
Smarter
energy solutions
For heavy process industries
Respect your energy

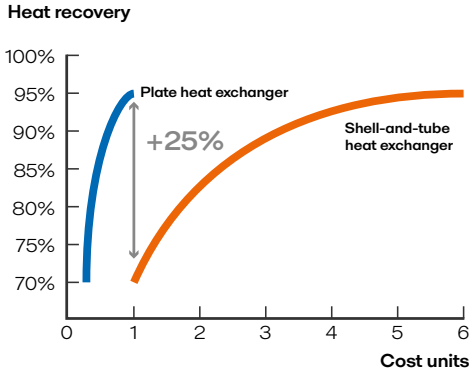
The smarter way to achieve goals under the Paris Agreement

Meeting the 1.5 °C target goal set in the Paris Agreement not only requires us to switch to renewable energy sources, but also to use energy in the most efficient way possible and put a stop to energy wastage. The International Energy Agency (IEA) estimates that increased energy efficiency could account for over 40% of the emissions reductions required in the next two decades, with the industrial sector contributing half of this potential.

Improved energy efficiency also has a positive impact on profitability. Companies across sectors investing in energy efficiency see rapid returns in terms of reduced OPEX, higher production capacity, increased yield, improved product quality and lower CAPEX.

Alfa Laval stands at the forefront of this development. We offer a complete range of proven products, solutions, and services tailored to enhance energy efficiency, helping companies across industries to increase both profitability and environmental sustainability.

It takes less energy than you think



The diagram shows the heat recovery level as a function of initial cost. The yield from plate heat exchangers is up to 25% higher than for shell-and-tubes at a comparable cost. To reach the same levels of heat recovery, shell-and-tube solutions often become several times more expensive. The basis of comparison is a BEM shell-and-tube system with stainless steel tubes and fusion bonded AlfaNova plate heat exchangers.

For more details, please visit www.alfalaval.com/energy

As sure as the rising sun, energy means a lot to your business.

For years, Alfa Laval has been leading the way in high-efficiency heat transfer. The recovery and re-use of costly energy, whether purchased or generated during process operations, can have an enormous impact on your results. And with increasing attention on greenhouse gas emissions, heat recovery will no doubt continue to be a key topic.

That's why many businesses are adopting plate heat exchangers. Investments in process optimizations based on plate technology can lead to significant improvements, such as energy and emission savings, reduced footprint, material and water savings, increased production, improved product quality and yield, capex savings, and improved reliability.

To achieve these benefits, it is important to base the designs on plate technology from the earliest stages, when process parameters can still be adjusted, to fully utilize the opportunities provided by high-efficiency heat exchangers..

When the time is right – for example, when you need to expand operations, improve your environmental profile, optimize maintenance and cleaning intervals, or reduce water consumption – you should talk to us. The advantages will simply brighten your day.

What's on hand is worth most

Shell-and-tube

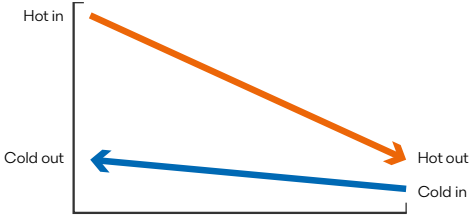
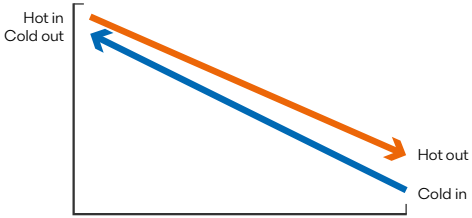


Plate heat exchanger



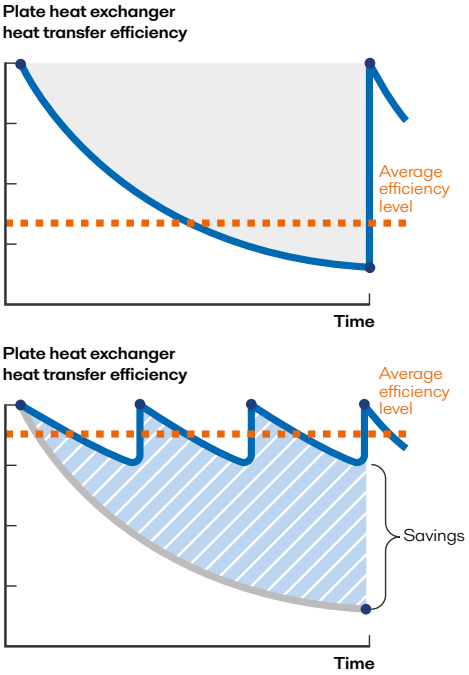
The smaller temperature approach, in combination with the ability to operate with crossing temperatures, makes heat transfer much more efficient in a plate heat exchanger than in a shell-and-tube unit.

