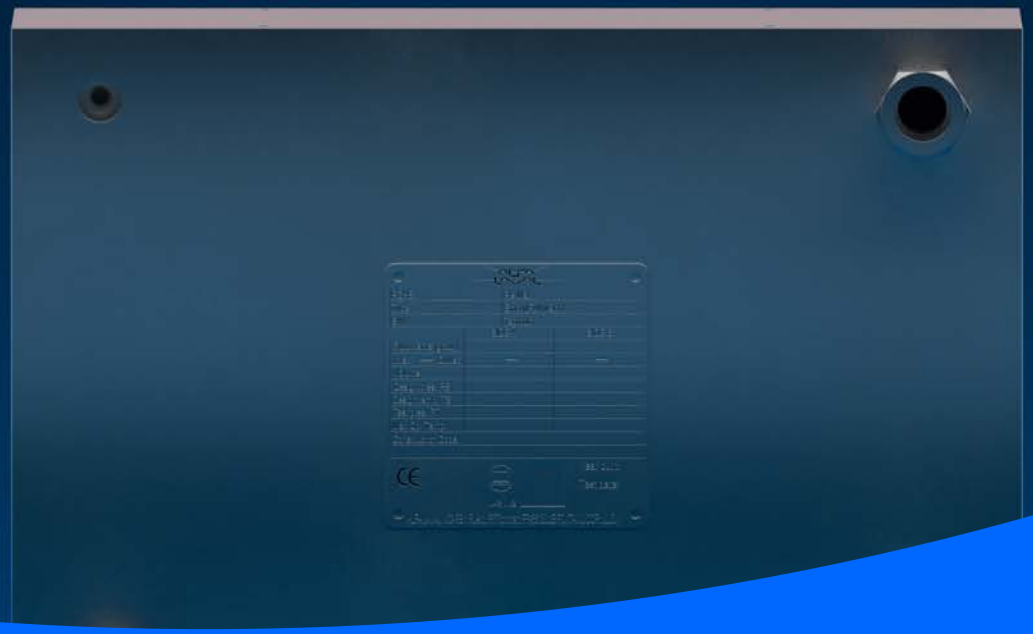
Alfa Laval HyBloc™ printed circuit heat exchanger



Fuelling the future of hydrogen precooling

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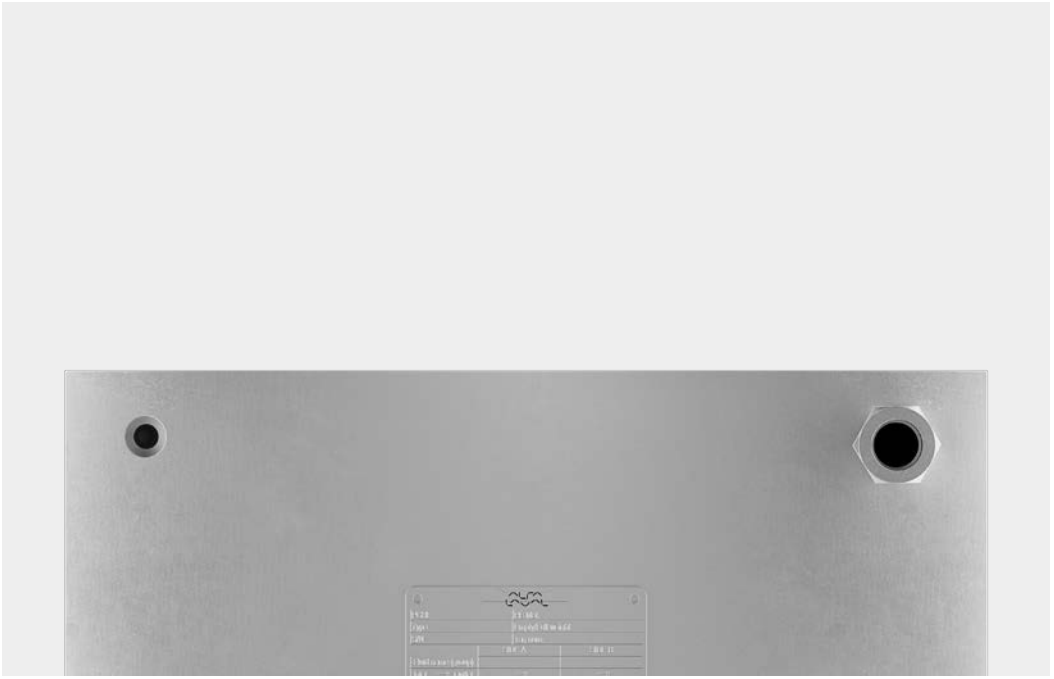
Funded by the European Union



A head start in **hydrogen**

Funded by the European Union

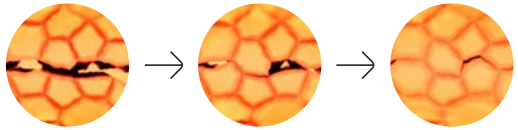
HyBloc™ 18 takes the spotlight in EU's Innovation Radar!
The EU-funded RHeaDHY project, which aims to advance hydrogen mobility across Europe, has been featured in the prestigious Innovation Radar award 2024. We're proud to have contributed to this recognition with our HyBloc 18, a cutting-edge hydrogen precooler that played a vital role in the project's success. With its innovative design and efficiency, HyBloc 18 exemplifies how collaboration and innovation can drive sustainability and support the global transition to clean hydrogen mobility.

