



Flexible, cost-efficient, environmentally aware – MAN vehicles at the IFAT 2018 trade fair

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MAN is presenting vehicles, services and finance as comprehensive solutions for municipal applications.

- **At the IFAT for the first time – MAN TGE from 3 to 5.5 tonnes**
- **New feature – high torque output on the body due to integration of OMSI PTO in the driveline**
- **Safety – rear area monitoring on refuse collector vehicles**

MAN Truck & Bus
Dachauer Straße 667
D-80995 Munich

**Should any questions arise,
please contact:**

Gregor Jentzsch

Phone: +49 (0)89 1580-2001

Presse-man@man.eu

www.mantruckandbus.com/presse

Flexibility, cost efficiency, environmental awareness, practicality, efficiency, reliability – municipal authorities and contractors involved in refuse collection, in road-maintenance services and winter services place high demands on their vehicles. MAN has made these features the focus of their trade fair stand at the IFAT 2018. You can find practical solutions at the world's leading trade fair for water, sewage, waste and raw materials management from 14th – 18th May 2018 in Munich. MAN is taking part in the trade fair with five industry vehicles. In addition to a TGE, this also includes two TGMs and TGSs.

For municipal authorities and contractors, their vehicle's operational and maintenance efficiency are important factors when choosing a customised vehicle-body combination – from vans to four-axle chassis, MAN equips municipal authorities' and contractors' fleets as a full-range provider from 3 to 44 tonnes. MAN has been successively launching the TGE, its lightweight van with the lion in the radiator grille, in various European markets since April 2017. MAN therefore offers a comprehensive range of commercial vehicles in the TGE, TGL, TGM, TGS and TGX series. This is because efficient characteristics only come into effect when there is a close interplay between MAN chassis and the industry-specific body and attachments.

MAN Truck & Bus is one of Europe's leading commercial vehicle manufacturers and transport solution providers, with an annual revenue of some 10 billion euros (2017). 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 Volkswagen Truck & Bus GmbH and employs more than 36,000 people worldwide.



For the first time at the IFAT – MAN TGE

For the first time at an industry trade fair, MAN is exhibiting a municipal vehicle from the TGE series. A retaining device for the snow plough and a gritting attachment on the loading area demonstrate its suitability for winter service. Municipal authorities and contractors involved in refuse collection and road maintenance will find the right vehicle for their diverse range of tasks in the wide-ranging TGE product portfolio. With box-type vans, glazed combi vans and chassis, MAN provides a wide range of cab types. You can choose between two wheelbases, three overhangs and three roof heights. There are single cab and crew cab options available for the chassis. With the corresponding configuration, a maximum payload of 1.5 tonnes is permitted with 3.5-tonners and with box-type vans, a maximum cargo compartment volume of 18.4 cubic metres is permitted. The entry-level vehicle in the MAN TGE series has a permissible gross vehicle weight of 3.0 tonnes. The upper end of the weight class is 5.5 tonnes with a rear axle fitted with twin tyres. The wide variety of variants enables you to be able to choose the drive. Depending on the permissible gross vehicle weight, front-wheel drive, rear-wheel drive and all-wheel drive are all possible. When developing engines, the focus was placed on efficiency and robustness. The 1968 cm³ large 4-cylinder diesel engine is available in four power outputs from 102 hp to 177 hp.

MAN innovations in the model year 2018

New MAN D08 engine for the TGL and TGM series

MAN is equipping the TGL and TGM series with a new engine from the D08 engine series. The drive unit, which is available with four and six cylinders, is characterised by only using SCR exhaust gas aftertreatment. The range of D0834 four-cylinder engines with 4.6 litre displacement starts at 160 hp and 600 Nm maximum torque. The other power outputs are 190 hp with 750 Nm and 220 hp with 850 Nm. The four-cylinder version is only fitted in the MAN TGL.

With 6.9 litre displacement, the D0836 six-cylinder variant with 250 hp and 1050 Nm is the most powerful engine for the MAN TGL, and also the entry-level version for the MAN TGM. Other variants have 290 hp and 1150 Nm, as well as 320 hp and up to 1250 Nm maximum torque.