With the combination of high turbulence and counter-current flow, Alfa Laval plate heat exchangers maximize heat transfer between process media, enabling maximum heat recovery and opportunities to optimize process performance.

The concept is simple. Liquids or vapours flow through channels between corrugated plates, creating turbulence in the media. This results in higher sheer forces between the media and the corrugated plate, and better heat transfer between the media. A counter-current flow enables crossing temperature programs, where the cold fluid can be heated to a temperature very close to that of the hot fluid and vice versa. The closer the temperature approach between two fluids, the more heat is recovered. Counter current flow is easier to obtain using a plate heat exchanger compared to a shell and tube heat exchanger.

Energy saved and energy reused.
To optimize performance and get the most from your operations, you recycle valuable energy for a wide range of uses rather than producing or buying more.
It's smarter for you. It's also smarter for the environment, since it means you reduce fuel consumption and greenhouse gas emissions.

Bright ideas whose time has come



Regular cleaning and optimized design double your heat exchanger maintains high performance over time. If cleaning intervals are too long, fouling can substantially reduce total heat transfer. This, in turn, can negatively affect OPEX, CO_2 emissions, production capacity, and more.

Alfa Laval's plate heat exchangers are used for a wide variety of duties in plants and industries around the world, both in critical process positions and as utility equipment.

We offer the world's most extensive selection of plate heat exchangers, including gasketed, semi-welded, fully welded, wet surface air coolers, and fusion-bonded models. The design is infinitely flexible. A number of configurations and materials can be combined to handle a range of temperatures, pressures and aggressive media.

Our heat exchangers are highly competitive in terms of sustainability, as well as capital, installation, operating and service costs. They are lighter in weight, take up little space and can be installed in previously unthinkable places. Plates are more resistant to fouling, resulting in lower maintenance costs, longer uptime, and increased energy efficiency. The CO_2 footprint of a plate heat exchanger can be as much as 50% lower than a comparable shell and tube heat exchanger. Alfa Laval offers service methods that make it quick and easy to keep the plates at maximum performance throughout their lifetimes.

From design, production and installation to parts and service, we draw from know-how, experience and a global pool of skilled engineers to ensure your operations run brilliantly.

Others have seen the light

Energy savings

Many companies are already using plate heat exchangers in their operations – and with rising demands for sustainability and operational efficiency, many more are in the process of switching to this technology.

Here are a few reasons why:

- Reduced fuel consumption, water usage and greenhouse gas emissions, lessening the effect on the environment.
- Lower operating costs with higher heat transfer efficiency.
- Optimum heat recovery from each and every process.
- Increased production capacity using less area.
- Savings in capital investment and installation due to compact size and lighter weight.
- Less fouling due to better flow patterns and greater turbulence, resulting in less maintenance and increased uptime.
- Improved process control due to lower hold-up volume.

While shell-and-tubes have reached their efficiency peak, plate heat exchangers continue to rise and shine.

Shining examples

Since the 1960s, we have worked together with customers in over 100 countries, combining global resources with local support. With the world's most extensive range, Alfa Laval knows heat exchangers inside and out. Our parts and service organization is staffed by experienced service engineers, ready to assist you with performance evaluation, troubleshooting and field service. Ultimately, our solutions are optimized to your needs. You'll expend less energy and get all the more for your operations.

Of course, the best source of information and inspiration is our customers. Here are just a few examples from many glowing installations. See how our plate heat exchangers can provide environmentally responsible solutions with efficient heat transfer and minimum energy consumption for low overall cost and maximum reliability.

