

At CHEMUK 2021, stand E31, HRS Heat Exchangers will showcase its range of tubular heat exchangers for the chemical industry, and in particular its range of products for recovery from exhaust gases.

HRS have supplied a K Series large gas heat exchanger for a Belgian chemical plant to cool the exhaust gases leaving a catalytic reactor (which can reach temperatures of up to 500 deg. C) and use the recovered heat to pre-heat the cold gases entering the reactor.

HRS Sales & Process Engineer Antonio Jara explains: "Every HRS heat exchanger is designed specifically for the client's demands. Our largest heat exchangers are designed to the smallest details to ensure that they fit perfectly in the customer's planned installation. We manufactured this unit in stainless steel which is specifically used by HRS to cope with arduous duties."

For gas applications, small pressure drops are often required, so large tube bundles are needed. This particular unit contained 2,900 separate tubes – providing a total tube length of 21 km – with each one being individually inserted into the shell before carefully being expanded and welded into the tubeplate to provide a high level of resistance to thermal and mechanical stress.

Other design features include expansion bellows to absorb the thermal dilations and stresses which occur between the inner tubes and the shell, and reinforced impingement rods at the shell inlet. These are carefully spaced and located to absorb the kinetic charge of the incoming flow, thus preventing unwanted tube vibrations. Inside the shell, segmental buffers support the large tube bundle and help to improve the thermal efficiency of the unit.

"The inlet nozzles are designed with a tolerance of 5 mm to meet strict dimensional specifications, so that the unit connected directly and easily to the existing pipework at the customer's facility," adds Antonio. "With a length of 7m and weighing in at 14 tonnes, this 1.5 m diameter heat exchanger is one of the largest units we have manufactured. Lifting lugs and transport saddles, as well as fixing supports for the bellows, were manufactured and fitted to ensure safe transport and installation."

For more information on the extensive range of HRS industrial heat exchangers and thermal technologies, visit stand E31 at CHEMUK 2021 on 15 & 16 September 2021, NEC, Birmingham.

