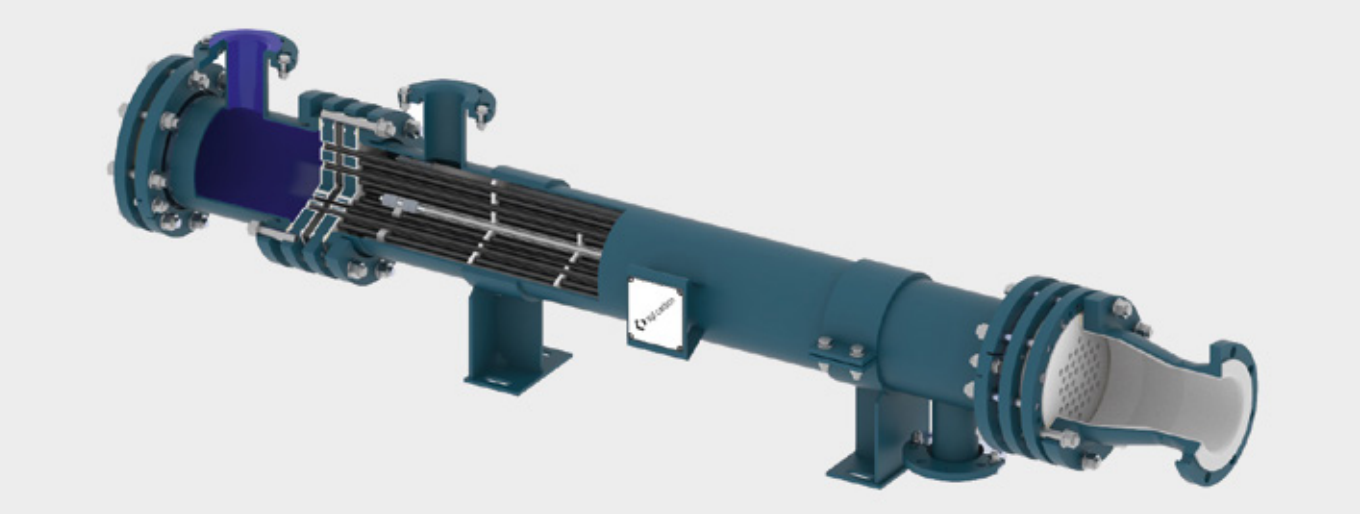
sgl carbon

SICABON® shell and tube heat exchanger

Unique sealing concept with unmatched safety and maximum reliability

Silicon Carbide (SiC) shell and tube heat exchanger are a perfect solution if other materials like graphite reach their limits. SICABON heat exchanger provide highest corrosion resistance for all ultra-demanding applications. Our proven technology is based on more than 25 years of experience and hundreds of installations all over the world.

SICABON heat exchanger significantly differ from all other designs available on the market due to the sealing technology for tubes inside the tube sheets. This unique and patented sealing system consists of 2 pressure-bearing tube plates, an intermediate plate made of solid SiC and special developed gaskets to ensure maximum operational reliability.



↑ SICABON shell and tube heat exchanger DN200 (NPS 8) with 1.5 m (6") bundle length, installation on saddles

Customer benefits

- **Extreme corrosion and excellent abrasion resistance:** Meets extreme demands for corrosion resistance, e. g. mixed corrosive media with differing and varying corrosive constituents and highest mechanical resistance, especially in combination with chemical attacks.
- **Cleanness:** No risk of contamination/interaction of process media, e.g. ultra-pure application for semi-conductor or pharmaceuticals including FDA certification.

FDA

- **Flexibility:** Huge variety of design options to allow optimized solutions.
- **Low maintenance costs:** Easy removal of headers for direct access, e.g. cleaning or inspection on tube side.
- **Unmatched safety and maximum reliability:** Innovative and optimized sealing system including double O-ring design with gasket seats located in temperature stable and non-deforming SiC intermediate plate.
- **Service excellence:** Fast and competent services along the full lifecycle offered by our global network.

