



MAN Diesel Contract for VTA Turbochargers

Concordia Maritime and Total Buy Fuel-Saving Turbocharger Technology

29 October, 2008. Concordia Maritime and French energy company Total have jointly taken the decision to install MAN Diesel turbochargers with the VTA variable turbine area technology aboard a new tanker.

The turbochargers with VTA technology will equip the MAN B&W brand type 6S46MC-C low-speed engines aboard the new tanker *Stena Progress*. On the basis of earlier trials, they are expected to reduce fuel consumption by around 2-3% with parallel reductions in exhaust emissions.

“We are always interested in new energy saving technologies,” noted Hans Norén, President, Concordia Maritime. “When approached by MAN Diesel about employing VTA we decided right away that this was something we wanted to participate in. It has been tested onboard our ship *Stena President* with very positive results and, as a consequence, we and our customer Total have decided to install VTA turbochargers onboard the *Stena Progress*.”

Stena Progress is a 65,200 DWT shallow-draught ice class tanker of the P-MAX type under construction for Concordia Maritime at the Brodosplit shipyard in Split, Croatia, where the main engines will also be built under licence. The tanker is due for delivery in June 2009 and will be chartered to

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Total for 5 years. MAN Diesel type TCA55V turbochargers – the “V” suffix denotes the inclusion of variable turbine area technology – will be used on both the six-cylinder 6S46MC-C low-speed main engines aboard the *Stena Progress* and other P-MAXs.

MAN Diesel noted that the results of field testing aboard the *Stena President* were closely monitored and exceeded expectations, leading Concordia Maritime to the decision to equip the engines of other P-MAXs with VTA turbochargers. All the parties involved with the operation of the ships – Owner Concordia Maritime, Commercial Manager Stena Bulk and Total on the Charterer side – have expressed their enthusiasm for both the reduced fuel consumption and reduced emissions of the ships with VTA turbocharging.

“These tankers’ routes include arctic waters, which means varying ice conditions and thus highly variable load profiles,” stated Jacob Norrby, Naval Architect, at Stena Teknik. “By allowing charge-air delivery to be optimised at all engine loads, the TCA55V turbochargers give the engines better response to load changes, improved emissions at part load and, most importantly, the 2 to 3% reduction in fuel consumption. So as well as low noxious emissions, we are also reducing emissions of greenhouse gases to the atmosphere.”

MAN Diesel VTA Technology

In MAN Diesel TCA axial and TCR radial turbochargers with VTA technology, fixed-vane nozzle rings are substituted by nozzle rings with adjustable vanes. Under electronic control, vane pitch is adjusted to regulate the pressure of the exhaust gases on the turbocharger turbine and so vary

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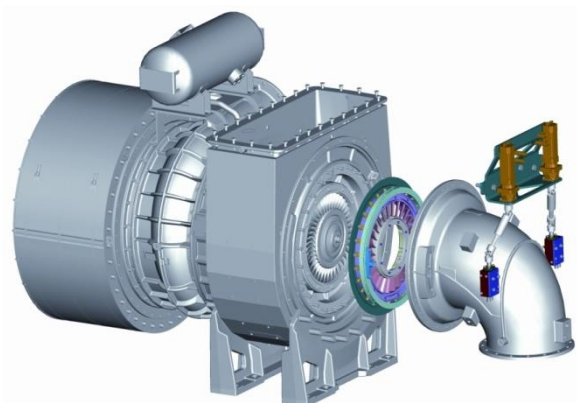
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the output of the turbocharger compressor. The quantity of charge air entering the cylinder can be more precisely matched to the quantity of fuel injected, allowing combustion to be optimised over the complete engine-operating profile. According to turbocharger type, VTA technology can also be retrofitted to turbochargers already in service.

Project Manager Jacob Norrby of Stena Teknik, representing the owners and Ralf Grosshauser, Turbocharger business unit vice president for MAN Diesel celebrate the contract covering type TCA55V VTA turbochargers for use in new tankers at the recent SMM marine trade show.



VTA turbochargers from MAN Diesel feature a nozzle ring with adjustable vanes. Seen here is the axial variant for the TCA axial turbocharger. The VTA nozzle ring and its control and actuation system are modular and occupy the same position as a fixed-vane nozzle ring. It can be retrofitted to turbochargers already in the field.

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The MAN Diesel VTA system was tested on the turbocharger of one of the 46-cm bore MAN B&W 6S46MC-C engines powering the P-MAX, ice class shallow-draught tanker, Stena President.

About MAN Diesel

MAN Diesel is the world's leading provider of large-bore diesel engines for marine and power plant applications. The company designs two-stroke and four-stroke engines, generating sets, turbochargers, CP propellers and complete propulsion packages that are manufactured both by MAN Diesel and its licensees. The engines have power outputs ranging from 450 to 97,300 kW. MAN Diesel employs over 7,700 staff, primarily in Germany, Denmark, France, the Czech Republic, India and China. The global after-sales organisation, MAN Diesel PrimeServ, comprises a network of the company's own service centres, supported by authorised partners. MAN Diesel is a company of MAN AG, which is listed on the DAX share index of the 30 leading companies in Germany.

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