SCR exhaust gas aftertreatment technology and higher combustion temperatures in all D08 engines ensure fuel efficiency improved by three to five percent. The entire series is, depending on the power output, up to



103 kg lighter thanks to a less complex structure. The balance in payload, reliability and engine service life all benefit from this simplified construction. The Euro 4 and Euro 5 versions have high sulphur tolerance and can therefore be used worldwide, even in countries with a high sulphur content of up to 2000 ppm in diesel. The simpler structure of the exhaust gas cleaning system allows Euro 6 vehicles to be converted for secondary marketing in countries where the Euro 5 or Euro 4 standard applies. All new D08 Euro 6c engines can be operated without subsequent conversion using synthetic biodiesel fuel as per EN 15940. Another advantage is the extended engine oil change interval. When using oils that MAN has approved, this interval is now up to 80,000 kilometres, depending on the vehicle usage.

The new engine generation includes completely reworked moving-off and gearshift matching. Idle Speed Driving is also available for the 6-speed and 12-speed TipMatic gearbox. This gearbox function enables slow driving at idling speed and with a closed clutch, without pressing the accelerator. The vehicle speed remains constant and the clutch wear is reduced.

Furthermore, the MAN TipMatic with a 12-speed gearbox provides additional functions for increasing efficiency – Speed Shifting for faster shifting between the three highest gears and EfficientRoll for consumption-reducing rolling.

Reworked – optimised interior for MAN TG series

The new interior of the entire TG series is even more practical and user-friendly. Design, functionality and ergonomics are the focus.

On the main instrument panel there is a clearly structured 4” high-resolution colour screen. Its different-coloured displays aid readability and orientation. This means that any warning messages or further information catch the eye even more quickly. The central panel of switches and operating panel also display the restructured functionality. Related switches are organised into groups to ensure more intuitive handling, and frequently used functions, such as the rotary switch for the MAN TipMatic automated gearbox, are now located in this main operating panel. The new switching and operating concept will be identical in all MAN truck series in the future.

The instrument panel above and to the right of the central control box provides more storage areas with integrated electrical connections and new flexible cup holders. In the area below the central console, there is an additional open compartment along the entire width of the drawers below.



The redesign also provides extra space between the seats and in front of the bed. The coolbox or storage box (which is now completely hidden under the bed in the long variant of cabs) also contributes to this. The coolbox has increased to 35 litres capacity here; a rapid cooling function and quiet hibernation mode are also included. Alternatively, a large closed storage compartment can be provided here.

In the optimised rest area of the MAN TGM and TGS with an L and LX cab, the top and bottom bed (optional) now have more convenient electrical control boxes with switches for interior lighting, window lifters and the sliding roof. Four powerful sockets (12 V, 24 V, USB) and a new lighting concept add to the convenience.

A dark-grey colour scheme with the name "Urban Concrete", which can optionally be ordered for the lower area of the interior, is quite resistant to dirty hands or work clothing.

Exhibition vehicles at the MAN stand at the IFAT 2018 trade fair

Première for winter service – MAN TGE

The exhibited MAN TGE 5.180 has industry-oriented equipment for municipal use and winter service. Twin tyres, rear-wheel drive and a reinforced chassis characterise the 5-tonner with the single cab. The orange cab colour and orange revolving beacons are part of the usual municipal equipment. An assembly device can be used to attach the snow plough in winter, and a gritter can be fitted to the three-way tipper delivered from the factory.

In operation throughout the whole year – MAN TGM

Efficient vehicle usage by municipal authorities and in the building yard means being able to use the vehicle flexibly throughout the entire year. The exhibited MAN TGM 13.290 4x4 BL is an example of this. The C cab features dark interior fittings with the designation "Urban Concrete". The centre seat with a three-point seat belt has been added to ensure that the driver can give a lift to two colleagues.