Pioneering e-fuel collaboration

Örnsköldsvik, Sweden

Affordable e-fuels are essential to driving the transition away from fossil fuels in the marine industry. Liquid Wind, a leading developer of e-fuel processing plants, cooperates closely with Alfa Laval to minimize energy consumption in its projects, thereby enabling lower production costs and competitive market pricing.

By involving Alfa Laval early in their design processes, the entire systems can be optimized for maximum energy efficiency by fully leveraging the capacity of Alfa Laval's heat exchangers.

Did you know...

...that Liquid Wind intends to complete 10 e-methanol plants by 2027 and scale up to 500 by 2035?

From waste heat to valuable energy source

Rönnskär, Sweden

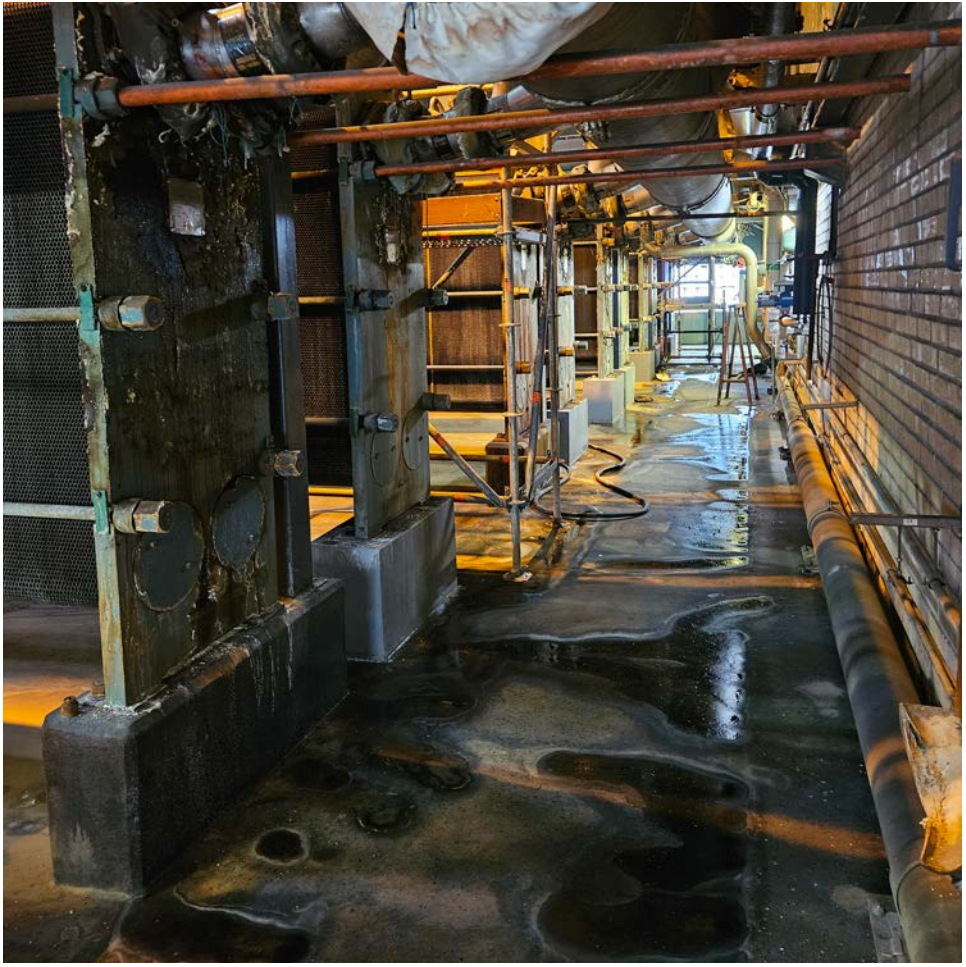
Boliden's Rönnskär smelting plant is set to increase its supply of waste heat to the Skellefteå region's district heating network. This will not only reduce the need for burning oil and peat but also positively impact Boliden's bottom line.

Alfa Laval has supplied the hundreds of high-efficiency plate heat exchangers responsible for extracting heat from Boliden's processes. The company also ensures that all heat exchangers maintain optimal performance over time by monitoring and servicing them through a comprehensive service agreement.

