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## WinGD X-DF Engines Power CMA CGM's Record Containerships

As the latest high point in an unbroken run of prestige contracts for its low-speed X-DF dual-fuel engines with low-pressure gas admission, Winterthur Gas & Diesel (WinGD) is pleased to announce that French shipping line CMA CGM, based in Marseille, has chosen WinGD's largest, 92 cm bore, dual-fuel low-speed engine to power what are presently the largest containerships ever ordered.

The 12-cylinder X92DF engines (12X92DF) will power a series of nine "mega" containerships, each with a record capacity of 22,000 TEU. The vessels ordered by CMA CGM will be built at the yards of *Hudong-Zhonghua Shipbuilding (Group) Co., Ltd.* and *Shanghai Waigaoqiao Shipbuilding Co., Ltd.* They are due to enter service in 2020 on routes between Asia and Europe and are designed to have the potential to sail complete Asia-to-Europe voyages on liquefied natural gas (LNG). The 12X92DF engines will be rated 63,840 kW at 80 rpm, making them the most powerful gas and dual-fuel engines ever built.

Beyond leveraging the operating economy and reliability of WinGD's X-DF engines, with this futuristic move CMA CGM is endorsing the outstanding performance of WinGD's dual-fuel engines with low-pressure gas admission as a way of addressing existing and upcoming regulations from the International Maritime Organization. "Given the low NO<sub>x</sub> emissions of dual-fuel engines using lean burn combustion and the extremely low sulphur content of natural gas, by choosing our X-DF engines and LNG, CMA CGM is automatically complying with all existing and future emissions regulations," says Volkmar Galke, General Manager of Sales at WinGD.

For CMA CGM, Ludovic Gérard, Vice President of Owned Fleet comments: "With this move to LNG energy, CMA CGM is moving ahead for a greener shipping. We selected WinGD engines for the main propulsion on the grounds of their experience in dual-fuel engines and our positive feedback on the two-stroke Generation X engines".

The regulations already met by the WinGD X-DF dual-fuel engines include the limits on NO<sub>x</sub> in Emission Control Areas (ECAs) imposed by IMO Tier III and the 0.5% limit on sulphur in fuel which will be introduced in 2020, as well as possible limits on particulates. "The built-in efficiency of our lean-burn dual-fuel engines is also complemented by the favourable ratio of carbon-to-hydrogen in methane – the main constituent of natural gas – which mean that our X-DF engines are already low emitters of CO<sub>2</sub> compared to liquid fuelled engines," Galke continues. "Our X-DF engines are thus an excellent starting point for playing a full part in achieving the 30% improvement in overall vessel efficiency up to 2025 specified by the IMO's Energy Efficiency Design Index (EEDI)."

Looking at the overall Total Cost of Ownership (TCO) of the new vessels, as well as operating expenditure (OPEX), capital expenditure (CAPEX) is also reduced because the emissions levels of WinGD X-DF engines are achieved without the need to install exhaust gas after treatment systems, and by the application of the low-pressure gas admission feature of the X-DF engines, which uses less expensive, more energy-efficient gaseous fuel compression equipment compared with low-speed dual-fuel engines requiring high pressure gas injection. In addition, WinGD's Generation X engines feature a series of designed-in measures which target increased ease-of-maintenance. It is these aspects that have helped WinGD substantially increase its market share since the introduction of its new diesel and dual-fuel engines. WinGD has so far received more than 75 orders for X-DF engines since their introduction to the market at the end of 2013. Besides being popular for application in LNG carriers for main propulsion, the number of orders received for cargo

ships operating on LNG has increased substantially in 2017, with over 25 engine orders received in the year to date.

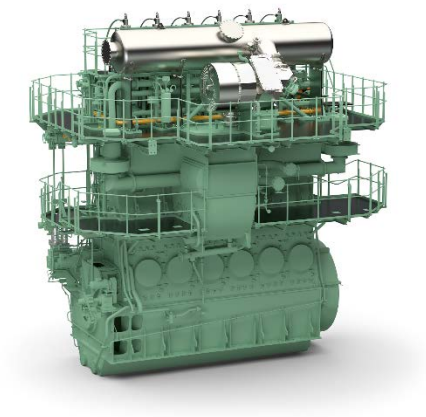
## **X-DF technology: environmental compatibility and economy**

To address demand for low-speed dual-fuel engines, WinGD has further developed for its two-stroke engines the lean burn Otto combustion process with low-pressure gas admission and micro-pilot ignition which is the global standard technology on medium speed dual-fuel engines.

WinGD's low-pressure dual-fuel technology is offered on all Generation X engines. It enables the very stable combustion, high fuel efficiency and low noxious and greenhouse gas emissions typical of lean burn gas combustion. X-DF engines comply with IMO Tier III limits on NOx in gas mode and IMO Tier II in liquid fuel mode, both without EGR or SCR.

With liquid fuel consumption for pilot ignition below 1% of total heat release and the very low sulphur content of LNG, WinGD also sees X-DF technology as the ideal solution to the 0.5% global cap on sulphur in marine fuels proposed for 1<sup>st</sup> January 2020.

X-DF engines also fulfil WinGD's target of lower capital expenditure (CAPEX) and operating expenditure (OPEX). Complementing the designed-in low maintenance of Generation X engines, low-pressure gas admission considerably reduces CAPEX and OPEX associated with the high-pressure gas compression and supply equipment needed on low-speed engines with high pressure gas injection.



*Caption: WinGD X-DF engine with low-pressure gas admission*

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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 WinGD brand name and are manufactured under licence in four shipbuilding countries. WinGD has its headquarters in Winterthur, Switzerland, where its activities were founded in 1898.