Laser welded Plate Heat Exchangers Type XPS
XPS – for use under demanding conditions

A response to the questions and challenges from the market for heat exchangers is the XPS: the optimal heat exchanger for industrial applications which combines all the benefits of an effective, safe and compact product with innovative design for our customers.

Compact design

In plate heat exchangers the concentration of exchanger surfaces is high but the structural volume for the same performance is many times lower than in shell and tube heat exchangers.

In the circular heat exchanger plates of the XPS the stresses caused by pressure or temperature differences are more uniformly distributed than in rectangular plates and thus the risk of stress cracks is minimized.

The cylindrical jacket is the optimal shape for a pressure vessel, allowing thinner materials to be used and resulting in lower weight than a rectangular construction.

Laser welded plate

Laser welding technology produces much better weld seam cross-sections in the XPS.

At the same time the heat introduced by welding is minimized. Minimal heat affected zones mean fewer annealing colours and fewer changes in the material structure. Smaller weld pool volumes prevent the formation of blow holes and pores during solidification.

The result is plate packs that have higher leakage resistance and fewer potential corrosion points.
Different corrugation patterns

The heat exchanger plates are made with a regularly corrugated surface utilizing different corrugation angles.

Plates with a flat corrugation angle (H plates) allow high heat transfer rates caused by a highly turbulent flow in the flow channels. Plates with a steep corrugation angle (L plates) are used in applications which must be optimized for pressure loss.

In gas/gas applications or in slightly contaminated media we use plates with a greater channel cross-section (G plates).

Optimal operating characteristics

In addition to high heat transfer rates, turbulent flow also leads to a powerful self-cleansing effect and permits a high temperature media input.

The pressure distribution at right angles to the flow is very homogeneous, so lateral media distribution is excellent across the whole plate.
Fields of Application

- Paper and pulp
- Petrochemical
- Oil and gas delivery
- Food/pharmaceuticals
- Energy generations
- Bio-energy
- Shipbuilding
- Steel manufacture
Components – type XPS

**Function**
Heat exchanger plates form parallel channels through which hot and cold media flow alternately.
- Heat transfer takes place through the walls of the plate channels, from the hot to the cold medium.
- Primary and secondary media are either fed through the plate or the shell side.

**Container shapes**
- **Fully welded** a completely gasket-free design
- **Accessible from one end** allows shell-side inspection of the plate pack
- **Accessible from both ends** two packs – for very high performance or different circuits
Flow directions

**Counter-flow**
- The most common form of flow direction

**Cross-flow**
- For different flow resistance on primary and secondary sides, e.g. gas / liquid applications

**Parallel flow**
- For maximum inlet temperature differences

Plate circuits

**Inlet and outlet on both end faces**
- for large volumetric flows on the plate side

**Plate side deflection**
- for contrasting volumetric flows on plate and shell side

**Shell and plate side deflection**
- for optimizing pressure loss and transfer rates on both sides

Installation positions and set-up

**On feet**
- possible with feet on the end plates

**On saddles**
- for units which open at both ends or longer models

**On lugs**
- frequently for vertical installations e.g. on columns
**XPS-facts**

**Materials**
The selection of materials is determined by the operating media. Several materials are available for standard applications. The product range is constantly expanded when new materials are demanded for new applications. Flow directors are also made from plate materials.

No elastomers are used in XPS heat exchangers. Fully welded units are absolutely gasket-free. The standard configuration of heat exchangers that may be disassembled uses graphite flat-ring gaskets on tanged steel.

<table>
<thead>
<tr>
<th>PLATE MATERIALS</th>
<th>SHELL MATERIALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard: 1.4404 (AISI 316L), 1.4547 (SMO 254)</td>
<td>Standard: ST 35.8, P265 GH, P 355 NL1, AISI 304 ja 316</td>
</tr>
<tr>
<td>Special: Hastelloy C-22 ja C-276, Titan Gr 1</td>
<td>Special: Hastelloy C-22</td>
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**Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>XPS 50</th>
<th>XPS 100</th>
<th>XPS 150</th>
<th>XPS 200</th>
<th>XPS 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1, S2</td>
<td>3/4&quot; - 4”</td>
<td>1” - 10”</td>
<td>2” - 14”</td>
<td>2” - 24”</td>
<td>2” - 28”</td>
</tr>
<tr>
<td>P1, P2</td>
<td>2”</td>
<td>4”</td>
<td>6”</td>
<td>8”</td>
<td>12”</td>
</tr>
<tr>
<td>Ø [mm]</td>
<td>360</td>
<td>610</td>
<td>890</td>
<td>1,100</td>
<td>1,400</td>
</tr>
<tr>
<td>L [mm]</td>
<td>150 - 2400 (depending on number of plates and design pressure)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Area [m²]</td>
<td>1.5 - 30</td>
<td>max 100</td>
<td>max 320</td>
<td>max 500</td>
<td>max 700</td>
</tr>
</tbody>
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**Operating Parameters**
the maximum parameters depend on the size of the unit, the materials used and the thickness of the material.

Operating pressure: -1 - 150 bar
Operating temperature: -200 - 500°C
Dynamic viscosity: max. 8.000 mPa s
Quality

Quality means safety. Each unit is constructed and pressure tested before leaving the factory. ViFlow helps the customers with the maintenance and supply of spare parts for all of the products we market. Our service does not end with delivery of the product.

Maintenance and spare parts

Our delivery includes operating and service instructions which allow the customer or the customer’s own service company to carry out routine service operations. If necessary, we will gladly assist.

We also provide annual maintenance contracts to ensure a long service life for every piece of equipment we deliver.

The annual contract also ensures the availability of spare parts. A spare parts bank guarantees prompt delivery without long waiting times.

Certificates

Products are manufactured in compliance with the European Pressure Vessel Directive.

Contact information

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