Facts

Benefits

Optimized waste heat recovery
Improved environmental performance
Higher productivity due to increased uptime
Longer lifespan for the plate heat exchangers



Massive savings thanks to service agreement

Rönnskär, Sweden

Entering a service agreement with Alfa Laval has had a highly positive impact on the cooling processes at Boliden's Rönnskär copper smelting plant in Skelleftehamn, Sweden. Switching to planned, preventive maintenance for the hundreds of Alfa Laval plate heat exchangers installed at the plant has resulted in fewer breakdowns and a substantial increase in uptime.

Additionally, water consumption has been nearly halved, from 110 million tonnes per year to 60 million tonnes. This reduction has also lowered energy costs for water pumping by 15–20%.

Facts

Benefits

Reduced water consumption
Lower energy costs
Improved environmental performance
Higher productivity due to increased uptime
Longer lifespan for the plate heat exchangers

Smarter energy solutions

Performance and sustainability

Terneuzen, The Netherlands

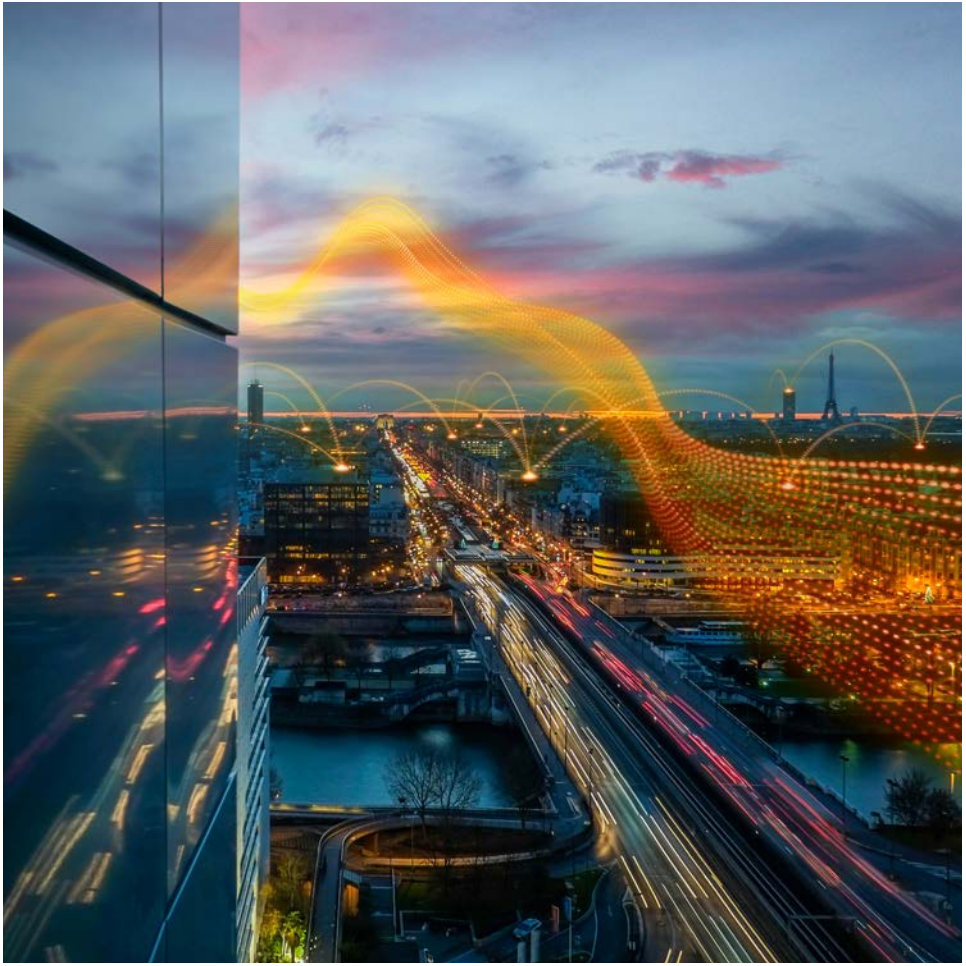
The team at Dow's site in Terneuzen, the Netherlands, has collaborated with Alfa Laval for many years on energy efficiency projects, including both revamps and improved service.