In order that the MAN TGM is able to perform many different tasks, it is equipped with a hook unloader unit. The interchangeable platform body with the attached loading crane handles all transport tasks that arise. Whether the team tasked with road construction, gardening or park area



maintenance has to transport excavation material, paving stones, earth or plant material, the MAN TGM takes care of this. A water tank is also available as a second interchangeable body for watering the plants in summer. Winter service includes a large range of activities. With a gritter as an interchangeable body and a snow plough fitted on the vehicle front, the MAN TGM is also used in the cold season. In accordance with the equipment typical for the sector, MAN equips the TGM ex works for winter service with a steel bumper, municipal hydraulics, snow plough mounting plate, elevated headlights and turn indicators as winter service lighting, as well as orange revolving beacons. Differential locks in the front and rear axles allow safe traction on unpaved surfaces or in the event of slippery driving conditions due to ice and snow.

Payload advantage in refuse collection – three-axle MAN TGM

The MAN TGM series demonstrates its strengths as a three-axle refuse collector vehicle when it comes to payload and the cab. Just two steps provide convenient entry to the cab. The smaller number of steps than in other models becomes noticeable during collection services where you frequently have to enter and exit the vehicle. The extension of the C cab provides the crew with 265 millimetres more space. This extends the stowage space behind the seats, which can be used for stowing and hanging up work and weather-proof clothing. The MAN TGM, which is designed with a permissible gross vehicle weight of 26 tonnes, enters into collection service with approximately one tonne advantage in payload compared to an MAN TGS. The flexibility of loading the body, which has a volume of 22 m³, underscores this.

The MAN TGM 26.320 6x2-4 BL chassis exhibited at the IFAT 2018 has a wheelbase of 4125 millimetres between the first and second axle. This configuration is practice-oriented in order to optimise the weight distribution between all axles with respect to the heavy bulk material and the load centre of gravity, which is constantly shifting in the course of the collection service. This includes the steered trailing axle designed for a 7.5 tonne load capacity. It promotes manoeuvrability on fully parked roads and when driving in narrow alleys and in tight city streets.

The option to select an automatic gearbox with a hydrodynamic torque converter is a new feature in the driveline of the Euro 6 version of the MAN TGM. The supplier of the gearbox from the 3000 series is Allison. It allows wear-free moving-off and smooth gear changes. The driver appreciates this



comfort during collection services that require many moving-off, shifting and braking operations on very short trips from loading point to loading point.

Safety first with refuse collectors – the three-axle MAN TGS

MAN TGS refuse collector vehicles are popular. This includes the exhibited MAN TGS 26.360 6x2-4 BL with a rear loader assembly. The steered and liftable trailing axle with a 7.5 tonne load capacity takes the weight of heavy bulk material on the vehicle rear. Vehicles very often have to manoeuvre in reverse to the loading point during collection services. The reversing restriction introduced in 2016 in DIN 1501 must be observed here with the rear loader. It implements the safety measures relating to the use of the rear standing platforms by the refuse collectors. Until now there was the danger that passengers jumping off could stumble or be run over during reversing. If the reverse gear is now engaged on the TipMatic selector switch while the standing platform is occupied, the vehicle remains stationary in order to ensure that the vehicle does not roll back. Depending on the equipment, the halt brake is automatically activated or the engine is turned off.

Manoeuvring, reversing and short trips from loading point to loading point in densely built-up residential areas where there are lots of parked vehicles require a high degree of attention from the driver. In the exhibition vehicle, MAN is presenting various systems that will help the driver gain a panoramic view.

The ViSy rear area monitoring system uses innovative 3D sensors to identify the positions and movements of objects behind and next to the vehicle. Depending on the system's analysis, an acoustic warning signal sounds, a visual indicator is displayed on the screen built into the dashboard or emergency braking is initiated as a precaution.

An aerial view system provides a 360-degree panoramic view. For this purpose, the video images from four wide-angle cameras are merged into one image and shown on a monitor in the cab.

Some truck exhibits at the MAN stand have a camera-based system for displaying the vehicle's surroundings on the poorly visible right-hand side of the vehicle, in order to detect critical situations early when turning or manoeuvring. In addition to the rear-view mirror, this should aid the driver to see the area next to the vehicle using a monitor affixed to the right A-pillar in the cab or the screen in the dashboard. MAN can install this upon customer request.



