

Alfa Laval Packinox

Plate-and-frame heat exchanger

Introduction

Alfa Laval Packinox plate-and-frame heat exchangers are ideal for demanding heat recovery duties in processes with large flows, long temperature programmes, and high temperatures and pressures.

Outstanding thermal and hydraulic efficiency gives an Alfa Laval Packinox high capacity, high heat recovery efficiency and minimal pressure drop.

Applications

- Carbon capture and acid gas removal
- Energy storage
- Petrochemicals
- Crude oil refining
- Thermal power
- Renewable power
- District heating

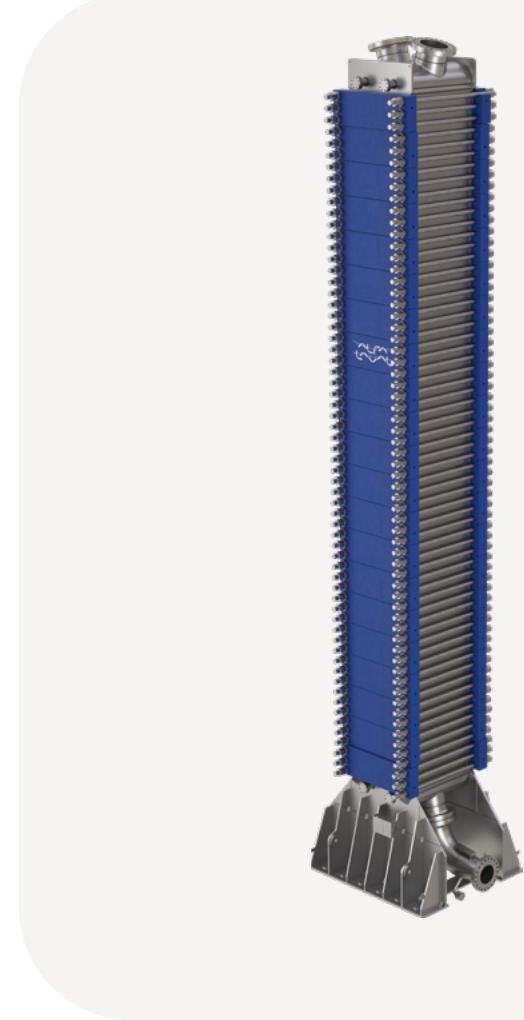
Packinox's design is tried-and-tested, with more than 500 units in operation in plants across the world. Superior performance, high reliability, and short payback time have made Packinox the industry standard for energy-intensive applications, such as catalytic reforming and aromatics production.

Benefits

An Alfa Laval Packinox plate-and-frame heat exchanger offers many benefits over a shell-and-tube solution:

Maximized energy efficiency

- Fully-customized design, for optimal performance
- Outstanding heat recovery – minimal HAT (hot approach temperature) and thermal efficiency >95%
- Low pressure drop
- Guaranteed performance



Improved profitability

- Low CAPEX: high capacity and compact size make it possible to replace multiple shell-and-tube or plate heat exchangers with a single unit
- Low OPEX: robust design and reliable operation, as well as long-term performance-reviews from Alfa Laval
- High return on investment
- Reduced CO₂ emissions
- Compact size, for optimized use of raw materials
- Reduced fossil fuel consumption

Plate-and-frame heat exchanger

How it works

The core of an Alfa Laval Packinox plate-and-frame heat exchanger is a fully-welded bundle of heat transfer plates. The hot and cold streams flow in alternate channels in the plate bundle, and in opposite directions. The counter-current flow maximizes heat transfer and makes it possible to operate with crossing temperatures in a single unit.

The corrugation of the plates causes high turbulence in the media, thereby increasing heat transfer and minimizing fouling. The overlapping welds on two of the sides of the plate bundle form solid walls. The other two walls are reinforced with side panels, held together by a large number of tie rods. This design allows an Alfa Laval Packinox plate-and-frame heat exchanger to be operated at pressures up to 70 bar.

A Packinox plate-and-frame heat exchanger can be configured to operate with more than two flows, meaning several media can be heated or cooled simultaneously. Each flow can have an individual number of channels and the channel gap can differ for the different media.

Design configuration

Customized design

Each Packinox heat exchanger is designed and built to the exact conditions under which it will operate. Performance is optimized by selecting the correct plate pattern, gap distance, plate dimensions, number of plates, ΔT , and pressure drop. The result is outstanding performance and cost effectiveness.

Low pressure drop with HyperCut

Packinox plate-and-frame heat exchangers combine excellent heat recovery with low pressure drop, usually within the range 0.3 to 1.5 bar (total flange-to-flange, both sides).

Thanks to Alfa Laval's unique HyperCut plates, the pressure drop over the distribution area of the plates is very low. This means more of the available pressure drop can be utilized in the heat transfer area of the plate, resulting in higher heat transfer.

Robust design

Alfa Laval Packinox plate-and-frame heat exchangers are designed and built for maximum operating reliability. The chevron pattern on the heat transfer plates is produced using underwater explosion forming, a technique developed by Alfa Laval to maximize the mechanical strength of the plates.



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Option: Packinox+

Alfa Laval Packinox plate-and-frame heat exchangers can also incorporate Alfa Laval's new FlexFlow technology. Packinox+ is the optimal solution for highly asymmetric duties where flows rates differ greatly, such as liquid-to-gas and gas-to-gas duties.



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We operate under a rigorous quality management system, and thorough inspections are performed at each step of the production process.

Accessible for service

All welds in the plate pack are accessible for service and can be repaired.

Installation

Alfa Laval Packinox plate-and-frame heat exchangers are installed in an upright position with a minimal footprint.

Dimensions

Current size range

Height: 10 m to 20 m (30 to 65 ft.)

Weight: 30 to 400 metric tons (60,000 lb. to 600,000 lb.)

Equivalent S&T surface area: 1,000 to 35,000 m²
(10,000 to 375,000 sq. ft.) in a single unit.

Technical data

Plate materials

Stainless steel (SS 321, SS 316, SS 304, etc.).

Thickness 0.8 to 1.5 mm.

Pressure and temperature operating limits

Temperature

The typical design temperature is up to 400°C (752°F). Design temperatures as high as 475°C (887°F) have been achieved.

Pressure

Total and differential pressure up to 70 bar.

Codes and Standards

Our quality and environmental management systems are certified according to ISO 9001 and ISO 14001.

Key features



HyperCut

Unique plate design that increases reliability and reduces pressure drop

The design of our patented HyperCut plates increases the mechanical robustness and operating reliability of your Packinox heat exchanger, reduces the pressure drop over the distribution areas, and improves operability. This makes it possible to maximize heat recovery, minimize size and CAPEX, and reduce the overall pressure drop.



ALOnline

Digital services for maximum uptime and performance

We offer a range of digital services for our Packinox heat exchangers, including process optimization, condition monitoring and predictive maintenance through our Packinox Performa software, as well as remote guidance and support from our experts via video link.



Explosion Forming

High-strength plates with long, reliable lifetime

The pattern on a Packinox heat transfer plate is formed by shockwaves from an underwater explosion. This one-step operation minimizes residual stresses in the plates, making them mechanically stronger. The end result is very high operating reliability and longevity.



ALOnsite

Qualified support at your facility

With Alfa Laval as your partner, you have the full backing of our global service network, including 24/7 remote technical support. We can be at your plant within 1-2 days if you need onsite assistance.



For more information about Packinox+ plate-and-frame key features, visit our website: >>

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