



Corporate Responsibility at MAN 2016

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Products

MAN stands for efficient and safe transportation and energy solutions. Our approach to product responsibility is broad and comprehensive: in addition to continuously reducing fuel consumption, we also develop alternative drive systems such as gas or electric drive. Our product development process focuses on the entire product life cycle – from raw materials extraction to end-of-life disposal.



Protecting the climate through innovation

As part of MAN's Climate Strategy we are committed to offering our customers a consistently efficient product portfolio. We have positioned ourselves as a supplier of sustainable products and services in both our Commercial Vehicles and our Power Engineering business areas ([> Climate Strategy](#)).

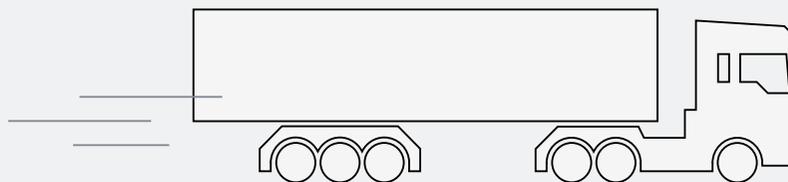
MAN seeks to reduce the total cost of ownership (TCO) and fuel consumption of its products by developing innovative transportation and energy solutions. In particular we focus on improving the efficiency of existing products and developing alternative drive systems.

Reducing the life cycle CO₂ emissions of our products

A large proportion of our products' life-cycle greenhouse-gas emissions is generated during the use phase. Bearing in mind that most of our products have a very long service life, during which they are used intensively, we implement a future-oriented product development process aimed at reducing environmental impacts to a minimum.

More than

90%



of greenhouse gas emissions are generated during the use phase.

Electricity – the climate-friendly drive technology

With zero pollutant emissions and low noise, plus a low carbon footprint when the power is renewably generated, electricity is set to be the drive technology of the future – around town and on shorter journeys at least. By 2020, as a step to expanding electric mobility in the commercial vehicle sector, we plan to begin volume production of an all-electric city bus and an eTruck. Our economically robust eMobility solutions are being developed in close collaboration with cities and logistics partners.

Electric trucks

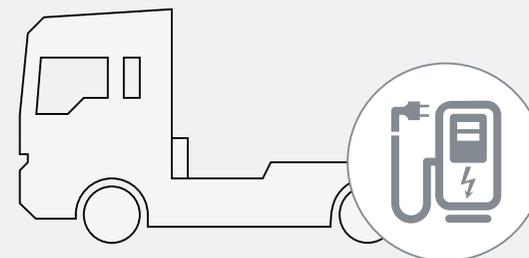
Paving the way for electric drive in medium- and heavy-duty distribution, at the 2016 Commercial Vehicles Trade Fair in Hanover (IAA) MAN Truck & Bus unveiled the new MAN eTruck, an electrically powered TGS semitrailer tractor. This concept vehicle meets the main requirements for urban delivery vehicles of the future, combining generous cargo space with a low unladen weight, zero emissions, and very quiet operation. Field testing of this vehicle by nine partners from the Austrian Council for Sustainable Logistics (CNL) will begin in 2017.

2017

MAN eTrucks field trials begin.

2021

eTrucks scheduled to join the MAN product portfolio.



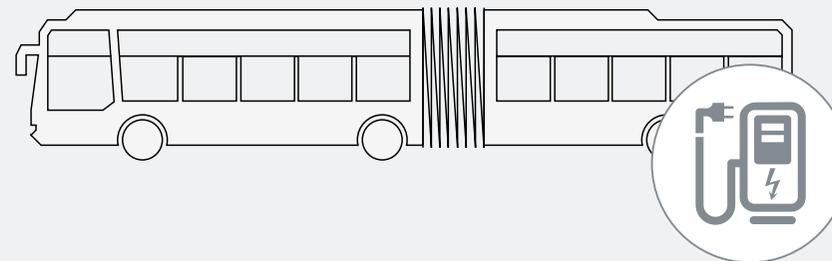
Electric buses

Electric bus development at MAN is based on a modular concept. Charging technologies can be freely selected and combined and the number of battery modules can be varied – in line with individual requirements in terms of driving range and transportation capacity.

MAN is partnering with a number of cities, including Munich and Hamburg, to expand the development of alternative-powered line-service buses. One of the aims is to develop a cost-optimized zero-emission concept for electric mobility.

2018

MAN will present a pre-production version of a battery-electric bus (BEV).



2019

MAN will begin volume production of an all-electric city bus.

Hybrid buses

Our MAN Lion's City bus is already available in a hybrid version. The MAN Lion's City Hybrid bus is powered by a frugal internal combustion engine and an efficient electric motor. Up to 30% annual fuel savings can be achieved with the MAN Lion's City Hybrid Bus.

Efficient diesel engines

Ever since Rudolf Diesel developed the diesel engine in the late 19th century together with engineers at Maschinenfabrik Augsburg (a forerunner of the MAN Group), we have worked continuously to improve the efficiency and performance of this internal combustion engine – with impressive results. Today, economical and efficient transportation and energy solutions from MAN are in operation all over the world.

