



## **MAN – 100 years of partnership with the fire service**

Hanover, June 8, 2015

**MAN celebrates an important anniversary this year: The history of commercial vehicle manufacturing at MAN started 100 years ago.**

- **Fire services were among MAN's first customers.**
- **MAN made its name with the Hauber from the end of the 1950s.**
- **The M90 series brings success in the fire service market.**
- **The reliability and robustness of MAN vehicles is appreciated by fire services around the world.**
- **The introduction of the Trucknology Generation makes MAN the market leader in both Germany and Austria.**

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### **The fire service becomes mobile**

In 1915, "Maschinenfabrik Augsburg Nürnberg" (Machine Plant of Augsburg and Nuremberg) was planning to add trucks to its product range. The collaboration began with Saurer, a well-known Swiss car manufacturer and, until 1918, the first trucks bore the name M.A.N-Saurer. Saurer had already got off to a good start with the German fire services. For example, in 1921, Munich bought a turntable ladder on a MAN-Sauer chassis having already motorised its fire service in 1912 and 1913 with 18 Saurer chassis produced in Lindau.

When the City of Augsburg commissioned three vehicles for its fire service in 1922, the basic chassis was still a Sauer design. The MAN plant in Nuremberg was shown as the manufacturer on the company badge. The bodies of the two fire fighting vehicles and turntable ladders came from the Ulm-based fire protection specialists Magirus. After 60 years of service in two brigades, one of these fire fighting vehicles became part of the MAN Truck & Bus historic vehicle collection at the plant in Munich. Both MAN and the body manufacturers based in Germany received export orders from abroad for turntable ladders and fire fighting vehicles, in this case from both Sweden and South America.

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.



1925 was a particularly important year for MAN. The first in-house newly designed truck with a diesel engine left the factory - the five ton KVB. A photo from MAN's historical archive shows that a MAN 5 KVB with a long wheelbase was put into service with the Gutehoffnungshütte plant fire department in 1929.

At the Berlin Motor Show in 1933, MAN really set the world alight in terms of innovation. The Z1 was designed for a three-ton payload and the D1 for a four-ton payload. They were supplied with a 6-cylinder diesel engine. At this time, government ministries restricted the range of options for fire service vehicles by specifying a set number of model types. One of these was the KS 15 'Krautfahrspritze' with a pump delivering 1,500 rpm. Prototypes were also built on the MAN Z1 chassis, however, this was not considered for series production. The next larger version was the KS 25 'Krautfahrspritze' with a pump which was the most powerful at the time, operating at 2,500 rpm. A chassis with a four-ton payload was needed for this, such as the MAN D1. However, these KS 25s appeared in large numbers on the chassis of other manufacturers. The reason for this was a reduction in the number of types as stipulated by the government and under which vehicle manufacturers were assigned specific tonnage segments. This restricted MAN's vehicle range to two basic types with a 4.5- and 6.5-ton payload respectively. This contrasted with the actual need for standard vehicles on smaller chassis with 1.5- and 3-ton payloads.

### **MAN Hauber makes the breakthrough**

In the post-war period, MAN continued to focus on the heavy commercial vehicle class. The top of the range model, the F8 series with its powerful engine, went on to become the flagship during the period of the post-war economic miracle in Germany. However, it was just that bit too big for use with the fire services. MAN seldom received orders to supply heavy-duty chassis for export orders of large water tender fire fighting vehicles or of turntable ladders with lengths of 60 m, - the highest at that time. Only the MAN's home city of Nuremberg placed orders for two heavy 'hauben chassis' (cab-behind-engine chassis) in Germany. Metz built a RKW 10 recovery truck with crane on the MAN 758 L1 in 1955, designed for a payload of 7.5 tons. The V8 diesel engine under the bonnet produced 155 hp. Since the end of its service in 1978, it has remained preserved as a record in Nuremberg's industrial past. One year later, the Nuremberg fire service added a 30-metre turntable ladder from Metz on the MAN 630 L2.



Up to this point, there had only been single instances or small series of MAN chassis which had made it into the fire service. The launch of the 'Kurzhauber' (short bonnet) turned the tide. At the IAA 1955, MAN presented a truck with elegant styling and a panoramic windscreen. While the classical appearance of the extended engine compartment lid and free-standing headlight was still a common sight on the streets in the heavy commercial vehicle class, MAN accurately read the mood during the period of the economic miracle with the smooth lines of its light vehicle class. The model name chosen by MAN revealed much about the vehicle configuration. The initial number provides information about the payload, with the second and third numbers - with 100 added - indicating the horsepower of the engine.

The first fire service vehicles were developed on the 115 horsepower 415 L1. Orders from some large professional fire services in Germany certainly sent out an important signal. The City of Nuremberg in which the MAN engines were built, equipped its fire service with the new MAN Hauber. Berlin also opted for MAN, and has been procuring the majority of its fleet on MAN chassis for more than 50 years.

