

19 January 2016

First Low-pressure Dual-fuel Wärtsilä X-DF Two-stroke Engine for Commercial Use passes Type Approval Test

Initial application will be in prestige environmental project

The first dual-fuel two-stroke engine designed and developed by Winterthur Gas & Diesel (WinGD) equipped with a low-pressure gas admission system has successfully completed its Type Approval Test (TAT).

The TAT took place at the works of WinGD's Chinese licensee Yuchai Marine Power Co., Ltd. (YCMP), based in Zhuhai, China in early December 2015. The TAT, on a 5 cylinder, 500 mm bore Wärtsilä brand RT-flex50DF engine employing WinGD's dual-fuel (X-DF) technology, was witnessed by representatives from major Classification Societies ABS, BV, CCS, DNV-GL, KR, LR, NK and RINA.

With the TAT successfully completed, WinGD's low-pressure dual-fuel technology, referred to as "X-DF" is now fully ready for commercial use in marine propulsion applications. Accordingly, this particular YCMP-built 5RT-flex50DF engine will be delivered in January 2016 to the shipyard building four 15,000 DWT tankers ordered by Terntank Rederi A/S, based in Skagen, Denmark as propulsion power. The tankers will operate mostly in northern European waters designated as Sulphur Emission Control Areas (SECAs).

Further distinctions

The YCMP-built 5RT-flex50DF will enjoy two further distinctions. As well as being the first engine with WinGD's two-stroke low-pressure dual-fuel X-DF technology for a commercial application, it represents a central element in the implementation of an EU-supported Joint Industry Project (JIP) aiming at greatly improving the environmental compatibility of energy transportation in the Baltic sea.

Under the title "Into The Future – Baltic SO₂lution", the project centres on cooperation between shipowner Terntank, marine solutions provider Wärtsilä, engine designer Winterthur Gas & Diesel, fuel and bio-products supplier North European Oil Trade (NEOT) and energy and environmental consultant Wega Enviro. It promotes the development of more environmentally sustainable and energy-efficient shipping in the Baltic Sea, and aims to validate dual-fuel propulsion concepts at sea, based on the high efficiency and intrinsically low emissions of SO_x, NO_x and particulates of engines burning LNG.

Accordingly, the RT-flex50DF engines with X-DF technology were chosen for the Terntank tankers due to their ability to achieve emissions of SO_x and particulate matter at very low levels, NO_x emissions are far below the levels demanded by IMO Tier III in ECAs. CO₂ emissions are reduced by some 25 percent compared to conventional diesel engine operated on low sulphur diesel fuel.

In addition to the Terntank application of WinGD X-DF technology, the EU funded project also plans to promote retrofits of this more environmentally-friendly propulsion technology to achieve emissions reductions from existing vessels and, in parallel, the building of the prerequisite LNG infrastructure in the Baltic region.

"The successful TAT is proof that WinGD low-pressure X-DF Technology is not only commercially competitive, but also fulfils all the safety standards required", notes Mr. Marcel Ott, General Manager Dual-fuel Technology at WinGD's headquarters in Winterthur, Switzerland. "And, at the same time, the adoption of the RT-flex50DF engine for the Baltic SO₂lution shows that the technology is already acknowledged as a very environmentally-friendly propulsion option".

About Winterthur Gas & Diesel low-pressure DF technology

The low-pressure gas admission system designed and developed by WinGD for its X-DF engine series 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 X-DF engines work on the lean burn Otto cycle when operated in gas mode – i.e. ignition of a compressed lean air-gas mixture by injection of a very small amount of liquid pilot fuel.

As demonstrated during the Type Approval Test, WinGD X-DF engines are characterised by stable combustion inherently low NO_x emissions and high overall system efficiencies as well as safe gas operation. In terms of NO_x, 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 while running on gas.

Moreover, with the low-pressure gas admission the gas fuelling system on the X-DF engine series does not require any high-pressure electrically-driven compressors, considerably reducing equipment costs, on-board energy consumption and maintenance during operation.

Photo:



Caption: The Winterthur Gas & Diesel type Wärtsilä 5RT-flex50DF two-stroke engine with low-pressure dual-fuel technology during its Type Approval Test at the works of licensee YCMP at Zhuhai, China.

Media Contacts:

Mr. Marcel Ott

General Manager, Dual-Fuel Technology
Winterthur Gas & Diesel Ltd.

marcel.ott@wingd.com

Tel.: +41 52 262 2487

Ms. Rong Lin

Marketing Manager
Winterthur Gas & Diesel Ltd.

rong.lin@wingd.com

Tel.: +41 52 262 2211

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.