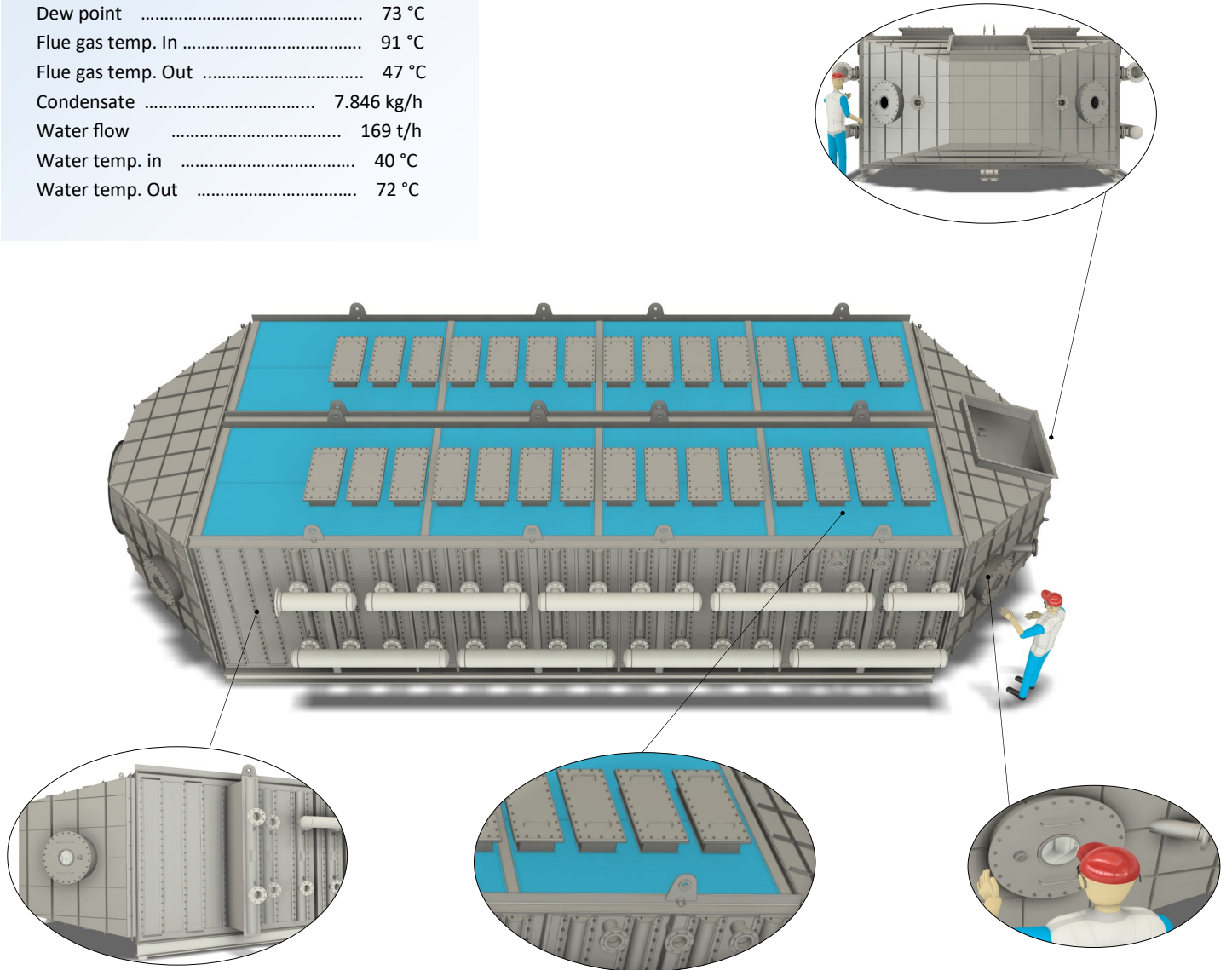
Yearly utilization of district heating:

- 1000 household energy consumption
- Saving equivalent to 6500 tons wood chips pr. year
- 6000 tons CO₂ reduction pr. year

Danstoker fluegas cooler / condenser for Waste Heat Recovery

The illustration below shows the Danstoker flue gas cooler/condenser for utilization of Waste Heat Recovery.

Performance	6.246 kW
Flue gas flow wet	50.000 m ³ /h
Flue gas flow wet	42.158 kg/h
Flue gas flow dry	32.078 kg/h
Dew point	73 °C
Flue gas temp. In	91 °C
Flue gas temp. Out	47 °C
Condensate	7.846 kg/h
Water flow	169 t/h
Water temp. in	40 °C
Water temp. Out	72 °C



- **Compact design with high focus on low ΔT**
- **Low pressure drop on both flue gas– og waterside**
- **Modular heating surfaces. Service minded and easy exchange**
- **Inspection hatch for easy access to cleaning and maintenance**
- **Customized solution for future upgrade of performance**
- **Permanent solution for cleaning of heating surfaces**

” Danstoker designs after clients requirements.