The 415, however, did not meet the requirements of the fire services. But with a high load and large water tank, the light chassis for the four ton payload did actually comply with the 10 ton total weight stipulated at the time. However, the fire services demanded more powerful engines, because on emergency call-outs they wanted to be able to accelerate through the traffic and not just lose forward momentum at the slightest incline. MAN's response to the needs of the fire service sector was the 450 H-LF and the all-wheel drive 450-HA LF with 156 hp. The letters represent the vehicle type: H for Hauber ('Hood'), A for Allrad (all-wheel drive) and LF for Löschfahrzeug (fire fighting vehicle). It was seen as a sales hit both at home and abroad, and - as an off-road, robust vehicle - it brought MAN to the attention of all in the fire service sector.

MAN continually attracted attention for its innovations in engine design. The slogan "The M engine starts in a matter of seconds without preheating" was therefore particularly well received by fire services because no time could be lost when having to respond at speed. The letter M stood for Mittenkugelbrennverfahren (centre ball combustion process). Compared to other engine concepts, the slow combustion of the vaporising diesel in the spherical piston recess ensured smoother running and reduced consumption.



At the start of the seventies, MAN updated the Kurzhauber. The new bonnet could be raised in one piece providing the technician with easy access to the engine. The model name changed at the same time. The number before the point no longer specified the payload, but rather the permissible total weight in tons. Two engines were installed, initially a 6-cylinder engine with 168 hp and a 5-cylinder engine with 192 hp. MAN later brought out the 168 hp with a five-cylinder engine. The 'Haubenwagen' (cab-behind-engine vehicle) remained in the product range for the fire service until 1985.

### **First cab over engine chassis for the fire service**

MAN has been offering cab over engines with a modern design in the range since the 1970s. The cab was developed in cooperation with the French truck builder Saviern. Since this was reserved for the heavier and more powerful model versions, these were of no relevance to the fire service other than for some special-purpose vehicles for industrial and airport fire services in use on some continents. It was not until 1985 that, based on this, MAN developed a medium weight truck for the fire service in the 12 ton class. Compared to its predecessor with the bonnet, the 12.192 FA-LF cab over engine with the generously proportioned cab was more manoeuvrable and afforded the driver a clearer view when driving. Its in-line six-cylinder engine with combined intercooling and charging produced 192 hp.

### **Entering a new market segment with the G series**

In order to gain a presence in the light commercial vehicle segment, MAN entered into cooperation with VW at the end of the 1970s, after which both logos appeared on the front grill. The engine, frames and front axles originated from MAN. VW contributed the cab, from the VW LT, the five-speed synchronised gearbox and the rear axles. From 1979, MAN managed to enter a new market segment in the 6- to 9-ton tonnage class with smaller emergency services vehicles - such as, in Germany, the LF 8 fire fighting truck, the TLF 8 water tender fire fighting vehicle, the RW 1 recovery truck and gear trucks. The large, four door crew cab went down very well with fire services in Germany. The all-wheel drive 8.136 FAE fitted with low-pressure single tyres was added in 1982. To start with, the engines produced 90 and 136 hp. Over its 14-year production period up to 1993, the series known most recently as the G90 underwent a model



improvement in 1987. The headlights moved down from the front grill into the plastic bumper. At the same time, the power of the four- and six-cylinder engines was increased to 100 and 150 hp respectively.

### **A favourite with the fire services - the M90 series**

In Autumn 1988, MAN introduced the M90 series in the 12- to 18-ton medium tonnage range to the specialist trade. Externally only details had been changed, however the front panel concealed continual further development. The series would remain part of the product range up to 2005. Evidence of both facelifts to the M2000 launched in 1996 and the M2000 Evolution introduced in 1999 and shortly afterwards abbreviated to ME2000, were apparent first in the altered bumper and then in the front grill without chrome surround.

The M90 enabled MAN to achieve growth in the municipal sector and, in this case, particularly among fire services. The day cab, taken from the F90 series, and the crew cab added by the body manufacturers impressed many fire services in terms of its size and the great sense of space. In addition, MAN now had a market-compliant engine size in the range with the 230 hp, in-line six cylinder engine. Known as the type 12.232, it quickly went on to become the universal chassis for fire fighting trucks, water tender fire fighting vehicles, recovery and equipment trucks. The 14-ton version with on-road drive served the turntable ladder market. The most powerful and heaviest version with 18 ton permitted total weight and 260 hp - 280 hp from the year 2000 - was often used as the basis for large water tender fire fighting vehicles in the new and simultaneously growing market for swap-body trucks.

