



MAN Engines presents sustainable propulsion solutions for workboats at SMM

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Hybrid system: MAN Engines supplies complete system and individual configuration based on series components

Dual fuel hydrogen engine: Retrofit of V12 marine diesel engine with output of 749 kW

MAN Engines is focusing on sustainable propulsion solutions at SMM 2022 and is presenting two ways of reducing CO₂ emissions for workboats. The MAN Smart HYBRID Experience enables sailing and anchoring without any emissions, and with the dual fuel engine, exhaust emissions can be noticeably reduced when operating on hydrogen. "Our goal is to support our customers with environmentally friendly drives. MAN Engines offers a wide range of solutions for this," states Mikael Lindner, Head of MAN Engines.

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The MAN Smart HYBRID Experience is based on a conventional marine engine, which is connected to the permanent-magnet synchronous motor/alternator by an electromagnetic clutch. The marine gearbox is in turn flanged to this via another clutch. The electric motor generator unit from the MAN Smart HYBRID Experience can produce a rated power of 184 kW or 368 kW, at an extremely high efficiency rating of up to 96 per cent. The permanent-magnet synchronous motor/alternator is 160 mm long at 184 kW, or 320 mm at 368 kW. Its diameter is 560 mm. The electromagnetic clutch means that the engines do not have to be stopped to change the operating mode. This changeover can be made during operation – including as an emergency function – without interrupting the power, making operation much more convenient.

The MAN Smart HYBRID Experience was first introduced for yacht applications in 2021. Because it can be combined with all MAN marine engines of the current D2862 (V12), D2868 (V8) and D2676 (R6) series, it can also be used to upgrade the output of engines for light, medium and heavy-duty applications in commercial shipping.

MAN Truck & Bus is one of Europe's leading commercial vehicle manufacturers and transport solution providers, with an annual revenue of just under 11 billion euros (2021). The company's product portfolio includes vans, trucks, buses/coaches and diesel and gas engines along with services related to passenger and cargo transport. MAN Truck & Bus is a company of TRATON GROUP and employs more than 34,000 people worldwide.



This enables overall system outputs for each driveline ranging from 147 kW to 1838 kW (200 hp to 2500 hp) to be represented and degrees of hybridisation of up to 71 per cent of the total output to be achieved.

The MAN Smart HYBRID Experience can be configured for the most diverse requirements of ferries, pilot and patrol boats, for example, according to the system designs of performance, efficiency or comfort. Their different Zero Emission, Diesel-Electric, Cross-Over, Hotel, Boost and Diesel operating modes enable economical operation, an increase in range and access to ECAs (Emission Controlled Areas) thanks to emission-free operation, or additional power as a power boost. In Hotel mode, the battery capacity can also be used when the boat is docked. The high-voltage battery of the plug-in hybrid system is charged via the integrated shore connection or by the diesel engines or on-board generator sets when the boat is on the move.

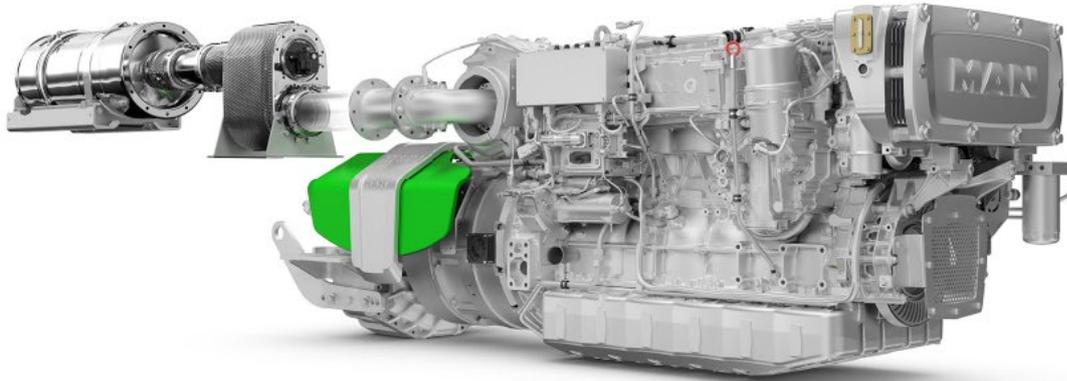
At the moment, MAN Engines is still using battery systems from different manufacturers for the MAN Smart HYBRID Experience. These are connected in series in a modular fashion and are designed as high-energy cells with a voltage > 600 V. This results in flexible battery operation between 500 V and 750 V in the intermediate circuit. This enables quick charging of the batteries, and provides the basis for major energy consumers such as the boost function. At the same time, the highest safety standards are guaranteed as the drive system has been approved by classification societies.

With the MAN Smart HYBRID Experience, MAN Engines is the first engine supplier to offer a complete hybrid system from a single source. MAN Engines supervises shipyards and boat designers from the planning and concept phase through development, consultation on installation and technical implementation including control software, to service and maintenance. This means that B2B partners benefit from more than just intensive consultation and simplified processes throughout all stages. An additional point in MAN Engines' favour as a system supplier is the perfect coordination of complex components such as diesel engines and electric motors, batteries, power electronics and the on-board voltage system, both with one another and with the application itself.

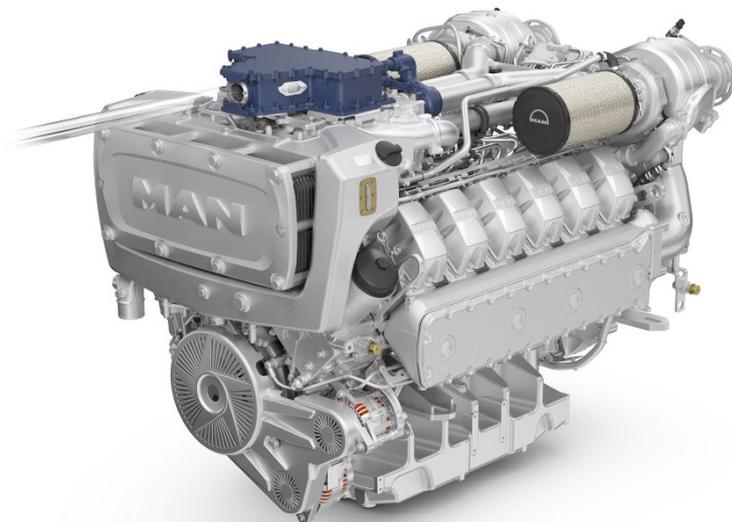


MAN Engines will be presenting an exhibit of the MAN Smart HYBRID Experience based on its D26 in-line six-cylinder engine with an electric motor with an output of 184 kW and aftertreatment system at its stand 211 in Hall A3 at the SMM in Hamburg from 6th to 9th September. In this combination, a system output of up to 1100 hp (809 kW) can be represented.

In addition, MAN Engines will present a dual fuel hydrogen engine with SCR system. The first two engines of this type were handed over back on 10th May 2022 for series operation powered by hydrogen on a workboat. The MAN dual fuel hydrogen engine is a twelve-cylinder diesel engine of the type MAN D2862 LE448 with 749 kW (1019 hp) at 2100 rpm. This was prepared by MAN Engines for dual fuel operation and supplemented with a hydrogen injection system from development partner CMB.TECH.



Among other things, a greater range or emission-free operation is possible: The MAN Smart HYBRID Experience makes it possible. On show at SMM 2022 in Hamburg.



The V12 dual fuel hydrogen engine from MAN Engines is already in operation.