VAHTERUS

Case Stories

Waste Heat Recovery with Vahterus PSHE – A Path to Carbon Neutrality

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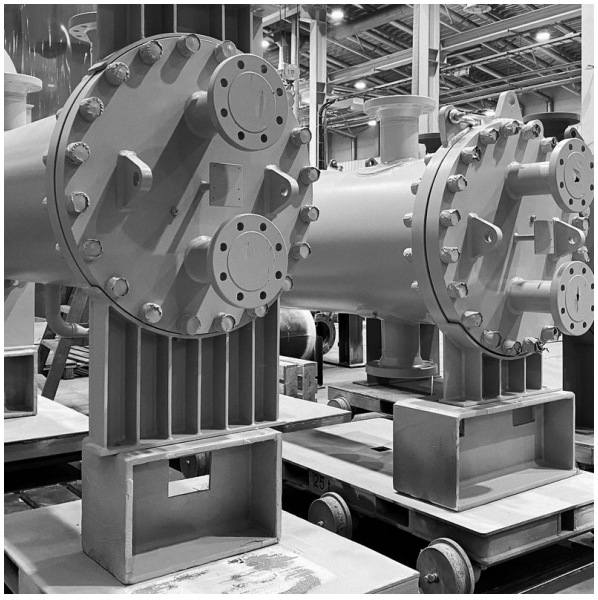
The petrochemical and refining industry is a very energy intensive field and is under constant pressure to increase energy efficiency and reduce carbon-dioxide emissions. Waste-heat recovery is essential for modern manufacturing, especially with the current energy situation in Europe.

A good example of a heat-recovery project is one that Vahterus delivered to a refinery in Europe last year. In that project, Vahterus supplied 10 heat exchangers, together comprising 20MW of heat. In the refinery, residual heat was utilised from the desulphurisation plant, diesel production units and vacuum distillation to heat a hot-water circuit, from where the heat further transferred to the district-heating network.



Vahterus heat-recovery units at a refinery whose waste-heat recovery system now heats around 150 industry buildings.

Vahterus heat recovery PSHEs cool the refinery product to heat the district-heating water. The PSHE is excellent for these kinds of tight temperature profile cases with high product/water mass flows. One of the installations comprised two PSHE 5HH-736/2/2 models, connected in series, both consisting of two 368 plate packs. The external piping arrangement for the heat exchanged directly matched the customer's piping system. The distillation product was cooled by 80°C in the heat exchanger to provide water of 60°C. The capacity of the installation was 4 MW.

This industrial waste heat recovery system directly heats around 150 industry buildings through the district heat piping and saves 21,000 metric tons of CO_2 annually. In in other words, CO_2 emissions have been cut by 85% when compared to the figures 10 years ago. This is a great example of environmentally friendly district heating.

Vahterus had already supplied heat exchangers for a similar project in Europe ten years ago, and this installation has provided a reliable and efficient operation ever since. In the first part of the project, a 40 MW heat recovery system was built, and five years later a 50 MW heat-recovery system was created from multiple process streams. In that project, over 40,000 homes were heated by industrial waste heat, saving around 100,000 metric tons of CO_2 emissions. At the same time, the energy efficiency of the refinery was increased by 5% and the district heating company was able to provide a stable energy price and independence from the primary energy source.

These successful projects show how our industry can make a valuable contribution to a lower-carbon future with environmentally friendly district heating.