MAN also offered a version with the inscription "Silent". The noise reduction measures included enclosing the engine block, insulating the gear box and the use of a special exhaust silencer. Engine performance was also reduced by 10 hp as well as the torque. The delivery of 29 identical MAN 12.222 F models in the Silent design to the Munich fire service caused a stir in the trade in 1995. The Austrian company Rosenbauer constructed these rescue unit fire fighting trucks.

### **Provider in all tonnage classes with L, M and F**

MAN presented a light series for the 6- to 10.5-ton weight class in 1993 under the name L2000. MAN used the long-standing Austrian company



Steyr for the cab. Steyr have been part of the group of companies since 1989. The four- and six-cylinder engines from the D08 series produced between 100 and 220 hp depending on the design and exhaust-gas classification Euro 1, Euro 2 or Euro 3. The product presentation made it clear that MAN was focusing on fire service clients. The exhibition included a fire fighting truck on the 8.153 chassis and with a weight of 7.49 tons which, importantly, was permitted for German car driving licenses at the time.

The variety of cabs also sparked interest among fire services: In addition to the day cab referred to as C and the extended design, longer by 30 centimetres and known as L, there was also a 4-door crew cab. MAN's vehicle construction plant in Wittlich also designed and produced a nine-seat crew cab.

The range would also find its way into the medium tonnage class a few years later. This vehicle was identical to the M2000 or the ME series in terms of the substructure and engine range, and bore the letter L in its name due to the cab from the light series. MAN was thus presenting customers in the 12- to 18-ton segment with the choice: same platform, same engines, just a different cab.

When municipal fire services and plant fire services made enquires to MAN regarding chassis from 16 tons upwards for telescopic masts, large water tender fire fighting vehicles, industrial fire fighting vehicles or swap body trucks, then the F90 was the answer. MAN gradually introduced this series from 1986. This began with six cylinder in-line engines from 290 to 360 hp. By the start of the new century, the maximum performance for the municipal vehicles had climbed to 460 hp with the implementation of the different emission control levels. Two-, three- and four-axle vehicles with on-road or all-wheel drive were able to meet the requirements of the fire services.

From 1994, the F2000 models gradually superseded the previous F90 models. Ever the forerunner to the two other series, the F2000 Evolution, or FE2000, followed in 1998. At the IAA 2000, MAN introduced a nomenclature for the type designation on the doors. This consisted of the letters L, M or F for the series and the E for Evolution and the specification of the engine performance. A letter following this provided information about the weight class: C under 7.5 tons, B for the 7.5- to 18-ton range, and A for vehicles from 18 tons. The range of the offer enabled MAN to be extremely competitive in the market at an international level. Increasing



numbers of body manufacturers across Europe, Asia and Africa used MAN chassis as the basis on which to build their emergency services vehicles.

### **The Trucknology Generation represents success**

The year 2000 was a turning point for MAN: MAN began the new millennium with many innovations, all of which the brand new Trucknology Generation type A truck - TGA for short - had on board from a total weight of 18 tons and above. At the time, their engine range spanned from 310 hp to 510 hp. Production started with the semitrailer tractor and it was another two or three years before the TGA chassis reached the fire services. The TGA came with a variety of large, slim and wide cabs.

In 2007, MAN presented not only a facelift, but also divided the series into two. Since then, vehicles with the wide cabs have carried the TGX name, and those with the narrow cabs TGS. It's the latter series in particular which is in demand at fire services in the form of large water tender fire fighting vehicles, special-purpose vehicles, telescopic masts or swap bodies.

For markets outside Europe, where the challenge of deployment on poor quality routes and in extreme climatic conditions must be met, MAN offers a version of the TGS which previously bore the name TGS WorldWide or TGA WW. This vehicle is particularly suited for heavy fire fighting vehicles, water tank trucks, special vehicles for fire protection at airports and in industrial facilities as well as for turntable ladders and telescopic masts able to operate at great heights.

There was also huge interest among fire services for MAN HydroDrive, the exclusive drive technology introduced by MAN in 2005. The engageable hydrostatic front-axle drive offers more traction for occasional off-road driving. At the same time, the benefits of a conventional rear-axle final drive have been retained, such as low height for easy access. Fire services can take on higher returnable containers with headroom inside in comparison to the all-wheel drive chassis.

### **Ready for operation with TGL and TGM**

At Interschutz 2005, MAN presented a vehicle in the new TGL light series, ready and waiting to succeed the LE 2000 series. The TGL is a two-axle chassis with on-road drive in the 7.49- to 12-ton weight class. There is no all-wheel drive version.



The MAN TGM is assigned the role of covering the 12- to 18-ton weight category. German fire services brought the first emergency services vehicle on the TGM chassis into service in 2006. The standard air suspension on the rear axle in the all-wheel drive version with gross weight of from 11.99 to 15.5 tons is unique. The benefits include great driving comfort and protection of the vehicle, bodies, crew and load. The TGL and TGM series account for most of the operational duties in the saturated German market. They include fire fighting vehicles, turntable ladders and elevating rescue platforms as well as technical assistance vehicles such as gear and recovery trucks. Both series have become very well established, not just in European countries, but also at fire services in Asia and Africa.

