Press release

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New research into glycol freezing enables further savings with the Alfa Laval DuroShell heat exchanger in LNG fuel systems

With the DuroShell plate-and-shell heat exchanger, Alfa Laval continues to lead the way in technology for fuel gas systems. Optimized for use as an LNG vaporizer, the robust DuroShell provides higher thermal efficiency than conventional plate-and-shell designs, as well as market-leading fatigue resistance. Thanks to new research into glycol freezing, it can now be used in even more compact and cost-effective installations.

“The continued rise in the number of vessels sailing with LNG is one of the most significant trends in today’s marine industry,” says Jonny Hult, Head of Marine Heat Transfer Equipment at Alfa Laval. “With more and more ships relying on LNG as fuel, we are seeing greater demand for vaporizer technology that can dependably resist freezing and the fatigue caused by pressure and temperature. DuroShell is exceptional in this regard.”

Laboratory freeze testing yielded cost-saving insights

DuroShell has been optimized for use as a vaporizer in fuel gas applications. With its 100% stainless steel design, it can reliably handle LNG entry temperatures that approach -170°C or lower. Now Alfa Laval has also performed an extensive laboratory freeze testing, gaining knowledge that will lead to lower capital and operational costs.

“Extreme low temperatures are not an issue for DuroShell, but a glycol mix with a freezing point of around -50°C has the potential to freeze when it meets plate surfaces as cold as -90°C,” Hult explains. “Solving this problem with a higher glycol flow is a very expensive solution for our customers, so Alfa Laval has worked with SINTEF Energy Research to find the correlation of flows on both sides and thereby avoid freezing of fluid on the hot side.” Hult concludes that this will let shipbuilders use a more compact plate-and-shell design with smaller pumps and pipes, which, in turn, will mean CAPEX and OPEX savings for the ship owner.

High thermal efficiency supported by unbeatable fatigue resistance

DuroShell's ability to withstand the large temperature differences in fuel gas supply systems stems partly from its special CutWing plates, which feature the patented Alfa Laval RollerCoaster™ plate pattern. The RollerCoaster™ design provides high turbulence that improves heat transfer efficiency and thus significantly reduces the risk of freezing and fouling.

Another unique DuroShell feature is the PowerPack™ distribution tubes, which run all the way through the plate pack and secure an optimized flow distribution onto the heat transfer surface. This design further enhances the strength of the plate pack for added fatigue resistance in demanding LNG duties.

"From the laser-welded plate pack to RollerCoaster™ and PowerPack™, DuroShell is loaded with features that help us secure far higher resistance to temperature and pressure fatigue than possible with conventional plate-and-shell designs," adds Hult. "Based on this and our knowledge about freezing behaviour, we can confidently state that DuroShell is the market's best solution for LNG applications today."

To learn more about Alfa Laval DuroShell and Alfa Laval's approach to LNG fuel systems, visit www.alfalaval.com/duroshell-marine

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Editor's notes

About Alfa Laval

Alfa Laval is a leading global provider of specialized products and engineering solutions based on its key technologies of heat transfer, separation and fluid handling.

The company's equipment, systems and services are dedicated to assisting customers in optimizing the performance of their processes. The solutions help them to heat, cool, separate and transport products in industries that produce food and beverages, chemicals and petrochemicals, pharmaceuticals, starch, sugar and ethanol.

Alfa Laval's products are also used in power plants, aboard ships, in oil and gas exploration, in the mechanical engineering industry, in the mining industry and for wastewater treatment, as well as for comfort climate and refrigeration applications.

Alfa Laval's worldwide organization works closely with customers in nearly 100 countries to help them stay ahead in the global arena. Alfa Laval is listed on Nasdaq OMX, and, in 2018, posted annual sales of about SEK 40.7 billion (approx. 4.0 billion Euros). The company has about 17 200 employees.

www.alfalaval.com