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Meet the Alfa Laval HyBloc™ heat exchanger – the new hero of hydrogen precooling

The demand for hydrogen-powered vehicles is growing, and so is the need for high-capacity, high-speed, zero-wait-time fuelling stations. That's why Alfa Laval developed HyBloc heat exchangers, which are especially designed for hydrogen precooling in filling stations. They offer unparalleled efficiency, ensuring that all types of hydrogen vehicles – from passenger cars, to trucks, buses, and other heavy-duty vehicles – can be filled quickly and safely.

HyBloc gives you a head start in hydrogen

“One of the biggest challenges to reaching net zero carbon emissions is the speed at which new products can be released for use in existing infrastructures,” says Mark Kirby, General Manager for Printed Circuit Heat Exchangers at Alfa Laval. “It's not enough to develop the technologies, we need to make them easy to use, so that the market will take them up on a meaningful scale. If we consider hydrogen vehicles as an example, they represent a fairly new technology that is being implemented across the globe. Alfa Laval has been focusing on how our printed circuit heat exchangers can help hydrogen vehicles become more mainstream.”

It's elementary

“In developing HyBloc, we took our inspiration from hydrogen itself,” continues Mark. “It's the lightest, most energetic element in the periodic table – and we've made a product to match. HyBloc is small, modular, scalable, and designed to fit easily into existing pump delivery systems. So, it's simple for customers to make the switch and to adopt this technology. We believe that this new level of accessibility will play a significant role in accelerating the transition to clean hydrogen in vehicles all over the world.”

Exceptional performance, today and tomorrow

HyBloc's exceptional performance is made possible both by high operating pressure, which shortens the time it takes to fill a vehicle's tank, and by high capacity in the precooler, which reduces the wait-time between fillings. Durable, fusion-bonded plates make these units extremely robust. They are able to withstand pressures of up to 1,250 bar (18,125 psi), and operating temperatures as low as -70°C (-94°F). This design makes HyBloc an ideal component for current H70 systems that operate at 700 bar, and also guarantees their status as a future-proof solution that's ready for tomorrow's applications.

Continuous cooling, with a tiny footprint

Unlike plate-and-shell heat exchangers, which require time to recharge between fuelling sessions, HyBloc's combination of a compact, thermally responsive design and a continuously operating cooling loop enables back-to-back filling, with no wait time. And because HyBloc precoolers are approximately 85% smaller than shell-and-tube heat exchangers with comparable cooling capacity, they are easy to integrate into dispenser casings. Their compact design eliminates the need for costly, time-consuming underground installation, making them ideal for use in urban areas or other limited-space environments.

A fully customized solution

The HyBloc range is made up of four standard models that cater to all capacity needs. 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

"Choosing a HyBloc unit is only the beginning," says Mark. "Our application experts are ready and waiting to support you throughout the development phase. We can advise you how to optimize your precooling process to get the best out of your system. And 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 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 lengthy operational life.

To learn more about Alfa Laval HyBloc™ heat exchangers, please visit:

<https://www.alfalaval.com/pche/hrs>

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Editor's notes

Printed circuit heat exchangers

Alfa Laval printed circuit heat exchangers (PCHEs) combine superior robustness and integrity with an exceptionally high heat transfer rate, in a unit that's up to 85 % smaller and lighter than comparable shell-and-tube and shell-and-coil exchangers. The unique design results in excellent performance, lower installation and operational costs, as well as improved safety. Each unit is also fully customizable according to your exact needs.

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™*.

Alfa Laval has 16,700 employees. Annual sales in 2020 were SEK 41.5 billion (approx. EUR 4 billion). The company is listed on Nasdaq OMX.

www.alfalaval.com