The variety of cabs offered ex works contribute to this. Besides the three berth day cabs, the crew cab with a maximum of seven seats should also be mentioned. MAN produced these on the same assembly line in Steyr. There is therefore no difference in the quality, equipment or paint. At the top end, the nine-berth crew cab completes the range on offer. This product is an example of those from the extensive range of services offered by the MAN Modification Competence Centre.

To start with, the range of engines in the MAN TGL comprised powerful 4 and 6 cylinder engines from 150 hp to 240 hp, and later 250 hp. Only light-torque 6 cylinder engines with 240 hp, 280 hp and 330 hp were installed in the MAN TGM. Model improvement measures have seen engine performance improve uniformly by 10 hp in each case, to 250, 290 and 340 hp respectively. The MAN D08 engine series with Common Rail injection met the requirements for emission control in the Euro 3 and Euro 5 stages without the addition of AdBlue. It was not until the introduction of the Euro 6 emission standard at IAA 2012 that the Adblue fluid had to be added. A slight change to the design of the front of the MAN TGL and TGM in the Euro 6 version gave it a different appearance.

As, in terms of driving style design, acceleration is more important on emergency call-outs than the efficiency required by distribution and long-haul vehicles, MAN introduced the TipMatic automatic gear change in 2013. Powerful acceleration is a feature of the optimised gear strategy.

### **MAN SX ensures safety at airports**

In 1991, Munich airport put the first airfield fire truck into service globally on the MAN SX chassis. The international requirements for fire services set the standards for the development of the MAN SX 41.1000 8x8. The



chassis, derived from the off-road, extra wide SX military vehicle series with torsion-resistant box-body frame, coil-sprung suspension and four rigid axles, ensured that incidents could be reached even away from surfaced aircraft operational areas. This method of construction not only enabled rapid acceleration and high final speed, but also safe driving stability on bends and off-road. A powerful V12 1,000 hp cylinder engine was installed behind the cab. The chassis which was built in the Vienna plant, was supplied with a cab platform on which the driver seat had shifted to the centre. The body manufacturer added pumps, extinguishing medium container and cabs. MAN quickly adopted a leading market position globally in this very specialist high-performance airfield fire truck segment. For example, 165 vehicles ensured aircraft fire protection in Europe, Asia and Africa. The Munich airport fire service achieved the world record of 142.3 km/h in 1991 as the fastest fire service vehicle.

ICAO (International Civil Aviation Organisation) standards in 2005 led to the design being revised. The result was the MAN SX 43.1000 8x8 in which the engine was now positioned at the rear. As this engine was now only available up to the Euro 3 emission stage, demand for this MAN specialist vehicle declined after its first ten years.

MAN occasionally offered fire services other chassis from the LX, FX and SX series, derived from the off-road military vehicle segment. The external indication of the vehicle equipped with torsion-resistant box-body, permanent all-wheel drive and single tyres, was the so-called "modular cab" from the military vehicle range. These vehicles were primarily in use at fire stations.

### **MAN as a partner to the fire service**

The close contact between MAN, the body manufacturer and customers in the fire services is reflected in the chassis, which represent the ideal base for the body required. MAN has been the uncontested market leader for fire service vehicles in Austria for more than twenty years. MAN has been regarded as the preferred supplier for some German city fire services for many decades. This applies in particular to Berlin and Nuremberg. MAN has been supplying fire service vehicles to the city of Nuremberg since 1918. Berlin ordered the first MAN Hauber in 1958.

MAN has been very successful on a number of occasions in winning tenders from Germany for disaster rescue vehicles. These include the 228 RW1 recovery vehicles on the VW MAN chassis 8.163 FAE, 371 MAN

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10.163 LAEC from the L90 series with crew cab as GW-Dekon P decontamination gear trucks and several batches of the successor generation on MAN TGM 18.340 4x4 BB. MAN has supplied 390 sanitation gear trucks on TGL chassis in Euro 5 and Euro 6 design for the rescue services. In 2013, MAN completed the delivery of 190 MAN TGM 13.250 4X4 BL as LF-KatS fire fighting group vehicles. THW, the German Federal Agency for Technical Relief, has taken receipt of large numbers of various vehicles from the TGL and TGM series.

While in 1990 MAN's share of the fire service vehicle market in the over 7.5-ton weight class was still at 6 percent, by the start of the 21st century it had already risen rapidly to 40 percent and has stabilised at this level. Now in their anniversary year, MAN has been the market leader for fire service vehicles in the German market for the third time in succession.