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# Alfa Laval DuroShell sets a bold new standard for LPG/E cargo condensers

**With the new Alfa Laval DuroShell plate-and-shell heat exchanger, Alfa Laval significantly strengthens its lead in LPG/E cargo reliquefaction. DuroShell features an innovative construction that dramatically increases resistance to thermal and pressure fatigue.**

Alfa Laval DuroShell is a specially engineered plate-and-shell heat exchanger with unique design capabilities. Already used in the offshore oil and gas industry, it is now being introduced for demanding marine duties such as LPG/E cargo reliquefaction. An innovative construction and a patented roller coaster plate pattern make DuroShell significantly more robust, allowing it to condense cargo with a higher ethane content.

“DuroShell is a remarkable advance in heat exchanger design,” says Matilda Mellby, Application Manager, Gas Components at Alfa Laval. “As an LPG/E cargo condenser, it provides far greater resistance to temperature and pressure extremes than most other welded solutions.”

## **Reliquefaction of ethane-rich LPG/E**

DuroShell strengthens Alfa Laval’s leadership in heat exchangers for LPG/E cargo condensation, where the Alfa Laval AlfaRex plate heat exchanger is standard today. Like AlfaRex, DuroShell is a laser-welded solution combining high thermal efficiency with a very small footprint. But whereas AlfaRex handles pressures of around 30 bar and temperatures down to -50°C, DuroShell withstands pressures up to 35 bar when titanium plates are used, along with temperatures as low as -198°C.

“An extended pressure range is important as the ethane level in LPG/E increases,” says Mellby. “DuroShell is more than robust enough to handle ethane condensation, which demands pressures in excess of 30 bar.”

## **A rugged yet simple solution**

The robustness of DuroShell is the result of many factors, including the patented roller coaster pattern of its cut-wing plates. The roller coaster pattern ensures even expansion around the plate circumference, which eliminates potential weak spots and increases the heat exchanger lifetime. In addition, the entire plate pack is pre-compressed, which minimizes the effect of large differences and variations in temperature.

Further strength is added by the distribution tubes that extend through the laser-welded plate pack. These relieve stress on the plate pack itself, while at the same time ensuring the best distribution of media. Together with the roller coaster pattern, which creates high turbulence even at low velocities, the distribution tubes ensure excellent thermal performance.

“The DuroShell design merges stability with thermal efficiency, and it minimizes fouling to ensure high performance over time,” says Mellby. “For LPG/E cargo reliquefaction, no solution compares to DuroShell in simplicity, capability or reliability.”

To learn more about Alfa Laval DuroShell and Alfa Laval's approach to LPG/E cargo reliquefaction, visit [www.alfalaval.com/marine](http://www.alfalaval.com/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, 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 2015, posted annual sales of about SEK 39.7 billion (approx. 4.25 billion Euros). The company has about 17 500 employees.

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