Press Release
**MAN Truck & Bus**

# Powerful, economical and designed for endurance: MAN introduces new engine family at the bauma 2019

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**MAN Truck & Bus introduces its reworked engine family at the world's largest trade fair for construction machines, equipment and vehicles. The D08, D26 and D38 benefit from numerous technical innovations with even better performance and efficiency. The MAN D15 is an entirely re-developed engine, introduced to fill a position in the middle performance segment of 330 to 400 hp.**

- **New MAN engine family at the Bauma 2019 with improved efficiency, performance and robustness for all transportation disciplines**
- **The new MAN D15 engine launched for the first time at the Bauma 2019 for trucks**
- **MAN D26, D38 and D08 will now be available with numerous technical innovations and optimisations to help you move up a gear**

## MAN D15 – new top performer for the middle segment

The new addition to the MAN engine family is extremely versatile. The completely re-developed D15 features a nine-litre displacement (9037 $cm^3$) and a performance range of 330 hp (243 kW), 360 hp (265 kW) and 400 hp (294 kW), and is not only exceptionally powerful, but also very light and robust thanks to its compact and simplified design. Even at low speeds, it generates between 1600 and 1800 Newton metres of maximum torque, and its excellent ratio of weight, size and consumption make it the ideal drive for weight-sensitive construction applications, medium and heavy distribution transport, as well as light long-haul transport. The D15 is therefore the perfect addition to the larger D26 in the TGS vehicle series. New computer-supported design methods and the use of different materials which are optimally adapted to the application, make the new D15 approximately 230 kg lighter compared to the previously available D20 engine, which it is replacing in the middle segment of the MAN engine portfolio in the future.

With the D15, MAN relies on exhaust gas aftertreatment based on the further developed SCR technology (Selective Catalytic Reduction) combined with the self-regenerating MAN CRT (continuously regenerating trap) filter system. This form of exhaust gas aftertreatment reduces the production of noxious $NO_X$ emissions (nitrogen oxide) to almost zero. In this context, MAN's new engine generation is being implemented across the entire TG series, meaning that these will have a modular exhaust gas aftertreatment system. It is based on two variants which are used depending on the vehicle series: the larger is used in TGX and TGS vehicles, and the smaller exhaust gas aftertreatment system is used in the TGM and TGL series. In addition to the SCR catalytic converter, these also encompass the diesel particulate filter, diesel oxidation catalyst and AdBlue fluid injection in a compact package. A shared special feature is the airless AdBlue fluid injection, which operates without compressed air, thereby contributing to overall efficiency, as well as the higher AdBlue fluid conversion rate through optimised coating of the catalytic converters.

The new Common Rail injection system in the D15 features new leak-proof injectors with injection pressures up to 2,500 bar – this atomises the fuel into an especially fine mist. Combined with the installation-space and weight-optimised cylinder head, adapted inlet and outlet channels for reduced gas exchange loss, resistant steel pistons as well as robust curved valves, this makes energy conversion in the engine especially efficient and fuel saving. The single-stage turbo charger provides optimal power delivery and very good response behaviour, allowing the powerful D15 to reach its maximum torque of 1800 Nm while still at very low speeds. When moving off, this becomes apparent through a dynamic "pick-up" feeling.

The MAN developers have also optimised thermal management in the D15. An adjustable charge air throttle valve upstream and an exhaust throttle valve downstream of the engine work together to accelerate warming up, and keep the exhaust gas temperature sufficiently high continuously for particularly effective SCR exhaust gas aftertreatment. The speed-controlled coolant pump which operates according to demand instead of constantly, the oil cooler which is also enabled according to demand, as well as the fan with speed sensors also support thermal management and contribute to consumption efficiency as well.

MAN also relies on consumption-reducing solutions in the area of engine auxiliary units. When it comes to the 1-cylinder air compressors, the customer can, depending on their operating requirements, choose between a D15 version that switches off completely if the compressed-air tank is filled, or a version that does not. The latter is lighter and has been fitted with a

saving system for re-expansion. There is also a 2-cylinder version available for applications with higher air requirements, which also contributes to fuel savings through its lower power consumption in idle phases.

