



## **Flexible, efficient and environmentally aware: MAN vehicles at IFAT 2016**

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### **MAN showcases vehicles, services and finance as integrated solutions for municipal applications.**

Flexibility, economy, environmental awareness, practicality, efficiency, reliability - municipalities and operators in the waste-disposal sector, road maintenance services and in winter service demand high standards of our vehicles. These criteria are the focus of the MAN stand at IFAT 2016. Practical solutions can be found in hall C4 on the MAN stand - number 317 - at the world's leading trade fair for water, sewage, water and raw materials management from 30 May to 3 June 2016 in Munich.

Efficiency in operation and vehicle maintenance begins for the entrepreneur and municipal operator with the choice of tailor-made vehicle/body combinations: MAN offers an extensive range from 7.49 to 41 tonnes in the TGL, TGM, TGS, and TGX truck series. This is because it is only through the close interaction of MAN chassis, the sector specific bodies and the additional equipment that the efficiency features really take effect.

The four vehicles showcased on the MAN trade fair stand represent flexibility through their combination with the body, environmental awareness as a result of the efficient Euro 6 emission control technology and economy thanks to a driveline designed specifically for sector requirements.

### **Flexibility – MAN TGM 13.250 municipal vehicle with interchangeable bodies**

A road sweeper generally runs at the dry times of the year. If snow has fallen, the vehicle, which is comparatively expensive in terms of procurement and maintenance, stands idle. A winter service vehicle with its spreader unit is generally only used for a few months of the year. A tipper is used throughout the entire year for a variety of transportation tasks.

The solution: One chassis - three tasks. This variety of combinations represents flexibility: The chassis is in operation around the clock which

The MAN Group is one of Europe's leading industrial players in transport-related engineering, with revenue of approximately €14.3 billion in 2014. As a supplier of trucks, buses, diesel engines, turbomachinery, and special gear units, MAN employs approximately 55,900 people worldwide. Its business areas hold leading positions in their respective markets.

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ensures a high level of vehicle utilisation for the operator and provides municipalities with a return on their procurement costs.

As a swap body unit, the MAN TGM 13.250 4x4 BL all-wheel drive vehicle can accommodate a road sweeper or a tipper with winter service spreader fitted. MAN has prepared the vehicle so that the bodies can be swapped as quickly as possible. A road sweeper needs free installation space between the axles for the brush rollers, circular brushes and the suction shaft. MAN has therefore repositioned the Euro 6 exhaust system including the exhaust pipe, compressed-air tank and battery box on to a rack behind the cab. The diesel tank switches to the left-hand side which leaves space on the frame on the right-hand side for the sweeping unit. MAN provides a central tank for all consuming units in each body in place of individual hydraulic fluid tanks. Space is also available for this on the chassis.

The all-wheel drive not only ensures forward propulsion as a tipper when travelling off road, but also in winter when clearing snow. It makes ground clearance available under the frame for the sweeping and suction equipment. The scope of delivery includes the winter service equipment with front mounting plate in accordance with DIN 15432, lane speed signal for the spreader, raised lighting and turn signals and orange revolving beacon on the cab roof.

A speciality of the TGM series with a gross vehicle weight of 13 to 15 tons and all-wheel drive is the standard air suspension of the rear axle. This makes the procedure of swapping between bodies that much easier. It ensures maximum protection of the load from bumps and keeps the driving level always the same. The advantage of the air suspension system becomes very apparent in the winter. Regardless of the load condition of the mounted spreader, the loading platform and spreading plate always remain at the same height. The spreading pattern does not have to be re-adjusted during the round once it is set.

A MAN TGM 13.250 4x4 BL in combination with two bodies will be exhibited at IFAT in order to illustrate the flexibility of the vehicle operation. A Faun road sweeper body and a Meiller three-way tipper will be positioned behind the chassis. The vehicle is fitted with a 9-gear manually operated gearbox.



### **Automated gear changing when sweeping - new with MAN TipMatic**

As an alternative, in the future MAN will also offer the MAN TipMatic automated gearbox with specific gearshift program for road sweepers in the TGL and TGM series with the 250 hp Euro 6 engine. This removes the need for the driver to have to change gear. He is then able to focus on the traffic which is even more advantageous when street cleaning or clearing snow. The MAN TGM then moves with the usual speed of a truck between operation sites. The use of the rotary switch, located next to the seat and easily accessible, is straightforward: One turn selects forwards or reverse. An individual driving program is available for the road sweeper operation - this is labelled Ds.