One of the projects even won an internal award as one of the best energy efficiency initiatives in the entire company that year. In this project, two shell-and-tube heat exchangers were replaced with two Alfa Laval Compabloc heat exchangers, resulting in substantial energy savings, reduced emissions, and increased uptime, among many other benefits.

Facts

Benefits

Lower energy consumption
Reduced CO2 emissions
Increased uptime
Reduced consumption of makeup water
Improved product yield
Lower waste disposal costs



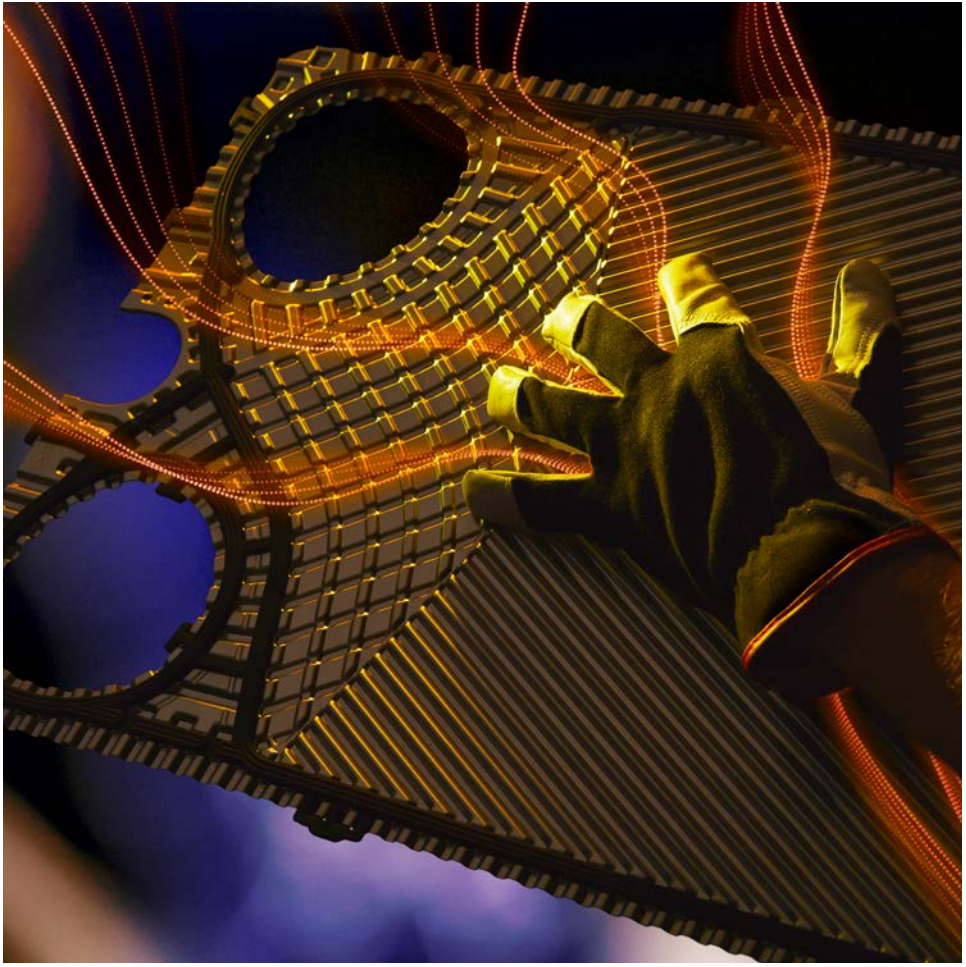
Driving the energy transition

According to the International Energy Agency (IEA), the rate of energy efficiency improvements must double by 2030 to achieve net zero emissions by 2050. The Energy Efficiency Movement (EEM) is a non-profit association co-founded by Alfa Laval, comprising over 500 companies across various industry sectors, all dedicated to the net zero vision.

EEM serves as a thought leader and knowledge hub for energy efficiency, CO_2 emissions reductions, and cost savings, while also acting as a catalyst for collaboration and innovation. Is your company ready to be part of the solution? Join the Energy Efficiency Movement today.

Did you know...

...that if all refineries serviced their plate heat exchangers regularly to optimize heat transfer efficiency, energy consumption could be reduced by 60 TWh every year, saving 13.6 million tonnes of CO_2 emissions annually?



