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## **WinGD further expands two-stroke DF order book**

Winterthur Gas & Diesel (WinGD) is supplying two 5-cylinder, 72 cm bore Wärtsilä brand dual-fuel engines 5X72DF from the WinGD X-DF series to power a new membrane LNG carrier (LNGC).

The LNGC is to be built by Daewoo Shipbuilding & Marine Engineering Co., Ltd (DSME) of Korea for leading shipper Mitsui OSK Lines (MOL) of Japan. It will transport gas in connection with an agreement that E.ON Global Commodities SE has concluded for shipping capacity with MOL.

With a gas carrying capacity of 179,900 m<sup>3</sup>, the 297.9 metre overall length, 47.9 metre beam vessel will be engaged in a 20-year free-on-board (FOB) off-take of approximately 800,000 tons per year of LNG, sourced from U.S. Gulf liquefaction projects, including the planned terminal near Freeport, Texas.

The official contract for the vessel between MOL and DSME was signed in February 2015 and the decision to adopt WinGD X-DF engines was taken in August. The first engine is due for delivery to the DSME shipyard in June 2017.

### **About WinGD low-pressure DF**

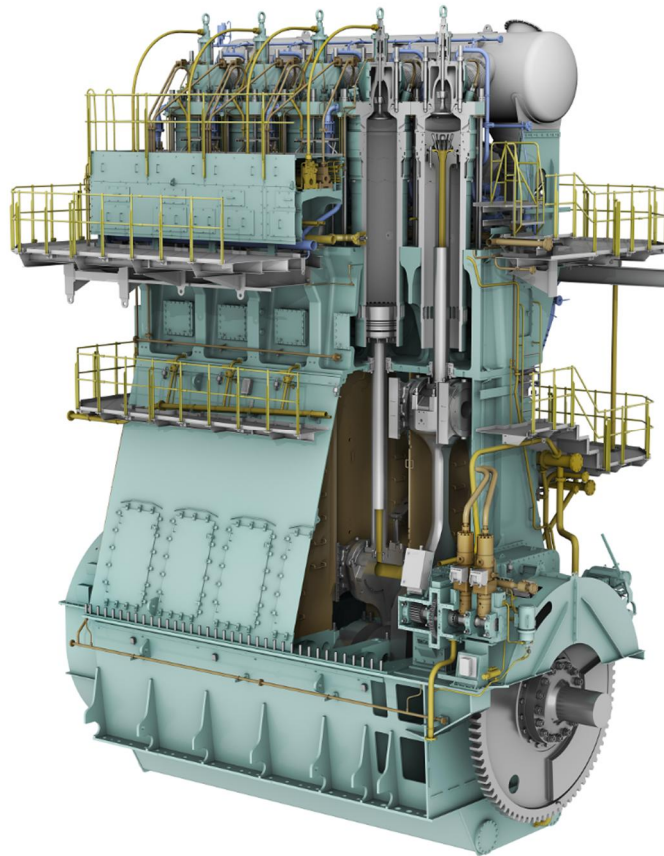
The low-pressure gas admission system being pursued by WinGD on its X-DF engines draws on Wärtsilä's long experience with what has become a well-proven industry standard technology on medium-speed dual-fuel engines. In contrast to high-pressure gas injection engines, which operate on the Diesel cycle, WinGD's low-pressure DF system works on the lean burn Otto cycle – i.e. ignition of a compressed lean air-gas mixture by injection of a small amount of liquid fuel.

As shown during 2015 on the X-DF technology demonstrator WinGD operates jointly with Japanese licensee Diesel United at the latter's works in Aioi, Japan, WinGD low-pressure gas admission is characterised by stable combustion, inherently low NO<sub>x</sub> emissions and high overall system efficiencies. In terms of NO<sub>x</sub>, WinGD X-DF engines undercut IMO Tier III limits for Emission Control Areas (ECAs) by considerable margins without any additional measures, such as EGR or SCR.

Moreover, with low-pressure gas admission the gas fuelling system on the X-DF engines does not require a high-pressure electrically-driven compressor, considerably reducing equipment costs, onboard energy consumption and maintenance.

"With the imminent implementation of the IMO Tier III regulations in Emission Control Areas for new vessels, we are registering an increasing interest in our X-DF series from markets worldwide, especially for the propulsion of LNG carriers." states Rolf Stiefel, Vice President Sales and Marketing at WinGD.

Photo:



5X72DF Engine cut-out view

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**WinGD in brief:**

Winterthur Gas & Diesel Ltd. (WinGD) is a leading developer of two-stroke low-speed gas and diesel engines used for propulsion power in merchant shipping. WinGD's target is to set the industry standard for reliability, efficiency and environmental friendliness. WinGD provides designs, licences and technical support to manufacturers, shipbuilders and ship operators worldwide. The engines are sold under the Wärtsilä brand name and are manufactured under licence in four shipbuilding countries. WinGD has its headquarters in Winterthur, Switzerland where, as one of the earliest exponents of diesel technology, it started the development of large internal combustion engines in 1898 under the "Sulzer" name.