Press release

25 March, 2014

LNG Carrier chooses Wärtsilä's new game-changing 2-stroke low-pressure dual-fuel engine as main propulsion

The new Wärtsilä low-pressure, 2-stroke, dual-fuel engine (DF), that meets the demand of the market, has been endorsed with an important new order. A 5-cylinder Wärtsilä RT-flex50DF engine, together with the gas valve unit and other relevant equipment, has been ordered for a new liquefied natural gas (LNG) carrier vessel being built for the Chinese ship owner and operator, Zhejiang Huaxiang Shipping Co.Ltd. The Qidong Fengshun Ship Heavy Industry Co., Ltd in China is building the new vessel according to the ship design by the Marine Design & Research Institute of China (MARIC) and the Chinese Class Society (CCS) standards. The contract was signed in March, 2014. When delivered in August 2015, the 14,000 cubic metre LNG carrier will operate along the Chinese coastline to serve domestic LNG transportation lines.

Wärtsilä unveiled its low-pressure, dual-fuel technology for 2-stroke engines in November of last year. The potential impact that this offers to the merchant marine market is such that the technology is being hailed as a 'game-changer' for the industry. It offers significant both capital expenditure (CAPEX) and operating expenditure (OPEX) benefits, and in gas mode is compliant with the IMO's Tier III emission regulations without need of any exhaust gas cleaning systems. Compared to other technologies, studies show that Wärtsilä's low pressure DF engines offer capital expenditure reductions of 15-20 per cent. On the OPEX side, the ability of low pressure DF engines to operate on gas at all loads, including idling and manoeuvring, substantially reduces costs.

The new 2-stroke DF application makes the use of LNG fuel available to virtually all vessel types. The Wärtsilä RT-flex50DF engine is the first of the new series to be manufactured.

"We feel that the Wärtsilä dual-fuel engine is excellent, especially the low pressure 2-stroke DF version, which we see as being an innovation that meets the demand of the market. As owners, we are very satisfied with this engine technology and believe that it will capture a large share of the market. We look forward to seeing this technology extended to cover other cylinder bores," says Mr Cai Dejiang, General Manager of Zhejiang Huaxiang.

"This second contract for the Wärtsilä low-speed dual-fuel engines in a few months demonstrates the fast market acceptance of this "game-changer" technology. This is the first time that Wärtsilä low-speed DF engine will power an LNG carrier. It represents a very feasible solution for this vessel class. The extension of Wärtsilä low-speed DF engine portfolio to bigger bore sizes such as the Wärtsilä X62DF and Wärtsilä X72DF engines will further expand the range of applications for the low-speed DF engine family to larger container vessels, tankers, LNG carriers and bulk carriers," says Mr Martin Wernli, Vice President 2-stroke, Wärtsilä Ship Power.

Wärtsilä's low pressure LNG concept is a lean burning Otto-cycle gas engine that has additional liquid fuel back-up capability, thereby enabling vessels to operate 100 per cent on LNG. This is in contrast to other systems utilising a high-pressure concept, which is merely a conventional diesel engine able to burn gas under certain conditions. Among other benefits, it offers simplicity, reliability, and the most economic gas supply system with the least number of components.

Zhejiang Huaxiang specialises in the safe transportation of LNG, and is one of the only two companies who have the Business Certificate of LNG transportation in coastal China issued by the Ministry of Transport of the People's Republic of China.

The Wärtsilä low-pressure 2-stroke dual-fuel engine technology
In addition to CAPEX and OPEX benefits, the new Wärtsilä low-pressure 2-stroke dual-fuel engine technology offers other competitive benefits. Most importantly, no investment is needed for exhaust gas cleaning systems in order to comply with the IMO's Tier III environmental regulations. An important advantage of the Wärtsilä low pressure DF technology is also that it allows stable operation on gas across the entire load range. This means that at low loads (below 15 per cent), there is no need to switch to diesel fuel.

The engine uses a low pressure gas handling system with a maximum 16 bar pressure. LNG and air are mixed in the cylinder prior to compression and, therefore, no additional external engine compressors are needed and additional parasitic load is avoided. Moreover, the consumption of pilot fuel is approximately just one per cent of the total energy at full load, and therefore the lowest for any low speed 2-stroke engine technology.

Wärtsilä introduced its third generation of Wärtsilä's 4-stroke DF engines in 1995. These engines combine fuel flexibility, environmental benefits, and high efficiency and reliability with low capital cost. Thus far more than 1000 Wärtsilä DF engines have been sold for both marine and land-based applications, accumulating more than 10 million running hours.

Link to picture of Wärtsilä RT-flex50DF engine

Read more:
New Terntank tankers will feature the first Wärtsilä 2-stroke, low pressure, dual-fuel

engines Wärtsilä Corporation, Press release, 2 December 2013

Wärtsilä introduces game-changing 2-stroke dual-fuel engine technology
Wärtsilä Corporation, Press release, 12 November 2013

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Wärtsilä in brief
Wärtsilä is a global leader in complete lifecycle power solutions for the marine and energy markets. By emphasising technological innovation and total efficiency, Wärtsilä maximizes the environmental and economic performance of the vessels and power plants of its customers. In 2013, Wärtsilä's net sales totalled EUR 4.7 billion with approximately 18,700 employees. The company has operations in more than 200 locations in nearly 70 countries around the world. Wärtsilä is listed on the NASDAQ OMX Helsinki, Finland.
www.wartsila.com