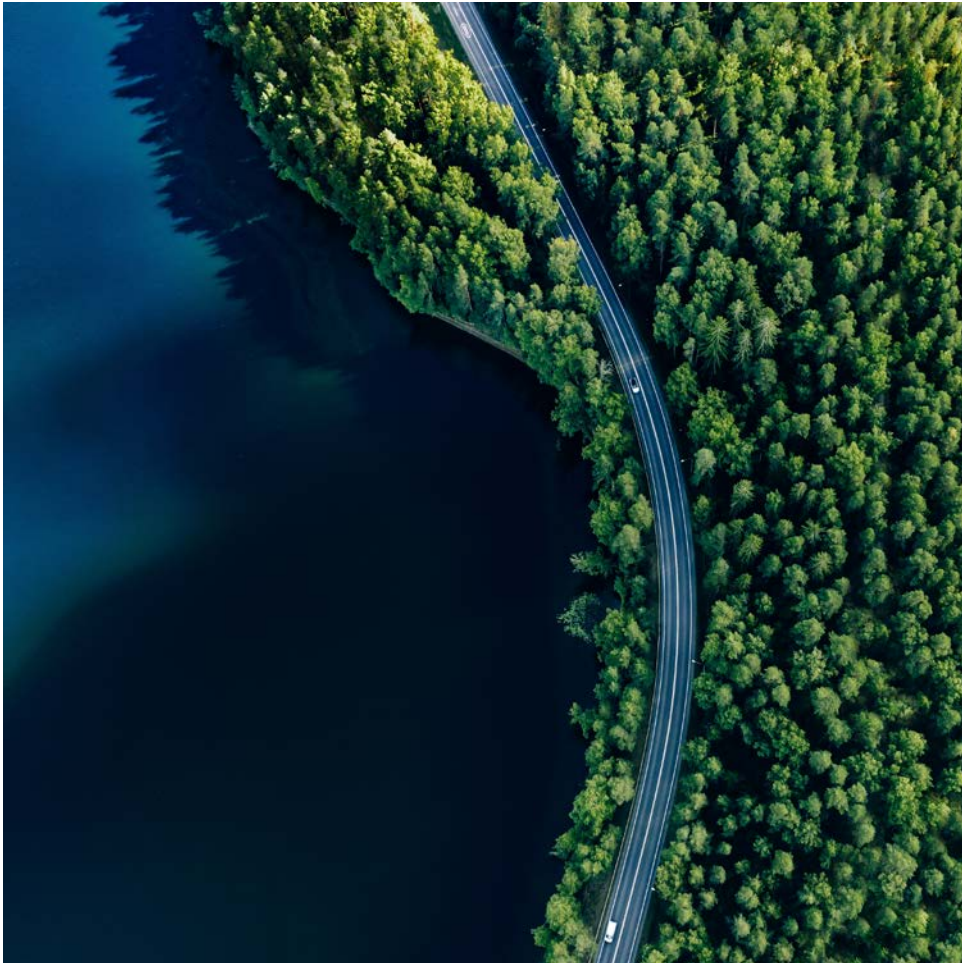
The benefits of plate heat exchangers

Reduced energy costs and CO_2 emissions, lower water consumption, increased production capacity, higher product quality, and increased uptime are some of the benefits companies experience when replacing shell-and-tube heat exchangers with plate heat exchangers.

The corrugated plates create a highly turbulent flow, which, combined with a counter-current flow arrangement, gives plate heat exchangers maximum heat transfer efficiency, a compact size, and good resistance to fouling.

Did you know...

...that Alfa Laval has over 90 years of experience in developing plate heat exchanger technology and offers the widest product range on the market?



On our way to net zero emissions

Alfa Laval has an ambitious energy efficiency program with clear carbon emission targets. We aim to reach net zero for scope 1 and 2 emissions by 2030, and for scope 3 emissions by 2050.

Since these targets were set in 2020, we have reduced carbon emissions from our operations by more than 50% while increasing our turnover by more than 50%. This achievement has been made possible through various energy efficiency projects and by switching to renewable energy. Currently, 97% of our electricity comes from renewable sources

Did you know...

...that the low temperature heat generated in component production at Alfa Laval's Gunnesbo production site in Sweden is being recovered via a heat pump system? This has reduced Alfa Laval's purchase of district heating by 85%.

