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## **Chinese Ceremony Launches New Blower for Tier III Compliance; First Order Already Won**

**ETB (Electrical Turbo Blower) raises exhaust-gas pressure to overcome the pressure difference between exhaust gas and scavenging air receiver by actively controlling the exhaust gas flow; strategic step to bring development in-house; design focuses on cost-optimisation and compactness**

MAN Energy Solutions has launched its new EGR (Exhaust Gas Recirculation) electrical turbo blower – designated ETB40 – at a ceremony in Shanghai attended by some 120 industry guests and hosted by its two-stroke licensee, CSSC-MES Diesel Co. Ltd. (CMD).

Simultaneously, CMD announced that it has placed the first order for the new blower in connection with the construction of several MAN B&W two-stroke 7G60ME-C9.5 main engines for newbuilding vessels.

Individual ETB40 units will be installed aboard each vessel as part of their main-engines' integrated EGR system. The order also represents the first time that CMD has employed EGR technology for compliance with IMO Tier III regulations, having previously commissioned several successful SCR (Selective Catalytic Reduction) applications.

Ralph Klaunig, Vice President and Head of Turbocharger and Exhaust Gas Systems Sales, MAN Energy Solutions, said: "Our development of the ETB series is a strategic decision and a significant addition to our existing, proven EGR technology that will play an important role in maintaining IMO Tier III emission standards. This will enable customers to achieve sustainable value creation in the transition towards a carbon-neutral future. In taking this step, we are making use of our in-house turbocharger technology that features a significantly higher thermodynamic efficiency than previous designs."

Klaunig continued: "The development of the ETB series is the next logical step toward complementing MAN Energy Solutions' EGR IMO Tier III solution packages for customers, and to ensure that there is a significant cost-down on all major components. The key to success will be continuous development and to ensure that the ETB remains the most cost-effective blower on the market."

Shuhei Kajihara, President of CMD, said: "First of all we are very proud to be the first Chinese EGR engine manufacturer. This was possible, because MAN and CMD worked closely together in finalising this first-of-its-kind project. Despite a challenging delivery time, the teams managed to perform really well. I especially appreciate MAN's continuous updates about the latest stages of development and their support in our factory during installation and commissioning."

## About the MAN ETB

Specifically designed for EGR systems, the MAN ETB's active control plays an important role in enabling these systems to reach IMO Tier III emission standards. The blower is a core component of MAN Energy Solutions' high-pressure EGR system that raises the exhaust-gas pressure in order to overcome the pressure difference exhaust gas and scavenging air receiver. In addition the blower actively controls the recirculated exhaust gas flow during the EGR flow by varying the blower speed.

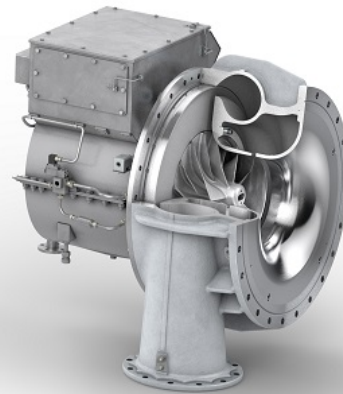
The desired EGR operating conditions are achieved by using a high-speed electric motor, directly coupled to the compressor wheel and speed controlled by a frequency converter. The MAN ETB features a highly-efficient blower wheel, optimised for the low-pressure ratios found in a two-stroke diesel engine and whose materials are designed to withstand corrosive agents. High blower-availability (even during continuous operation) and variable-speed operation ensure IMO Tier III compliance in emission-controlled areas (ECAs), and potentially also in IMO TIER II mode with the new Eco EGR feature (officially acknowledged by DNV GL).

Since May 2015, 2 × ETB18 prototypes have run successfully on an 82,000-dwt bulk carrier equipped with an MAN B&W 6S60ME-C 8.2 Tier III engine. The ETB40 passed its FAT (Factory Acceptance Test) on October 17th.

## MAN's EGR system

As an alternative to the SCR method within MAN Energy Solutions' Tier III programme, the EGR method is regarded as a very efficient means by which to reduce NO<sub>x</sub> in combustion engines. As such, the MAN ETB EGR-blower is suitable for high-pressure EGR engines of all fuel types and in all application ranges. In contrast with SCR systems, EGR systems are integrated with the engine and of a significantly smaller size.

In developing the ETB range, MAN Energy Solutions has focused on a cost-optimised and compact design that has the ability to cover the entire MAN two-stroke engine portfolio with just two frame sizes, ETB40 and ETB30 – MAN Energy Solutions' reports that the smaller ETB30 blower will soon be available.



*MAN Energy Solutions' Electrical Turbo Blower (ETB) is a high-efficiency blower that ensures that exhaust gasses being returned to the combustion process reach the same pressure as the normal scavenging air and the variable speed controls the recirculated exhaust gas flow in order to fulfill TIER III NOx regulations.*

*Based on MAN's radial compressor competence, the ETB's focus is on cost optimisation and a compact design. It has a modular concept to match that of MAN Energy Solutions' EGR systems, and is a robust and cost-effective solution with the lowest possible power consumption that readily integrates into all types of EGR engine.*



*Attendees at the launch of the new EGR electrical turbo blower – designated ETB40 – in Shanghai hosted by MAN Energy Solutions' two-stroke licensee, CSSC-MES Diesel Co. Ltd. (CMD)*

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MAN Energy Solutions enables its customers to achieve sustainable value creation in the transition towards a carbon neutral future. Addressing tomorrow's challenges within the marine, energy and industrial sectors, we improve efficiency and performance at a systemic level. Leading the way in advanced engineering for more than 250 years, we provide a unique portfolio of technologies. Headquartered in Germany, MAN Energy Solutions employs some 14,000 people at over 120 sites globally. Our after-sales brand, MAN PrimeServ, offers a vast network of service centres to our customers all over the world.