Application Literature
Case History

Improve The Processing Of Liquid 'Granite'

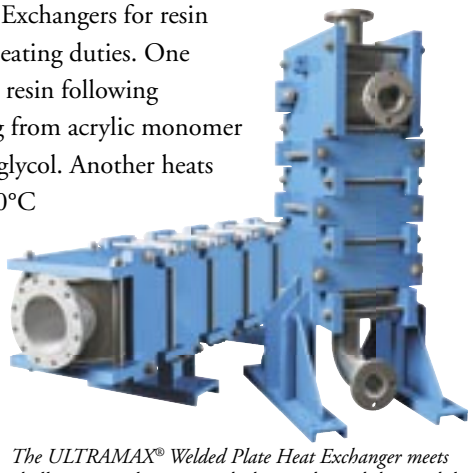
ULTRAMAX® Welded Plate Heat Exchangers bring reliability to resin cooling and heating in molded sink manufacturing.

When a UK-based manufacturer found itself in need of more reliable heat exchangers in its molded kitchen sink manufacturing process, it looked for products as precisely engineered as its own. With a 248-year history that includes inventing carronades, an entire class of naval ordnance, as well as dotting the British landscape with its familiar red telephone booths, the company prided itself on its rich heritage in making innovative business decisions.

The company found that organic attack by resin compounds limited the suitability of their gasketed HE units at high pressures and temperatures. Engineers investigated welded HEs in an effort to find a longer-life, lower maintenance alternative for cooling and heating mineral-filled, compounded resin for injection molding.

Welded technology fills the need

The customer selected two ULTRAMAX® Welded Heat Exchangers for resin cooling and heating duties. One unit cools the resin following compounding from acrylic monomer and ethylene glycol. Another heats the resin to 50°C (122°F) using a thermal fluid.



The ULTRAMAX® Welded Plate Heat Exchanger meets challenging application needs that are beyond the capability of gasketed plate & frame units.

Working in much the same way as a conventional, gasketed plate & frame heat exchanger, the ULTRAMAX embossed metal plates are arranged alternately into cassettes and welded to form channels for hot and cold media. Patented baffle clips eliminate continuous welding between the cassettes. Non-continuous seam welds allow the plate pack to expand and contract along the length of the pack as temperature and pressure changes take place. The plate pack is enclosed in a welded core with nozzles and installed in a frame to provide pressure integrity.

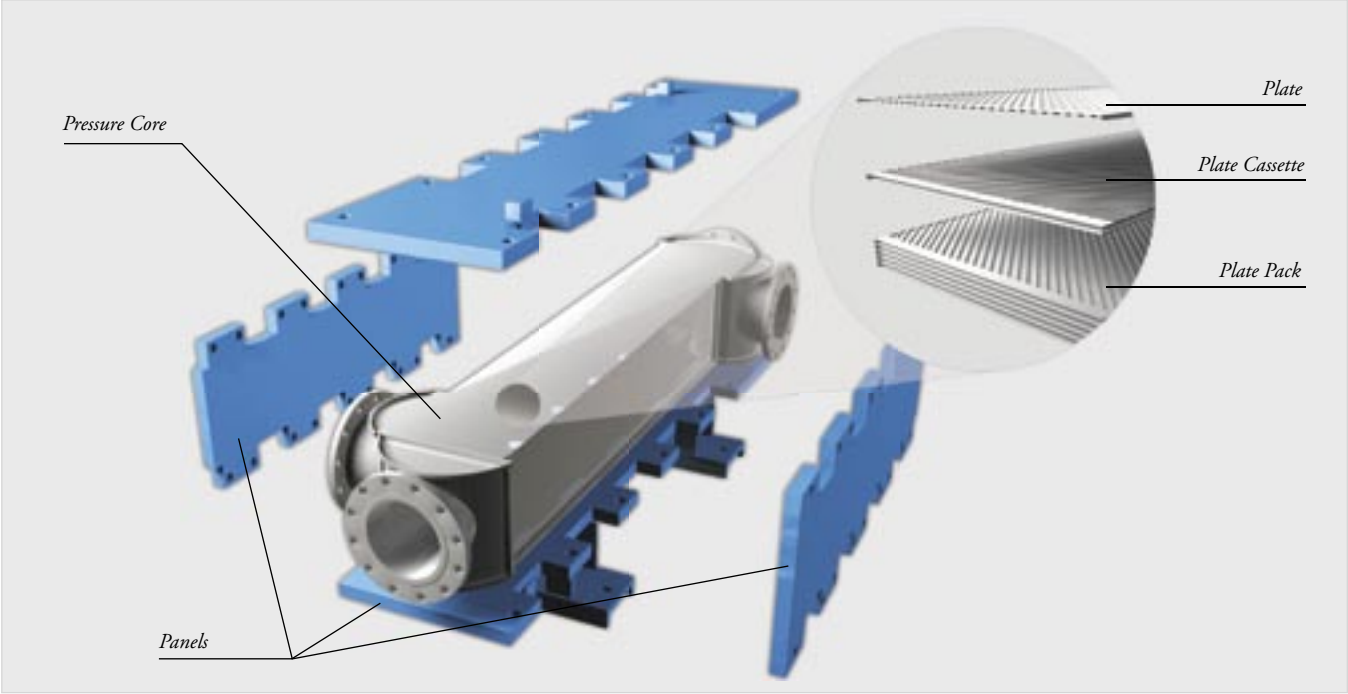
The ULTRAMAX design provides true countercurrent flow, unlike some competitive cross-flow units. Countercurrent flow offers full LMTD and allows for 1°C (2°F) temperature approaches, providing small hold-up volume, fast start-ups and close following of process changes. The velocity profile created by ULTRAMAX corrugated plates eliminates stagnant areas and promotes maximum heat transfer. Induced turbulence scours the heat transfer surface during operation, thereby reducing fouling. This turbulence also aids the effectiveness of CIP procedures.

ULTRAMAX heat exchangers are designed for pressures to 45 barg (650 psig) and at temperatures up to 343°C (650°F) for standard range units. Because of their high heat transfer efficiency, the welded units can handle temperature approaches of less than 1°C (2°F)

A high uptime alternative

Though shell & tube heat exchangers are considered by many as the conventional technology for extreme duty, the ULTRAMAX unit offers many advantages, from a simpler support structure to easier installation. With its high heat transfer efficiency, the ULTRAMAX actually requires only 30–50% of the space and up to 70% less weight compared to equivalent S&T exchangers. This efficiency also means reduced purchase price, shorter lead time and quicker delivery.

In operation, the customer has been very impressed with the trouble-free performance of the ULTRAMAX units. In the last four years of operation, the two units have experienced no failures or recorded downtime.



The ULTRAMAX® plate pack is enclosed in a welded core with nozzles and installed in a frame to provide pressure integrity.

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