Vahterus Plate & Shell (PSHE) and Plate & Ring (PRHE) Heat Exchangers combine the benefits of traditional heat exchangers. Utilising a fully welded plate pack within a strong shell construction makes Vahterus PSHE and PRHE the most compact, thermally efficient and cost effective heat transfer solution in many applications in the field of Energy Technology.

Applications
- District Heating and Cooling
- Feed Water Pre-Heating
- Vent, Surface, and Dumping Condensers
- Condensate Coolers/Excess Water Heaters
- Exhaust Gas Heat Recovery
- Oil Coolers and Heaters
Compact and Efficient

Vahterus Plate & Shell (PSHE) and Plate & Ring (PRHE) Heat Exchangers combine the benefits of Plate Heat Exchangers and Shell & Tube Heat Exchangers. PSHE/PRHE can either be described as fully welded, high integrity heat exchangers, with no gaskets; or a generic alternative to Shell & Tube heat exchangers, approx 25% of the footprint, displaying both space and weight benefits.

In Powerplants, District Heating and Industrial Steam Applications, Vahterus Heat Exchangers are proven as a mechanically strong and thermally efficient solution. PSHE/PRHE are an ideal solution for both new installations, retrofits and/or replacement of conventional technologies (as shown below). They have also displayed environmental benefits for “Green Energy” applications, where customers have observed improved energy efficiencies and recovery/re-use of previous system energy losses.

Steam Applications

Vahterus PSHE provide many benefits in designing and operating steam systems. Utilising their compact and flexible shell construction, PSHE can be customised to individual steam applications, providing a powerful solution to the special requirements of steam systems. PSHE is easy to control on both the steam and condensate side, and since the heat transfer is very efficient, the control is fast and accurate, based on the compact nature (small volume) of the exchanger.

Green Energy Applications

Vahterus PSHE, with their efficient heat transfer and high integrity, can provide solutions to improve energy efficiency and in alternative energy applications. The fully welded construction of Vahterus heat exchangers permits heat recovery from very demanding applications; notably when processing aggressive chemicals, and in applications at high pressures and/or high temperatures. As well as traditional heat recovery applications, Vahterus has experience in “green energy systems” like industrial heat pumps, landfill gas recovery, organic Rankine cycle and solar energy applications.
Vahterus provides solutions for many heat transfer needs. We have considerable experience with heat transfer technology and continually invest in Research & Development.

High quality, consistent and reliable products are a matter of principle to us.

**Compact & Effective**

Vahterus PSHE combines the benefits of Plate & Frame and Shell & Tube heat exchangers. PSHE can either be described as a fully welded, high integrity plate heat exchanger, with no gaskets; or a generic alternative to Shell & Tube, approx. 25% of the footprint, displaying both space and weight benefits.

**Benefits of PSHE**
- No Gaskets or Brazing
- High Integrity / Total Containment
- Strong and Safe Construction
- Unique Protection and Resistance to Thermal and Pressure Cycling
- Thermally Efficient
- Compact and Low Weight
- Flexible Construction
- Proven, Reliable Technology
- Low Fouling
- Minimal Maintenance Requirement
- Close Approach Temperatures

**Technical Specification**
- Maximum Heat Transfer Area: 
  - 2 000 m²/exchanger

**Mechanical Design**
- Full vacuum to 150 bar possible
- -164 to +899°C

**Main Data:**

<table>
<thead>
<tr>
<th></th>
<th>Area/plate, m²</th>
<th>Plate side nozzles, DN</th>
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<tbody>
<tr>
<td>PSHE 2</td>
<td>0.032</td>
<td>25</td>
</tr>
<tr>
<td>PSHE 3</td>
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<td>PSHE 7</td>
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<td>150</td>
</tr>
<tr>
<td>PSHE 9</td>
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<td>PSHE 14</td>
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<td>300</td>
</tr>
<tr>
<td>PRHE 12</td>
<td>1.00</td>
<td>200</td>
</tr>
</tbody>
</table>

**Materials:**

- **Shell:**
  - AISI 316
  - St 35.8/1 / P235GH
  - P265GH
  - P355NL2
  - EN 1.4547, SMO254
  - EN 1.4539, 904L
  - EN 1.4462, Duplex
  - other materials on request

- **Plates:**
  - AISI 316L
  - Titanium, Grade 1
  - C22
  - C276
  - Nickel 201
  - EN 1.4547, SMO254
  - EN 1.4539, 904L
  - EN 1.4462, Duplex
  - other materials on request

**Quality Systems:**
- ISO 9001:2000
- EN ISO 3834-2
- PED Module B+D
- ASME U Stamp
- OHSAS 18001
- ISO 14001

**Approvals:**
- PED
- ASME U Stamp & R Stamp
- SELO, China
- AD-2000 HPO
- Germanischer Lloyd
- Lloyd’s Register
- R.L.N.A
- ABS Europe Ltd.
- Bureau Veritas
- DNV
- MKE South Korea

**Technical Specification**
- Maximum Heat Transfer Area:
  - 2 000 m²/exchanger

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