The fuel filter system was also reworked in the new engine generation from MAN; it now features a 2-stage design consisting of a pre-filter in the frame and a main filter at the engine. This ensures a very high level of efficiency when filtering particles out of the fuel, thereby improving the service life of the main filter as well as the effectiveness of the water separation. The new fuel filter system is also innovative in terms of the engine's cold start capabilities at low temperatures. A new mixing valve ensures that fuel which has been warmed but not injected does not flow back to the cold tank from the Common-Rail-System; it is instead guided in a circuit. Only the amount of fuel that has actually been injected is replaced in circulation which reduces the energy needed to warm up the fuel at low ambient temperatures – this therefore improves fuel efficiency in wintery operating conditions.

Just as with the D38, D26 and D08 engines, the D15 can also be operated with paraffin fuels such as hydrogenated plant oils (i.e. synthetic second-generation biodiesel fuel) without subsequent additional conversions, in accordance with EN 15940.

For applications in the construction or large-scale distribution sectors, a powerful engine brake is part of the requirements profile. This is why MAN offers the D15 with the controlled Turbo-EVBec engine brake which delivers up to 350 kW of engine brake power in a gradual manner. This is made possible by an electronically regulated and pneumatically operated flap located upstream of the turbo charger, which allows it to build up increased counter pressure when braking. The brake output remains constant even on long downhill gradients, which is a bonus in terms of safety, especially on steep downhill gradients.

The PTO offerings for the D15 have been designed to reflect its versatility in regards to applications possibilities; there are two PTOs on the engine side for meeting all additional drive requirements typical of trucks, as standard. At the same time, the D15 offers factory preparations for attaching water-cooled 400-V/500-V alternators with a maintenance-free belt drive. Cooling units can be operated with a power of up to 30 kW with these alternators.

**MAN D26: a reliable top performer is now even better and more economical up to 4 percent**

In addition to the new engine family, MAN also launched a completely reworked version of their top seller, the MAN D26. This 12.4-litre six-cylinder engine will be available in the new power classes 430 hp, 470 hp and 510 hp in the future. Torque has also increased by 100 Nm to 2200, 2400 and 2600 Newton metres respectively, and is already available from a low value of 930 rpm to 1350 rpm. Numerous detail improvements ensure that the D26 is not only more powerful in its latest configuration level, but that it is also 80 kg lighter and up to four percent more efficient in terms of fuel consumption.

The improved performance is provided by the optimised combustion chamber geometry with increased compression and the simultaneously reduced EGR rate, amongst other things. This makes fuel combustion more effective, with higher peak temperatures and a generally improved degree of efficiency. The total efficiency of the engine is also supported by the following: a new leak-proof injection system with high nozzle throughflow and new injectors (for more precise injection), comprehensive measures for reducing the frictional power within the engine, as well as the reduction of gas exchange loss.

The single-stage turbo charger is essential for the characteristics of the new D26 because its high degree of efficiency offers the perfect combination between efficiency and robustness. The new EGR module is designed especially for the interplay of single-stage charging and a reduced exhaust gas recirculation rate. An electrical wastegate takes on the role of precisely controlling the charging pressure which allows for the ignition pressure to be raised to 220 bar, further reducing fuel consumption during operation. Direct intercooling also contributes to improving engine efficiency and thereby reduction of fuel consumption. It reduces the effort required during gas exchange while simultaneously improving cooling of the charge air. This means components for low-temperature cooling are no longer necessary, making the engine lighter.

Just as with the D15, the D26 also features improved thermal management. The core element in the D26 is the new electrically controlled exhaust throttle valve with position feedback. It controls the exhaust gas pressure and exhaust gas temperature quickly and precisely. Together with the regulated coolant pump, sensing of the fan speed and the optimised oil cooler with thermostat, it provides consistent thermal operating conditions for operating the engine and exhaust gas aftertreatment.

The new D26 is also equipped with a new clutch for even more driving comfort. The crankshaft has also been optimised and features a new bearing.

The D26 also benefits from the numerous optimisations within in the new engine generation. Depending on requirement, the new 1-cylinder or 2-cylinder air compressor with saving system provides additional fuel saving capabilities for the D26. The new two-stage fuel filter system and the airless AdBlue fluid injection of the exhaust gas aftertreatment system make additional contributions towards fuel efficiency.