Safety means more than just mounting the systems used for displaying surroundings being shown at this trade fair exhibit. MAN is equipping its chassis with a new generation of safety systems. These are the LGS lane departure system, the EBA2 advanced emergency braking system and the ESS emergency braking signal. The Lane Guard System (LGS) monitors the vehicle position on the road from a speed of 60 km/h, and warns the driver if they inadvertently drive over the lane marking. The EBA2 (Emergency Brake Assist) advanced emergency braking system installed in MAN vehicles already easily fulfils the Level 2 intensified legal requirements, which will apply to newly registered vehicles from November 2018. In addition to the brake lights, the emergency stopping signal (ESS) activates the hazard warning lights with an increased flashing frequency (emergency brake hazard warning light) in the event of an emergency braking manoeuvre, and therefore signals the emergency situation to the traffic behind.

High power and torque – TGS 35.500 as a 4-axle vehicle

500 hp represents the top of the range in the MAN TGS. The Euro 6 version of the 6-cylinder engine with 12.4 litre displacement from the D26 series is available in the three power outputs – 420 hp, 460 hp and 500 hp. High vehicle weights, demanding topography or the need to obtain high power and strong torque at the PTO are the arguments for choosing the 500 hp version in the municipal and disposal sector. The vacuum system's blower, which provides the suction power of a suction vehicle, sewer cleaning vehicle, suction cleaner or suction dredger, requires particularly high torque. At 930 – 1350 rpm, the 500 hp D26 engine delivers 2500 Nm, which is transmitted from the PTO (supplied by OMSI and, upon customer request, installed between the engine and gearbox) to the body. This combination with the MAN TipMatic automated transmission is new in the MAN TGS Euro 6.

MAN is exhibiting a four-axle truck with 1+3 axle configuration in the form of the MAN TGS 35.500 8x4-4 BL. The two centre axles are driven and the steered trailing axle supports eight tonnes. The chassis is intended for mounting a suction dredger. This axle configuration exploits the advantages of optimum axle load distribution. This is because the voluminous blower is positioned in the front of the body, and the cargo space for the suction material and suction nozzles with extension arm are above the rear axles. Additional arguments in favour of 1+3 axle vehicles include improved manoeuvrability and lower tyre wear compared to the popular configuration of two axles at both the front and rear.



MAN Truck Modification

Sector-specific adjustments are often necessary to make a chassis that rolls out of production at MAN into a vehicle for municipal application. This most frequently involves modifications to the cab, changes to the chassis or adjustment of the driveline. With its Truck Modification Centres, MAN has over 30 years' experience in accommodating customer requests that cannot be managed in mass production. The advantage for customers is that, with their sales representative, they have a single dedicated contact person at MAN. Modifications are carried out in accordance with the documentation and warranty guidelines that apply to MAN vehicles. They are subject to quality assurance in line with DIN EN ISO 9001. In addition, the company's brand-specific expertise in vehicle engineering is directly available. Every MAN branch can perform the service.

The driver's cab module focuses on modifications in the form of flat roofs, roof recesses or sloping roofs. Extensions to the C cab are often requested to create more space in the interior. The GRP moulded part used instead of the rear cab wall provides for a space gain of around 265 millimetres. Some local authorities have ordered sliding doors due to limited space in narrowly parked streets. One option, allowing several employees to ride along in the longer L, LX and XL driver cabs, is to install a four-person bench instead of a sleeping berth. Passengers are secured with three-point seatbelts on the outer seats and by lap belts on the inner seats.

The main focus of the chassis module is on making changes to wheelbases, shortening or bending frame overhangs, installing additional axles and steered rear axles, or moving and adjusting add-on components on the frame. Particularly on municipal vehicles, units mounted on the frame - such as a brush and suction shaft on a road sweeper - mean that battery boxes, fuel or air tanks otherwise mounted there need to be moved.

Modifications carried out on municipal vehicles offered under the driveline module often include the replacement of a standard gearbox with a converter for an automatic gearbox or adjustments to PTOs.