### **Safe driving - ESP for two-axle all-wheel drive vehicles**

As of now, MAN is offering ESP for two-axle municipal vehicles with optional all-wheel drive. The legislature only requires ESP for road chassis. However, tippers used for flexible operations in the builder's yard are often ordered with all-wheel drive in order to be able to complete work away from the road. However, they spend most of the time travelling on sealed road surfaces. MAN's commitment to also install ESP in the all-wheel drive versions of the TGM and TGS series, is further increasing safety.

### **Practicality – MAN TGS 28.400, tailored to winter service**

The three-axle MAN TGS 28.400 brings together the aspects of traction, manoeuvrability and efficiency, and its chassis configuration has been developed in close collaboration with users. MAN offers an ex-works all-wheel drive chassis with steered and lifting trailing axle. For sector-specific equipment in winter service, the customer no longer needs to involve a partner in making the conversion. The third axle which is designed for a nine tonne load capacity, increases the payload and body length which is a real benefit in terms of the grit quantities that can be transported in winter service. The driver will appreciate the steered training axle which provides a high level of manoeuvrability for a vehicle which is around 8.5 metres in length. A real feature of this design is the turning circle which is two metres smaller (17.3 metre instead of 19.3 metres) when compared to a three-axle MAN TGS with driven tandem-axle assembly. Raising the trailing axle when unladen or with partial load reduces fuel consumption and tyre wear and thus contributes to efficient vehicle operation.



The scope of delivery ex-works also includes specific winter service additions such as front mounting plate and lighting, electrical interfaces for the body and for winter service hydraulic system and the preparation for fitting a camera, whose image feeds into the navigation screen in the instrument panel.

Public-utility vehicles need to be in operation throughout the year. This is because municipal and city yards, road and highway maintenance companies, and their subcontractors, clear snow, clean roads, and carry out repairs on the road surface, signs, and lighting, and also maintain the roadside greenery. MAN meets these requirements with vehicles from the TGL, TGM and TGS series with tipper body and winter service equipment, to which a loading crane may also be added. Flexible conversion for tasks in both summer and winter is therefore also possible.

This MAN TGS 28.400 6x4-4 BL is shown with a chassis with winter service equipment without body in order to display the sector-specific configuration.

### **Efficiency– MAN TGS 32.360 four-axle refuse collector**

A four-axle refuse collector paves the way for maximum efficiency. When compared to a three-axle vehicle, the longer chassis with a higher payload can accommodate a body with a volume of 28 cubic metres; an increase of around six cubic metres. The centralisation of the network of disposal facilities such as dumps or thermal waste-processing plants extends the trips between collection areas and offloading sites. A larger capacity reduces the number of daily cycles with their time-consuming transportation runs.

The higher payload and optimal axle load distribution are additional advantages of the four-axle vehicle. The payload is a real benefit for example when emptying organic waste bins because a cubic metre of organic waste weighs more than a cubic metre of household waste or recycling.

In the TGS series, MAN supplies a 1+3 axle configuration in which the middle of the three rear axles is driven. The other axles are steered: a leading axle designed for an eight tonne capacity which can be lifted and the load removed, as well as a trailing axle with a capacity of eight tonnes. The wheel bases are 3750 / 1350 / 1450 millimetres. Further arguments in favour of this axle configuration are the high manoeuvrability and the reduced tyre wear.



On a collection round, the driver is constantly on the move, changing gear, braking, and stopping between loading points, which are typically only a few metres apart. In addition, each time he has to turn the hydraulic system for the emptying and pressing functions on and off. The driving profile in a collection round therefore fundamentally differs from other areas of operation for commercial vehicles. The gear changing element provided by MAN for rear loading refuse collector vehicles combined with the MAN TipMatic automated gear shifting makes life significantly easier for the driver. The control attached to the arm rest of the driver's seat lies comfortably in the hand. By pressing the button, the driver is able to activate all body-related functions.

The chassis of the MAN TGS 32.360 8x2-6 BL shown at IFAT 2016 is intended for the body of a rear loading refuse collector.