**MAN D38: top unit for extremely heavy-duty applications**

The top unit of the MAN engine family was also launched at the Bauma 2019 with interesting innovations. The 15.2-litre inline-six-cylinder engine remains the same in terms of providing 540 hp, 580 hp or 640 hp. It is characterised by high torques at low speeds, generating between 2700 and 3000 Nm from 900 rpm, depending on engine performance. This supports low fuel consumption and thus lower CO2 emissions. The D38's output data makes it particularly suitable for use in heavy-duty construction applications such as earth-moving or transporting construction machinery. Its powerful top output of 640 hp is also make it perfect for heavy-duty transportation applications and heavy-duty long-haul transport applications, both of which consistently require high levels of engine output. Just as with the new D26, the updated D38 also benefits from measures implemented on the pistons and cylinder liners for reducing friction; these again reduce wear and further improve efficiency. MAN has now also extended the oil-change intervals, depending on the individual usage strain, up to 140,000 kilometres. The D38, like the D15, also features a Turbo EVB engine brake that delivers up to 630 kW of engine braking power, gradually in conjunction with the D38. This means that in many applications, it can even replace a retarder, which decreases weight and means that the idling speed loss typical for the retarder does not occur.

As part of general optimisations, the D38 also features the innovations of the entire engine family. Depending on requirements, the new 1 or 2-cylinder air compressor with saving system provides additional fuel savings for the D38 as well. The same applies for the new two-stage fuel filter system, as well as the airless AdBlue fluid injection.

**MAN D08: the expert for light-duty applications**

The MAN TGL and TGM series cover a wide spectrum of application variants with their tonnage range of 7.5 to 26 tonnes. Their application areas include

light-duty and medium-duty construction transport as well as city and national distribution transport, food logistics, vehicle transport, waste disposal applications of all types, all the way to municipal tasks, e.g. fire departments or emergency services. In order to meet these various requirements, drives were required which were more versatile, more robust, as well as lighter and more efficient, all at the same time. The D08 assumes this role as an all-rounder in the MAN engine family.

The D08 engine generation which was last fully updated in 2017 is receiving additional optimisations for Bauma 2019. Just as with the D38, the power classes of the D08 remain unchanged. The entry-level version of the MAN D0834 four-cylinder engine with 4.6-litre displacement produces 160 hp and provides up to 600 Nm of torque. The medium variant offers 190 hp and 750 Nm, while the most powerful version serves up 220 hp and 850 Nm. The four-cylinder version is exclusively used in MAN TGL vehicles, while the D0836 six-cylinder version with 6.9-litre displacement in the variant with 250 hp and 1050 Nm represents both the most powerful engine for MAN TGL vehicles as well as entry-level power for MAN TGM vehicles. The new D08 six-cylinder engine is available in a 290 hp version with 1150 Nm, as well as a 320 hp variant with a solid 1250 Nm of maximum torque.

Just as with the D15, the D08 exclusively uses Selective Catalytic Reduction (SCR) for exhaust gas aftertreatment, and is likewise combined with an oxidation catalytic converter and a CRT filter.

The higher combustion temperature, which is determined by the system, is vital for good fuel efficiency, This goes hand in hand with the focus on SCR exhaust gas aftertreatment, and allows for thermodynamic efficiency to be improved.

Just as the D15 and D26, the D08 is also fitted with a single-stage turbo charger which provides the required charging pressure. In general, the new D08 engine generation impresses with a simple, robust and simultaneously light design, which has a positive effect on payload balance. Likewise, reliability and engine service life benefit from the simpler design. Additional measures contribute to the increased efficiency of the new D08 engine generation. For example, needs-based engine cooling through the regulated fan clutch in interaction with the optimised temperature sensor. The regulated and pneumatically operated exhaust throttle valve is new for the D08 engines. It improves thermal management of the engine and ensures optimal regulation of the exhaust gas temperature.

Additionally, the D08 also benefits from the general optimisations within the new engine family. This includes the new 1-cylinder air compressor with saving system, as well as the fuel-saving, the new two-stage fuel filter system, as well as the airless AdBlue fluid injection of the exhaust gas aftertreatment system

The long change interval for engine oil is an advantage for the operator; this is up to 80,000 kilometres when using engine oils approved by MAN. This being said, the display on the maintenance interval calculator is to be regarded as definitive, as the intervals may vary for individual vehicles depending on how they are used. The replacement of CRT filters also depends on the driving profile, but is required every 450,000 km at the latest.