Alfa Laval Aalborg boiler technology offers an easier path to LNG propulsion

**Alfa Laval is not an engine maker, but is nonetheless playing a key role in the move towards LNG propulsion. Alfa Laval technologies and expertise – especially in the area of boilers – are enabling marine vessels to deal with boil-off gas (BOG), which is the critical step in making the shift to LNG. Alfa Laval’s dual-fuel boilers, Gas Combustion Unit (GCU) and services form a complete portfolio of solutions for BOG safety.**

LNG is on the upswing, due to its role in reducing emissions and its relative economy compared to today’s low-sulphur fuels. “Customers are attracted to LNG propulsion for a variety of reasons, and it’s being considered for many vessel types besides LNG carriers,” says Markus Tauriainen, Manager Exhaust & Combustion System Sales at Alfa Laval.

In order to use LNG as fuel, vessels must be able to manage boil-off gas (BOG), the evaporated gas that can increase tank pressure. Alfa Laval is well known for BOG management on LNG carriers, where the Alfa Laval Gas Combustion Unit (GCU) safely burns BOG in compliance with the International code for Gas as Cargo (IGC). When it comes to using LNG for propulsion under the International code for Gas as Fuel (IGF), Alfa Laval is also managing BOG with dual-fuel Alfa Laval Aalborg boilers – and is tipping the balance in LNG’s favour for a far larger number of vessels.

**A compact and simple way of managing boil-off gas**

When an LNG fuel tank is incorporated into a vessel, the pressure created by BOG must be kept at a level that avoids ventilation to atmosphere via the safety valve. Reliquefaction of the gas is possible, but doing this on board adds too much complexity and cost for most vessels. Likewise, burning the gas in auxiliary engines or gensets requires pressurization, which demands a redundant expensive compression train.

“On some vessels you can use a Type C tank to allow pressure to accumulate,” says Tauriainen. “But what most vessels need is a safe solution for burning off the gas at low pressure. That can be a GCU on LNG carriers, but the best and most economical solution for vessels using LNG as fuel is usually a dual-fuel boiler.”

A boiler, either for producing steam or for heating thermal oil or water, is equipment that vessels need anyway. Since an Aalborg dual-fuel boiler can be fired with LNG, it can take on the additional safety function of BOG management. “Boilers are a compact, simple and highly affordable way to handle boil-off gas,” Tauriainen says. “As strange as it may sound, our Aalborg dual-fuel boilers have been the enabler for LNG propulsion in many, many projects.”

**Smarter preparations for LNG tank inspection**

Aalborg boilers, like the GCU, have yet another advantage when it comes to BOG management. Every fifth year, when a vessel enters dry dock for inspection, the tank environment must be made non-hazardous by replacing the LNG with inert gas. During this process, Aalborg dual-fuel boilers are capable of burning the mixture of inert gas and LNG.

“Inert gas itself doesn’t burn, so the mixture resulting from the inerting process can’t be fed to an engine or genset,” says Tauriainen. “It can be fed to an Aalborg dual-fuel boiler, however. So the boiler offers a time-saving and economical solution to this recurring issue, which otherwise has to be solved by visiting an onshore disposal terminal before and after dry docking.”

**A century of boiler expertise – and more**

Considering the importance of boiler technology to the overall LNG equation, Alfa Laval’s expertise and resources offer important assurance to ship owners and operators. Alfa Laval has supplied, optimized and supported boilers for 100 years, and has sold over 100 Aalborg dual-fuel boiler systems to date. That experience is paired with BOG know-how from the GCU, plus R&D muscle at the Alfa Laval Test & Training Centre in Aalborg, Denmark, a 1350 m2 facility with a dedicated wing for gas and combustion solutions.

“Our Aalborg dual-fuel solutions are designed with boil-off gas in mind and are influenced by our experience with the GCU,” says Tauriainen. “The boiler uses LNG efficiently for heating, but by managing the boil-off gas and making LNG propulsion possible, it also enables far greater savings. GCU or boiler, steam or thermal fluid – we have a solution to make LNG propulsion happen, on any size or type of vessel.”

**Full service backing where it matters most**

Since every aspect of BOG management is linked to safety, Alfa Laval’s organizational strengths also come into play. As a full-scope marine supplier, Alfa Laval provides not only in-house engineering and manufacturing, but also peace of mind through commissioning and a well-established global service network.

“Responsiveness is crucial in safety applications,” says Tauriainen. “We’ve spent decades building up our boiler services, and we can meet vessels at their next port in the vast majority of cases. In an emergency, we also have field service engineers who can be dispatched to sea.”

In fact, Alfa Laval service expertise is closer than ever, thanks to a growing range of digital services. Alfa Laval BOG solutions all make use of Alfa Laval Touch Control, a next-generation control solution with an easy-to-use touchscreen interface. As well as providing crews with common controls for all BOG-related equipment, Alfa Laval Touch Control offers a platform for data-driven maintenance and optimization.

“Customers today want immediate solutions for converting to LNG propulsion,” says Tauriainen. “They’ll find them at Alfa Laval. But we’ll also support customers as time goes on, so that they can achieve greater savings and peace of mind over their solution’s lifetime.”

To learn more about dual-fuel Alfa Laval Aalborg boiler solutions and the Alfa Laval GCU, as well as Alfa Laval’s approach to working with LNG, 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, 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.

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