



Natural gas – the fuel of the future

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## **MAN Diesel & Turbo supplies eco-friendly engines for new North Sea ferries**

**Augsburg-based manufacturer of large-bore diesel engines and turbomachinery, MAN Diesel & Turbo, has received an order from the Norwegian shipyard Bergen Group Fosen for a total of 14 diesel engines and their associated generators. MAN Diesel & Turbo will be supplying eight main 10L32/44CR engines and six L21/31 auxiliary engines together with two RENK gearboxes for the construction of two new ferries. The engines will initially be operated with conventional fuel, and then from 2016, switched to operation with eco-friendly natural gas.**

The car ferries, which offer the comfort of a cruise liner, will be in daily use from 2012 on routes between Denmark and Norway, carrying up to 1,500 passengers and 600 vehicles. They will be operated by the Norwegian ferry company Fjord Line.

Bergen Group Fosen and Fjord Line chose the well-proven MAN 32/44CR common rail engine for their main engines, since it combines low emissions with excellent fuel efficiency. In the chosen design, a ten-cylinder series engine, an assembly can deliver 5,600 kW (approx. 7,600 hp). The engines' eco-friendliness is of particular importance, since the North and Baltic Seas are Emission Controlled Areas in which particularly stringent emissions legislation is due to come into force.

To comply with these strict specifications, the plan is to convert the engines at a later point in time with a retrofit into dual-fuel engines. Currently this is still being developed and will therefore be installed within the next few years by the after-sales division, MAN PrimeServ. This retrofit will enable the engines to be switched at the press of a button, from operation with liquid fuel to eco-friendly natural gas. Dual fuel engines running on gas generate around 80 per cent fewer nitric oxides, virtually no sulphur emissions and around 95 per cent fewer particles in the exhaust gas than when they are run on heavy fuel oil. The amount of CO<sub>2</sub> is also reduced significantly. Assuming around 6,000 operating hours per engine a year, the two ferries will save around 12,000

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tonnes of CO<sub>2</sub> each. The gas tanks required on board have already been considered in the design phase.

Many liquid gas tankers are already equipped with dual-fuel engines by MAN Diesel & Turbo. The evaporating gas from the loading tanks on these ships is not lost, but can instead be used in a very energy-efficient way to power the prime mover. MAN Diesel & Turbo's dual-fuel engines are enjoying increasing popularity for stationary applications, too – if there are problems with the gas infrastructure, for instance, power plant operators can effortlessly switch to liquid fuel and thus maintain electricity production without interruptions.

**About MAN Diesel & Turbo**

MAN Diesel & Turbo SE, based in Augsburg, Germany, is the world's leading provider of large-bore diesel engines and turbomachinery for marine and stationary applications. It designs two-stroke and four-stroke engines that are manufactured both by the company and by its licensees. The engines have power outputs ranging from 450 kW to 87 MW. MAN Diesel & Turbo also designs and manufactures gas turbines of up to 50 MW, steam turbines of up to 150 MW and compressors with volume flows of up to 1.5 million m<sup>3</sup>/h and pressures of up to 1,000 bar. The product range is rounded off by turbochargers, CP propellers, gas engines and chemical reactors. MAN Diesel & Turbo's range of goods includes complete marine propulsion systems, turbomachinery units for the oil & gas as well as the process industries and turnkey power plants. Customers receive worldwide after-sales services marketed under the MAN PrimeServ brand. The company employs around 12,700 staff at more than 100 international sites, primarily in Germany, Denmark, France, Switzerland, the Czech Republic, Italy, India and China. MAN Diesel & Turbo is a company of the Power Engineering business area of MAN SE, which is listed on the DAX share index of the 30 leading companies in Germany.