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## **MAN Propulsion Package for Baltic RoPax Newbuilding Reduces Emissions by 50%**

### **First four-stroke, diesel-mechanical MAN dual-fuel solution for LNG-operated ferry**

The Jinling Shipyard in China has ordered 4 x MAN 51/60DF engines in connection with the building of 1 + 1 x 230-metre-long RoPax vessels for TT-Line, the German ferry operator. The vessel will feature a complete MAN propulsion package, besides the engines, including propellers, a fuel-gas-supply system (FGSS), and HyProp ECO – MAN's innovative, fuel-saving, hybrid propulsion system.

The newbuilding is based on TT-Line's 'Green Ship' design, developed in collaboration with Copenhagen-based designer, OSK-Shiptech, and is scheduled for delivery in 2022, whereupon it is expected to enter service within TT-Line's route network in the Baltic Sea. Operating on LNG, the new vessels will have 50% fewer emissions than TT-Line's previous generation of vessels.

Wayne Jones OBE – Chief Sales Officer and Member of the Executive Board, MAN Energy Solutions – said: "This is a prime example of what we do best – using all our resources to help our customers optimise their vessels' efficiency and emission metrics with a unique solution. The result speaks for itself."

Lex Nijsen, Head of Four-Stroke Marine Sales – MAN Energy Solutions, said: "Running on LNG, our propulsion package will enable this vessel to operate on such low emissions that it will become the most environmentally friendly RoPax ferry in the Baltic. Our business, to a great extent, is based on offering systems such as this that help our customers to increase the efficiency of their plants and reduce emissions, while leading the way to a carbon-neutral future."

MAN Energy Solutions will provide the scope of supply in association with Aspin Kemp & Associates (AKA), in which it has a 40% stake. AKA specialises in power supply, energy management and drive systems for marine and industrial applications.

Similarly, MAN Energy Solutions' fuel-gas specialist – MAN Cryo – will supply the new vessel's fuel-gas-supply system. MAN Cryo offers systems for the storage, distribution and handling of liquefied gases and was fully integrated into the company in 2015.

Nijsen added: "This order is the very first four-stroke, MAN dual-fuel, diesel-mechanical propulsion system for a ferry application, which reflects our strategic direction of developing sustainable technologies and solutions – as shown by the contribution of AKA and MAN Cryo. It also fulfills our desire to increasingly become a supplier of complete solutions."

Upon construction, the newbuilding will have the capacity for 800 passengers and over 200 articulated lorries. While designing the vessel, a particular emphasis was put on flexibility and fast, in-port turnaround-times. TT-Line currently has six ferries operating on various routes in the Baltic Sea.

MAN Energy Solutions' scope of supply covers:

- 2 x 8L51/60DF + 2 x 6L51/60DF MAN engines offering a total power of 29,400 kW
- MAN Alpha twin-screw CPP propellers
- 2 x twin-in, single-out gearboxes
- An MAN Cryo FGSS featuring 2 x 500-m<sup>3</sup> vacuum insulated Type-C tanks
- AKA's advanced HyProp ECO system
- AKA drives, electric generators and motors for the PTO and bow thrusters.

In respect to the last point, five different operational modes for the shaft alternator (PTO) will enable a fuel-saving power generation in combination with a smart and flexible supply of the bow thrusters.

### **About HyProp ECO**

HyProp ECO is a system solution that combines a diesel engine with a frequency-converter-driven shaft-alternator/motor and features multiple operational modes. The system combines the advantages of a bi-directional operating frequency converter for the shaft machine with a high-efficiency CP propeller plant. HyProp ECO is also open for shore connection and the integration of energy-storage devices/batteries.

