



Smaller footprint,  
bigger profit

Alfa Laval printed circuit heat exchangers



# First-class efficiency with the smallest possible footprint

Alfa Laval printed circuit heat exchangers combine superior robustness and integrity with an exceptionally high heat transfer rate. 85% smaller and lighter than traditional shell-and-tubes, printed circuit heat exchangers feature a unique design that offers safe and reliable performance with lower installation and

operational costs. In use in many of today's most demanding applications, Alfa Laval printed circuit heat exchangers offer a compact and highly efficient solution for a wide range of hydrogen, marine, energy and oil & gas duties. Each heat exchanger can be fully customized to meet your exact needs.



## OptiBond™

**A robust and compact solution for high-pressure needs**

State-of-the-art diffusion welding technology provides the highest durability and thermal efficiency within an ultra-compact welded plate heat exchanger.



## PowerDense

**Maximum sustainability under maximum pressures**

Improves sustainability with the smallest metal footprint design that can still contain hydrogen pressures as high as 1,250 bar.



## 3DPlate™

**Prevents clogging under freezing conditions**

A patented 3D plate pattern maintains high efficiency and maximum uptime when using water-based fluids like glycols in cryogenic applications.



## ReFuel+

**Higher back-to-back throughput for increased profitability**

Low thermal mass in a highly responsive and compact solution enables greater capacity and reduced wait time between customers, extending the number of daily back-to-back refuels.

# Improve sustainability

Diffusion welded printed circuit heat exchangers combine high thermal efficiency with compact size, minimal weight and reduced structural support costs. With simplified maintenance, they also provide assurance of maximum uptime. As a result, they give you a smart way to improve the sustainability of critical processes and minimize the environmental impact of the actual heat exchanger.

## Safe, robust and reliable technology

Alfa Laval printed circuit heat exchangers can operate in temperatures ranging from -253°C (-423°F) to 540°C (1,004°F) and pressures up to 1,250 bar (18,125 psi). The robust design is highly resistant to the effects of fluid pressure pulsations and fluid-flow-induced vibration, and the heat exchangers provide dependably safe operation without the need of a pressure relief valve or additional safety accessories.

## Applications

We design printed circuit heat exchangers to support clean and high-pressure duties that are beyond the capability of other welded heat exchangers. They can deliver unparalleled compactness and efficiency in demanding applications in the marine, energy, hydrogen and oil & gas industries. Typical applications include compression or precooling of hydrogen in refuelling stations, high-pressure vaporization in fuel gas supply systems, LNG regasification, hydrocarbon gas and water dew-pointing and offshore gas compression. In renewable energy applications Alfa Laval's diffusion welded heat exchangers are proving to be the best technology fit in medium to high-temperature long duration energy storage (LDES) processes, as well as evolving positions in carbon capture.

## Leading innovation

As the global leader in heat transfer technology, Alfa Laval continuously pushes development forward with new innovations for improved performance. Our printed circuit heat exchangers are built using state-of-the-art diffusion welding known as OptiBond™, which ensures the highest possible durability and efficiency within an ultra-compact footprint.

For cryogenic applications with water-based fluids, such as glycol, Alfa Laval's patented 3DPlate™ technology prevents freezing and clogging, resulting in maximum uptime.

### Technical data

Core:	Diffusion welded 316 or 304 stainless steels
Headers and connections:	304, 316, Duplex, Super Duplex stainless steels
Codes:	ASME VIII Div. 1 and PED 2014/68/EU + applicable national codes
Design pressure:	Full vacuum to 1,250 barg (19,130 psig)
Design temperature:	-253°C to 540°C (-423.4°F to 1,004°F)

Visit our web site to learn more:

[www.alfalaval.com/pche](http://www.alfalaval.com/pche)

[www.alfalaval.com/pche/hrs](http://www.alfalaval.com/pche/hrs)

In hydrogen refuelling stations, the low thermal mass in combination with continuous operation of the cooling loop, eliminates wait times between refuellings, thereby increasing the daily filling capacity.

## Worldwide support

As a truly global supplier, Alfa Laval can provide expertise wherever and whenever you need it. Our local technicians can support you during installation and commissioning, as well as with any service needs you may have during your equipment's long operational life.





### **This is Alfa Laval**

Alfa Laval is active in the areas of Energy, Marine, and Food & Water, offering its expertise, products, and service to a wide range of industries in some 100 countries. The company is committed to optimizing processes, creating responsible growth, and driving progress – always going the extra mile to support customers in achieving their business goals and sustainability targets.

Alfa Laval's innovative technologies are dedicated to purifying, refining, and reusing materials, promoting more responsible use of natural resources. They contribute to improved energy efficiency and heat recovery, better water treatment, and reduced emissions. Thereby, Alfa Laval is not only accelerating success for its customers, but also for people and the planet. Making the world better, every day. It's all about *Advancing better™*.

### **How to contact Alfa Laval**

Contact details for all countries are continually updated on our web site. Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information.

