

Fire appliance chassis are among the most sophisticated in transport. Ian Norwell reports from Ulm, Germany, home of bodybuilder Magirus, on how standard trucks morph into rapid intervention machines

Fire appliance manufacturing in the UK is, ironically, so hot with rising Phoenixes, it's hard to see past the ashes. Holding companies, private finance initiatives and private-public partnerships have been clouded by more bankruptcy and winding-up orders than you can shake a high-pressure hose at. Why? Mainly because this is one of the truck industry's most specialist niches so 'complete builds' just didn't work out. The chassis were just too expensive for bodybuilders to develop, while the bodywork was too complex and costly for truck makers to tackle.

But Magirus has been involved in fire truck design



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and manufacture since 1864, and the name may ring bells for some as one half of the old truck brand Magirus Deutz. In the UK, it is remembered as an air-cooled cousin of Iveco Ford in the 1970s. When I first toured the Magirus factory in 2011, every chassis on the line was an Iveco. However, since then the two companies have realigned under CNH Industrial (Case New Holland), leading to a significant change in what now moves down the production lines at the specialist's Ulm, Brescia and Graz factories.

Iveco base units still predominate, but 40% of the chassis cabs now come from elsewhere, with MAN, Renault, Kamaz, Mercedes, Scania, Volvo and Hino

The SuperDragon: specially developed for ARFF (aircraft rescue and firefighting) by Iveco and Magirus



all in attendance. A pragmatic view from CNH – accepting that customers have their own chassis preferences – is behind the change and, as a result, Magirus now has a lead role in firefighting bodywork. And that's not just in Europe: at the Ulm factory there's work in progress for China, Brazil, Algeria and Azerbaijan. Annual production is 1,200 crash tenders, 200 turntable ladders, and a further 200 specialist fire vehicles.

Limitless variants

Incredibly, average gestation period for these vehicles is 14 months from date of order – which only becomes understandable when the almost limitless variants demanded by worldwide markets are appreciated. Probably a victim of its own flexibility, Magirus has become a truly bespoke bodybuilder.

Making that work is Magirus's AluFire 3 aluminium superstructure modular body concept, conceived back in 1988 and now in its third generation, having absorbed ideas from all three Magirus plants and its customers. These use one standardised system for all gross weights from four to 40 tonnes, with the design of compartments, sliding trays, reel housings and the like then adapted to each customer's precise needs.



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The screwed construction can be adjusted both longitudinally and laterally, and the frame can fit to different chassis designs and water or foam tank capacities. Further, the body is not bolted directly to the chassis, with Magirus explaining that this leads to safer handling and higher torsional flexibility.

But apart from the structure, there's devil in the detail. Countersunk fixings for safety and ease of cleaning, slick roller shutters and roof-to-floor through loading are all staples, but the degree of tailoring depends on each appliance owner's preferred custom and practice. The needs of a tender in Corsica, where forest fires are a summer danger, are very different to those of a ladder stationed next to a large chemical plant on the Rhine.

As for chassis modifications, they are surprisingly few. Brakes are heavy-duty versions of the road-going option, usually from the construction chassis specification sheets. Engines are up at the top end of the torque table. And retarders are often, but not always, fitted.

However, on the transmission front, AMTs (automated manual transmission) are not making a mark in this sector. There's still a huge gulf between the performance of an automated, and an automatic transmission in the minds of buyers. The no-break-

in-torque quality of an Allison torque converter is still the gold standard here.

"We recognise a strong preference for the Allison automatic gearbox linked with retarder solutions, but the EuroTronic version from ZF is also on the shopping list," says Magirus marketing and product management director Michael Kretzschmar. The only other contender might be a dual-clutch gearbox, or Allison's own TC-10 twin countershaft unit, now finally in service among US fleets.

Fire breathing

Meanwhile, the vast majority of production remains on two axles. "More than 95% of medium or heavy firefighting trucks within Europe are based on medium product ranges, with the 16-tonne (4x2) and 15-tonne chassis (4x4) versions covering most demand," explains Kretzschmar. And he adds that around half of Magirus's production is now based on the Iveco EuroCargo. Only a few units, mostly for export, use the heavier Stralis or Trakker.

The only exception is the Dragon series, specially made for ARFF (aircraft rescue and firefighting). This is a dedicated Iveco-Magirus double act, with the range designed and developed at the Brescia plant. Looking like a weekend runabout for Arnold Schwarzenegger, this vehicle's 4x4, 6x6 or 8x8 chassis is uniquely manufactured by Magirus, and has to reach the highest performance levels for the most rapid of interventions.

A pair of Iveco Cursor C13-560 engines is used to provide the required 'pump and roll', capable of discharging 10,000 litres a minute, while still on the move, possibly at high speed. In serious incidents, aviation professionals calculate that if 90 seconds of full flow cannot stabilise a fire, it may be beyond retrieval. So the twin Cursor's 1,120bhp is needed to move 40 tonnes of 8x8 chassis loaded with crew, equipment, 14,000 litres of water, 1,700 litres of foam and 250kg of dry powder at speed. **TE**

Fire engines in production at Magirus in Ulm, Germany