### **The Maritime Energy Transition**

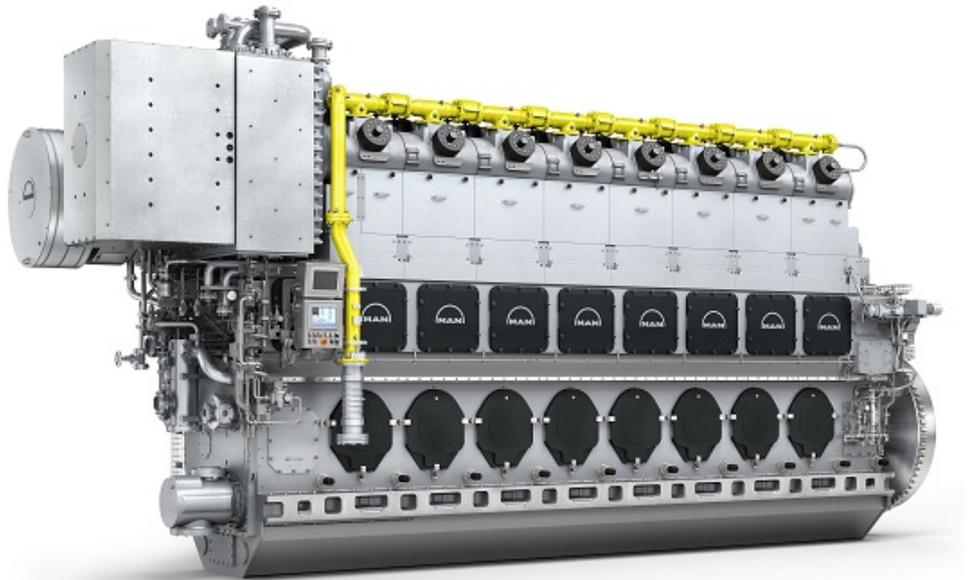
The new TT-Line order is part of the 'Maritime Energy Transition', an umbrella term that covers all MAN Energy Solutions activities in regard to supporting a climate-neutral shipping industry.

The term stems from the German expression 'Energiewende' and encapsulates MAN Energy Solutions' call to action to reduce emissions and, among other initiatives, establish natural gases as the fuels of choice in global shipping.

Launched in 2016 after COP 21, the initiative has since found broad support within the shipping industry and politics.

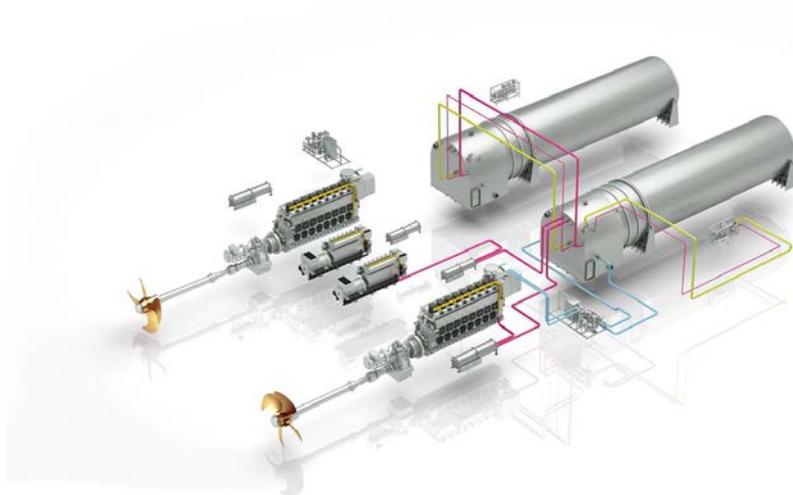
### **About TT-Line**

Based in Travemünde, Germany, TT-Line is the market leader in direct transport between Germany, Poland and Sweden, and carries nearly 900,000 passengers, 180,000 cars and more than 400,000 freight units annually. Typically, the company's ferries transport up to 6,500 passengers daily.



*The MAN 51/60DF engine is a dual-fuel engine that converts liquid fuel (diesel operation) or natural gas into electrical power efficiently and with low emissions.*

*The engine is able to switch smoothly and seamlessly from gas to liquid fuel operation (and vice versa) at full load without any output and speed fluctuations. This feature makes it possible to use the engine in many different applications with a variety of fuels.*



*MAN Cryo is a world leader in the development of LNG fuel gas supply systems to the marine sector. Cryo has developed & delivered over 45 Fuel-Gas Systems. MAN Cryo will play an important part in bridging the transition from diesel to future power sources in the maritime industry.*



*Rendering of the new “Green Ship” RoPax vessel (image courtesy TT-Line)*

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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.