



EnergyDecentral: greater output and efficiency for MAN's new E3262 naturally-aspirated engine

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Meeting TA Luft's amended air pollution requirements now and in the future; 275 kW and 93.6% overall efficiency; the convenience of a data logger

MAN Engines will be unveiling their new E3262 E302 natural-gas engine for co-generation plants at this year's 'EnergyDecentral' trade fair. Thanks to stoichiometric combustion ($\lambda=1$), a three-way catalytic converter is all that is needed to reduce nitrogen oxides and carbon monoxide on this twelve-cylinder engine. "Avoiding the use of an SCR system has resulted in a highly efficient and, above all, cost-effective exhaust gas aftertreatment system that enables even very low local emissions limits to be met," says, Hubert Gossner, Head of Power MAN Engines.

In other words, the MAN engine, in combination with suitable exhaust gas aftertreatment systems, is an effective way of meeting all currently applicable emissions guidelines around the world. Furthermore, the MAN E3262 E302 achieves a carbon monoxide value of $< 100 \text{ mg/Nm}^3$, which lies below the limits currently being discussed for the amendment to the Technical Instructions on Air Quality Control ('TA Luft').

Achieving an output of $275 \text{ kW}_{\text{mech}}$ at 1500 rpm (50 Hz), the twelve-cylinder engine outperforms its predecessor, the E2842 E312 naturally-aspirated engine, by ten percent. MAN engineers were able to increase output by enlarging the bore to 132 mm, which has increased cubic capacity to 25.8 L. Optimised combustion and a cylinder head with four-valve technology, meanwhile, have helped to increase overall efficiency to 93.6%. Contributing to the latter are a thermal efficiency of 54% and an outstanding mechanical efficiency of 39.6% representing improvements of more than six percent and 2.4 percent respectively.

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Increased output and improved efficiency aside, the latest naturally-aspirated engine from MAN Engines also provides extra convenience:

The E3262 E302 is available ex-works with a data logger, with standardised sensors and sensor positions, as well as a built-in cable harness. Via a CAN interface, important engine parameters such as exhaust gas temperature, oil pressure/temperature, mixture and coolant temperature, as well as the charge pressure, can be retrieved and provided for the system controls with minimum effort.

Of the components of the E3262 E302, the crankcase with optimised flow is most certainly a highlight: thanks to 30 percent less pressure loss, it is possible to reduce output for the coolant pump, which in turn reduces the co-generation plant's own consumption. Further savings can potentially be made through the co-generation plant's water-cooled exhaust pipes, which lower the exhaust gas temperature thus enabling the use of a smaller exhaust gas heat exchanger.

Furthermore, the E3262 E302 structure uses well-engineered components which underline the quality for which MAN is known: the basic power unit in the new naturally-aspirated engine, for instance, has proven itself in the turbocharged E3262 LE202 lean-burn engine, which was launched on the market in 2012, and has hundreds of instances currently in operation. In addition the E3262 E302 naturally-aspirated engine has already performed superbly in field trials. Years of experience with engines, combined with in-house development, design and production at the International Engine Competence Centre in Nuremberg ensure the high quality of MAN's well-established gas engines right across the board.

In order to comply with the amended 'TA Luft' statutory particle count limit from 2019, MAN is also using space-saving modular exhaust gas aftertreatment (AGN) on its turbocharged lean-burn engines. This technology is already successfully in use in mobile applications, where it is proving its worth in the narrow confines of engine compartments. The separate yet flexible SCR system positioning means that packagers have more flexibility in complex assembly situations and limited installation spaces than with a bulky integrated one-piece solution. Packagers and end customers also appreciate the low amount of maintenance required for the

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components. Modular AGN is currently demonstrating its practicality in on-going field trials in co-generation plants operating at 50 Hz (1500 rpm) and 60 Hz (1800 rpm).

MAN Engines will be unveiling its new E3262 E302 naturally-aspirated engine and modular exhaust gas aftertreatment at stand A11, hall 24, at the EnergyDecentral trade fair in Hanover, Germany, from 15 to 18 November 2016.