As the demand for hydrogen-powered vehicles grows, so does the need for high-capacity, high-speed, zero-wait time fuelling stations, while also minimizing environmental impact through efficient design.

The Alfa Laval HyBloc range of printed circuit heat exchangers is designed to meet these demands. They offer unparalleled efficiency in hydrogen pre-cooling and sustainability, ensuring that all types of hydrogen vehicles – from passenger cars to trucks, buses, and other heavy-duty vehicles – can be filled quickly.

What you get:

- Ultra-compact hydrogen precooling that simplifies integration into the limited space of a refueller.
- Zero waiting time between refuellings thanks to continuous refrigeration loops.
- High-pressure operation for minimal filling times and optimized performance.
- Proven technology ensuring safe operation and long lifespan.
- Reliable global supply and support with high production capacity.
- Integrated cooling inside the refueller, eliminating civil works for installation.
- Future-ready design, handling pressures up to 1,250 bar.
- Compliance with universal norms, including SAE J-2601 and ISO 19880-1.



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

Performance **under pressure**

Durable, fusion-bonded plates make Alfa Laval HyBloc units extremely robust, able to withstand pressures of up to 1,250 bar (18,125 psi), and operating temperatures ranging from -253°C (-423°F) to 540°C (1004°F).

Two key factors ensure fast filling times

- Operating pressure – the higher the pressure, the shorter the filling time.
- Precooler capacity – critical to avoiding delays between fillings.

This design makes Alfa Laval HyBloc an ideal component for current H70 systems that operate at 700 bar. It also guarantees their status as a future-proof solution that's ready for tomorrow's applications – which are anticipated to involve even higher pressures and tougher standards.

Pressure

1,250 bar

Temprature

-253°C
to 540°C

Continuous cooling
Unlike other heat exchanger technologies which require time to recharge between fuelling sessions, Alfa Laval HyBloc's compact, thermally responsive design and continuously operating cooling loop enable unlimited back-to-back filling with no waiting time.

The smallest design – the biggest advantage
Alfa Laval HyBloc precoolers are approximately 85% smaller than plate-and-shell heat exchangers with comparable cooling capacity. Their compact design allows them to be easily integrated into dispenser casings, eliminating the need for costly and time-consuming underground installations. This makes them ideal for urban areas or other environments with limited space.

Improve sustainability
HyBloc combines high thermal efficiency with a compact size, minimal weight, and reduced structural-support costs, reducing the scope 3 emissions generated when constructing your refuelling station. As a result, they help you improve the sustainability of your critical processes, while minimizing the environmental impact of the heat exchanger itself.

Robust. Reliable. Recognized.
The Alfa Laval printed circuit heat exchangers deliver over 15 years of tried-and-trusted performance in the toughest gas applications and industries. The unique OptiBond™ diffusion welding technology, combined with prime-quality plate materials, provides unmatched durability. Unlike other heat exchanger technologies, HyBloc heat exchanger units are built as one massive block, eliminating the risk of pressure pulsations or fluid failures.

Customised for your needs
The Alfa Laval HyBloc range consist of seven standard models, yet with customization options, designed to meet diverse capacity needs. Four models (HyBloc) cover the complete vehicle range for cooling hydrogen based on a liquid cooling fluid. Additionally, there are three models (HyBloc C) specifically designed for carbon dioxide-based vaporizing cooling. Cooling with carbon dioxide enables even smaller Hybloc units and more compact installations, while offering safe and highly efficient hydrogen cooling.

If you need a customised heat exchanger, these can be engineered-to-order and optimized for your specifications, including cooling fluid and capacity requirements, to ensure maximum performance.

There is no substitute for experience
Our application experts are here to support you throughout the development phase, providing advice how to optimize your precooling process to get the most out of your system. As one of the world's largest heat exchanger manufacturers, you can also rest assured that we have the capacity to meet your supply demands as your sales increase.

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

Visit our website at www.alfalaval.com/pche/hrs to learn more or contact us for a discussion on how you can benefit from integrating Alfa Laval HyBloc in your systems.

PowerDense
Maximum performance under maximum pressure Improves sustainability with the smallest metal footprint design, still capable of withstanding hydrogen pressures up to 1,250 bar.

OptiBond™
A robust and compact solution for high-pressure needs State-of-the-art diffusion welding tecnology provides the highest durability and thermal efficiency within an ultra-compact welded plate heat exchanger.

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, increasing the number of daily back-to-back refuels.

This is Alfa Laval
The ability to make the most of what we have is more important than ever. Together with our customers, we're innovating the industries that society depends on and creating lasting positive impact. We're set on helping billions of people to get the energy, food, and clean water they need. And, at the same time, we're decarbonising the marine fleet that's the backbone of global trade.

We pioneer technologies and solutions thatfree our customers to unlock the true potential of resources. As our customers' businesses grow stronger, the goal of a truly sustainable world edges closer. The company is committed to optimizing processes, creating responsible growth, and driving progress to support customers in achieving their business goals and sustainability targets. Together, we're pioneering positive impact.

How to contact Alfa Laval
Contact details for all countries are continually updated on our website.

Please visit www.alfalaval.com to access the information.

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