Applications

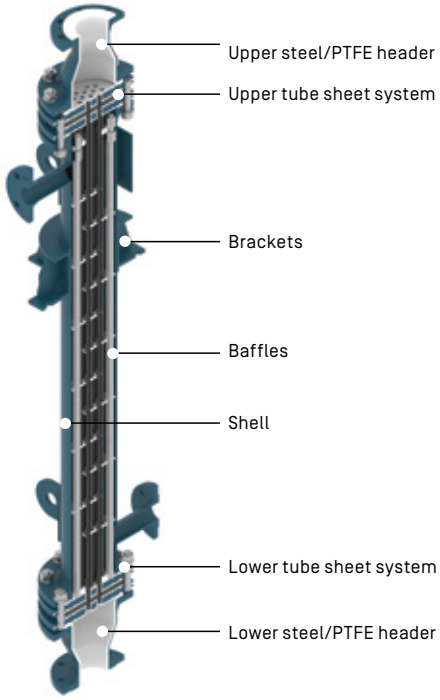
- Heating, cooling or condensation of ultra-corrosive fluids e.g. highly concentrated sulphuric acid, nitric acid, hydrofluoric acid, pickling liquors, caustic soda, organics, etc.
- Heat recovery by interchanger
- High purity chemical manufacturing for electronic applications

Product specifications and materials

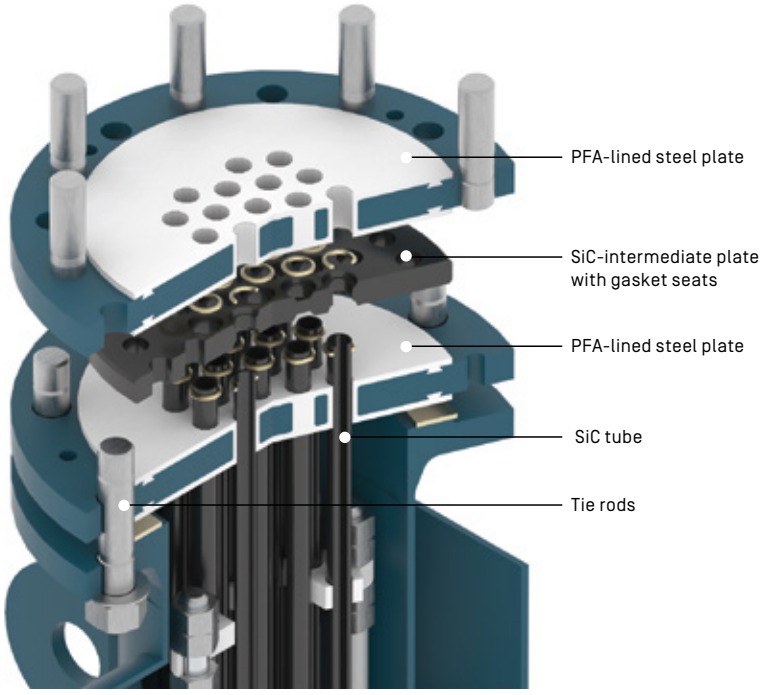
Tubes	Directly sintered silicon carbide (SiC) tubes 14 x 1.5 mm (0.55 x 0.06"), 19 x 2.2 mm (0.75 x 0.087") with max. length of 4500 mm (39.4 up to 177.2")
Tubesheet (Sandwich)	2 pcs. PFA lined carbon or stainless-steel tube sheets with SiC intermediate plate containing gasket seats
Sealing system	Double O-ring gaskets e.g. FKM/FKM, FKM/FFKM, FFKM/FFKM
Shell and headers	Carbon steel, stainless steel, PTFE-lined steel, rubber-lined steel, glass-lined steel
Flange connections	DIN/ANSI
Support	On saddles (horizontal installation), on brackets (vertical installation)
Retrofit/upgrade	Optimized tubesheet system compatible for retrofitting of all installed equipment

Design parameters

Max. operation pressure	–1/10 bar (FV/4.9 psi) both sides
Max. operation temperature	–10/200 °C (14/428 °F) both sides
Heat transfer area	0.2 up to 34 m² (2 up to 366 ft²)
Shell diameter	DN 100 up to DN 400 (NPS 4 to 6)
Design and inspection	PED/AD2000-Merkblatt, ASME VIII Div. 1 conformity
Proof of tightness	DIN EN 1591-1 and gasket parameters DIN EN 13555 (optional)
Special request	E. g. additional design options/codes on request



↑ Example of a SICABON shell and tube heat exchanger, bracket support



↑ Detail of SGL Carbon's unique sealing concept, consists of inner and outer PFA-lined steel tube sheet with SiC intermediate plate and special groves to accommodate double O-rings

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