Alfa Laval PCHE

The printed circuit heat exchanger

Introduction

AlfaLaval printed circuit heat exchangers (PCHEs) combine superior robustness and integrity with exceptionally high heat transfer rate in a unit up to 85 % smaller and lighter than traditional shell and tube exchangers. The compact design results in lower installation and operational costs, and it improves safety. The design is tailored to the application or duty it is intended for.

Applications

The PCHE is designed to deliver the highest heat transfer with clean fluids and gasses. The technology is suitable for high pressure applications and has a wide range of design temperatures. PCHE applications can for example be found in heat pumps, compressor cooling, gas/gas interchangers, CO_2 injection systems, boil-off gas recovery systems, steam generators and likewise.

Benefits

- Very small footprint, volume, weight. reduces structural support costs
- Technology that delivers the highest heat transfer area per volume
- Very wide capacity range delivery high heat transfer rate for maximum operating efficiency
- Design temperatures from cryogenic to 800 °C (1,472 °F) and design pressures up to 1250 barg (18,130 psig)
- Safe to operate – no pressure relief valve needed
- Easy maintenance ensures maximum uptime
- Diffusion welded without filler materials
- Full customization possibilities in terms of fluid channel design pattern

Design

PowerDense	Maximum sustainability under maximum pressure
3DPlate™	Prevents clogging under freezing conditions. A patended 3D plate pattern maintains high efficiency and maximum uptime when using water-based fluids like glycols in cryogenic applications
OptiBond™	A robust and compact solution for high-pressure needs

Learn more at **www.alfalaval.com/pche**.

Working principle

The PCHE operates with two or more media on opposite sides of a plate. It is possible to have high-pressure flows on both sides. The 2D or 3D pattern is optimized to give the required thermal length and pressure drop.

The flow patterns are chemically etched on flat sheets of material and are designed for each specific duty. The flow patterns provide the required thermal and hydraulic characteristics. The plates can be tailored for asymmetric flows or phase changing duties (2-phase). The individual plates are stacked into a block and diffusion welded in a state-of-the-art furnace.

Technical data

Design pressure:	
CE/PED	Vacuum to 1250 barg (18,130 psig)
ASME	Vacuum to 1250 barg (18,130 psig)

Design temperature:
-196 °C (-321 °F) to 800 °C (1,472 °F)

Maximum heat transfer area:
On request tailored towards requirements

Connections:
DN50 (2”) to DN750 (30”) typical, customizable

Standard materials:
304/304L and 316/316L stainless steel
Other materials are available on request.

Dimensions and weights:
On request tailored towards requirements, ranging from a few kilograms to tens of tons

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How to contact Alfa Laval

Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com