#### **Efficiency – MAN TGM 26.340 payload advantage in refuse collection**

When comparing the MAN TGM and TGS series as the basis for a three-axle refuse collector, the MAN TGM really shows its strengths in terms of payload and cab. This is because efficiency is not only measured in terms of price - part of the total cost of ownership (TCO) - but also in terms of the ergonomics in everyday handling. The convenient step unit into the cab only involves two steps which is less than in the larger series. This becomes noticeable over the course of a collection round with regular getting on and off the vehicle. The 26.5 centimetre extension of the C cab is an advantage in terms of the space gained for the driver and both co-drivers.

The MAN TGM is designed for a gross permitted weight of 26 tonnes and starts a collection round with around a one tonne greater payload when compared to the MAN TGS. This represents an advantage in terms of flexibility when loading the 22 m<sup>3</sup> body.

For IFAT 2016 and new to the TGM series, MAN is introducing a wheelbase of 4125 millimetres between the first and second axle. This configuration has been developed in response to practical requirements in order to optimize the weight distribution between all axles with respect to heavy emptying and the changing centre of gravity of the load over the course of a collection round. This also includes the steered trailing axle designed for a 7.5 tonne load. This benefits manoeuvrability in roads with lots of parked cars as well as in narrow side streets and in densely built urban developments.



The TGM 26.340 6x2-4 BL exhibited on the MAN stand displays the controls which make the operation of a rear loading refuse collector efficient. It is fitted with the sector-specific MAN TipMatic software, the halt brake and the control on the driver's arm rest. The vehicle also includes a new generation of safety systems. These include the LGS lane guard system, the emergency braking assistant EBA2 and the emergency stop signal. At speeds above 60 km/h, the LGS lane guard system monitors the vehicle's position with respect to the lane and warns the driver should he accidentally cross the lane markings. The EBA2 emergency braking system fitted by MAN even now easily meets the stricter legal requirements for Level 2 which come into force in November 2018 for newly registered vehicles. In the event of emergency braking, the Emergency Stop Signal (ESS) activates not only the brake lights but also the hazard warning lights which flash rapidly (emergency braking flashing) and thus signal an emergency situation to vehicles behind.

#### **Safer view - new large screen infotainment system**

The need for large screens in the cab is evident in DIN 1501, the standard establishing the safety requirements for the operation of rear loading refuse collectors. The driver uses this to monitor the vehicle environment, for example, when manoeuvring in reverse. In early 2016, MAN will introduce the new MMT Advanced infotainment radio. The 7-inch display is integrated in the instrument panel. This avoids additional screens being fitted which might impede the driver's view of the road. One of MMT Advanced's many functions is the recording of signals from two external cameras. These are activated either at the touch of a button by the driver or automatically through the use of predefined functions. The applications for this are wide-ranging, and not solely within refuse collection. One of the traditional camera monitoring tasks is also a view of both the spreading pattern and the functioning of the gritter.

#### **Integrated solutions from MAN - including municipal leasing and services**

Municipal leasing has become increasingly established among publicly funded waste disposal companies alongside purchasing - the traditional procurement procedure. Companies select between rental purchase, loan financing or "kilometre leasing". MAN Finance's leasing and financing services are tailored to sector requirements and are becoming increasingly



popular. The leasing agreements are adapted to the long useful lives of public-utility vehicles. Terms of up to 96 months are possible. Alternatively, MAN Rental offers public-utility vehicles for rent.

MAN Solution's integrated services offers solutions for municipal and private operators of public-utility vehicles for the economical and efficient implementation of the work and transportation contract. This impacts positively when taking into account the total cost of ownership (TCO). The extensive MAN ProfiDrive training opportunities are a key component of MAN Solution. It comprises theoretical and practical training, thus supporting the driver and the operator in safe and efficient use of their vehicle. The continuing training which is required by law under the German Professional Driver Qualification Act also forms part of the MAN ProfiDrive offer. MAN ProfiDrive has been advising drivers very successfully since 2014 using the ConnectedCoDriver. This is basically remote training for a period of one week and up to three months. The trainer focuses solely on the driver, the vehicle and the road profile. The aim is for the driver to develop a particularly economical style of driving on the road. MAN TeleMatics provides the technical tool. This gives the trainer insight into the driver's style of driving.

MAN Service care is another example of support provided for operators of public-utility vehicles. Proactive maintenance scheduling is a particularly efficient way to reduce costs. Regardless of the service agreements offered by MAN, MAN service outlets and customers stay in touch via MAN TeleMatics in order to arrange maintenance appointments so that work for completion can be bundled together and in order to keep visits to the workshop as short as possible.