Energy efficiency through maintenance

The traditional run-to-failure approach, with excessively long intervals between cleanings, leads to significant energy losses and unnecessary environmental impact. Estimates suggest that 2.5% of all CO_2 emissions are related to fouled heat exchangers.

Alfa Laval offers a complete range of services to ensure high performance and operational reliability, from quick and easy cleaning-in-place solutions to reconditioning and redesign services. Our condition-based assessment services make it easy to optimize service intervals and minimize the total cost of ownership.

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Compabloc

All-welded yet fully accessible, the Compabloc offers the possibility to handle tough duties involving high pressures and temperatures as well as aggressive media – without compromising fast and easy cleaning and inspection. Flexible configuration possibilities allow dissimilar flows, and combine with the short plate construction to make the Compabloc an excellent choice for condensing and reboiling duties.

Printed circuit heat exchangers

Up to 85% smaller and lighter than its shell-and-tube competitors, printed circuit heat exchangers (PCHEs) are the perfect fit for a wide range of high-pressure duties. The unique design makes it possible to transfer heat at a higher rate, improve performance, and increase safety while operating at a lower cost.

AlfaNova

The fusion bonded AlfaNova consists of 100 % stainless steel. Alfa Nova's patented bonding technique makes it possible to take on industrial applications that require higher temperature extremes and high pressures. Its construction makes it suitable not only for liquid/liquid applications, but also for use as a gas heater, gas cooler or reboiler.

Gasketed plate-and-frame heat exchangers

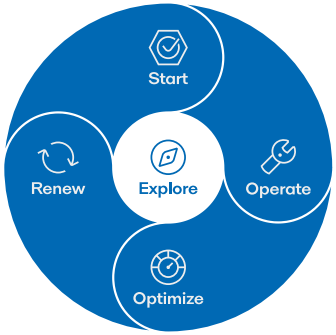
Alfa Laval's gasketed plate heat exchangers meet basic operational needs. A full portfolio with a wide range of sizes makes it possible to tailor a solution for each given duty, and the design can be adjusted to fit new conditions simply by removing or adding plates to the plate pack. Furthermore, the ease of dismantling and cleaning makes them highly serviceable. The semi-welded concept is designed to handle aggressive media on one side.

Spiral heat exchangers

The ultimate problem solver, the spiral heat exchanger has a single-channel arrangement that makes it self-cleaning and uniquely able to handle highly fouling fluids. Easy accessibility for maintenance reduces its operating costs and increases plant uptime even further. The unit's flexible design also makes it an outstanding condenser with a very low pressure drop. Moreover, the spiral condenser can be top-mounted, which reduces installation costs.

Air cooled heat exchangers

Alfa Laval's air-cooled heat exchangers are built for the toughest industrial duties and are characterized by exceptional operational reliability and high capacity. Our WSAC evaporative coolers offer maximal cooling capacity and compact size, enabling water savings and increased production. Alfa Laval offers a complete range of air-cooled heat exchangers, spanning from traditional air coolers to evaporative coolers and modular cooling solutions for data centres.



Packinox

The Packinox all-welded heat exchanger features a unique design for thermal and hydraulic efficiency at high temperatures and pressures, all within a compact large-capacity unit. The result is highly efficient heat recovery with an extremely low pressure drop. Because a Packinox can withstand extreme temperatures at high pressures, it is suited for a variety of duties, for example in catalytic reforming, hydrodesulfurization, and aromatics production

Olmi

Alfa Laval Olmi process shell-and-tube heat exchangers are designed and built for the toughest applications in chemical processing industries, oil & gas production and power stations. These fully customized units maximize plant sustainability through low service requirements and exceptional reliability, resulting in competitive total cost of ownership and trouble-free operation.

Complete service solutions

Alfa Laval offers a complete range of heat exchanger services, ensuring maximum performance and operational reliability throughout the entire lifetime of your equipment. With a global network of service centers, spare parts hubs, and field service engineers, we ensure you receive quick and qualified support whenever you need it. Entering an Alfa Laval service agreement provides you with the smoothest service process, where we handle all the practicalities. Visit www.alfalaval.com/service to learn more.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