Selected product examples

Trucks

Our TGX EfficientLine, now into its third generation, incorporates a range of fuel-saving technologies aimed at further reducing total cost of ownership and CO₂ emissions.

6.35%

that's how much the fuel consumption of the MAN TGX EfficientLine 3 has been reduced compared with the previous model. This figure was verified by the TÜV technical inspection authority in 2016.

Coaches

With its aerodynamically optimized design, the NEOPLAN Skyliner double-decker coach returns fuel consumption of less than 30 l/100 km – a saving of approximately 5% in highway driving at a constant speed of 100 km/h. This has benefits for the environment as well, with CO₂ emissions of just 12 g/passenger kilometer when operating at full passenger capacity.

Low-pollutant natural gas engines

As a clean fuel, natural gas plays a key role in our product portfolio. As well as providing low-emission propulsion for buses, trucks, and ships, natural gas is also ideally suited for use in the power generation industry.

Selected product examples

City buses

When operated on biogas or e-gas, the MAN Lion's City GL CNG natural gas-powered city bus is virtually carbon-neutral. Gas-powered buses accounted for one in five of all MAN city buses sold during the year under review. MAN Truck & Bus is the leading European supplier of gas buses, with an average market share of 39% in 2016.



Dual-fuel engines

With its dual-fuel engines, which are capable of operating on both gaseous and liquid fuels, MAN Diesel & Turbo offers a low-carbon propulsion solution for ships that combines energy efficiency with flexibility. As well as liquefied natural gas (LNG), MAN Diesel & Turbo also offers engines capable of running on methanol, ethanol, or liquefied petroleum gas (LPG).

Leveraging the potential of digitization

Digital transformation is opening up whole new business opportunities and fields of activity for MAN. Taking commercial vehicle connectivity as our starting point, we are already offering smart services that reduce fuel consumption, increase fleet utilization levels, and reduce the frequency of workshop visits.



RIO logistics platform

RIO is an open, cloud-based, manufacturer-independent platform which integrates the entire transportation and logistics ecosystem. The aim is to make transportation processes more transparent and more efficient, and to improve capacity utilization – cutting costs and at the same time reducing CO₂ emissions. With its digital freight-matching service, for example, RIO is able to ensure better utilization of truck capacity, resulting in fewer empty runs.



Connected CoDriver

The driver still has a major influence on fuel economy. With Connected CoDriver, MAN Truck & Bus offers its customers a system which, for the duration of the training period, pairs drivers with an instructor who acts as a virtual co-driver.

Driving data – about the vehicle, the style of driving, and the route topography – is supplied to the instructor by the TeleMatics system. The instructor uses this data to provide regular coaching and tips for a more efficient driving style via the hands-free phone system.



That's how much fuel even an experienced driver can save by adopting a more efficient driving style with the help of Connected CoDriver.

Platooning

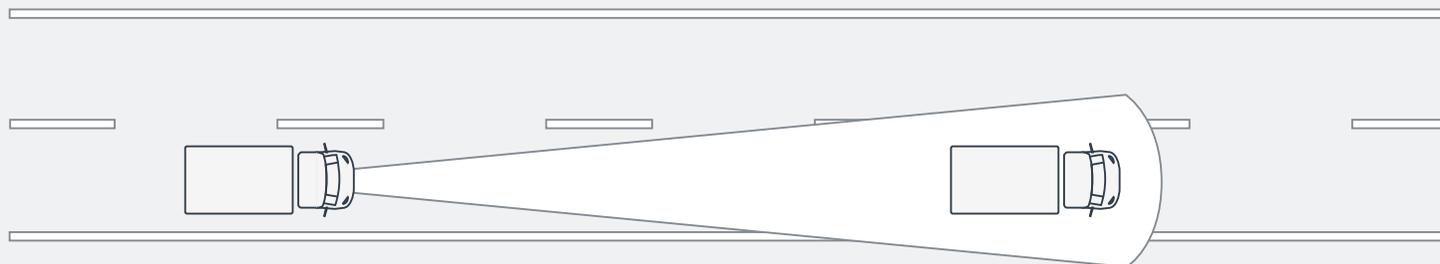
At the present time, the mandatory minimum following distance between trucks driving on Europe's highways is 50 meters. In the future, truck platooning could change all this – with benefits both for the environment and for traffic flows.

MAN is working with its customer DB Schenker to continue developing and improving platooning technology. This is the first time that a logistics company and a vehicle manufacturer have cooperated on the development of connected truck platoons and their testing under real-world conditions.



Effective driver assistance systems

The European research project euroFOT, in which companies and institutions from ten different countries took part, established that MAN driver assistance systems improve road safety and reduce fuel consumption. Trucks using Adaptive Cruise Control (ACC) achieved average fuel savings of almost 2% over the period of the trial, despite also recording a higher average speed. At the same time, critical events such as hard braking or sudden evasive maneuvers were reduced by more than one third.



94%

of drivers questioned said that ACC significantly improved safety – and rated it as one of the most important driver assistance systems for trucks.