



Iveco LMV

Designing in defence

Manufacturing vehicles for war zones requires specialist engineering. Ian Norwell reports from Iveco's defence division plant in Bolzano, Italy

On a list of prime defence contractors supplying chariots of battle, Iveco may not be up there with the likes of Lockheed Martin, but it does have an impressive defence engineering history. Iveco Bolzano, in northern Italy, started life as a Lancia defence plant in 1937 and our tour of the site revealed a scale of operations and R&D that may come as a surprise to some.

In particular, on the heavy Trakker front, Iveco has just completed delivering more than 200 6x6 and 8x8 chassis to the UK MoD, with others in the frame, while its LMVs (light multi-role vehicles) are the subject of ongoing contracts with no fewer than 10 European armies. Indeed, the current order book for Iveco's LMVs stands at 3,200, now 80% supplied.

Feedback from theatre, primarily Afghanistan at present, is fed into ongoing product revisions, and some of the resulting modifications are interesting. IEDs (improvised explosive devices), for example, make depressingly regular news headlines, but the LMV design is responding to improve occupant protection. Carlo la Corte, sales engineer for Iveco's multi-role vehicles, is sanguine about continuous improvement. "It's true that measures spur counter-measures and they generate counter-counter measures, but we are trying the break that cycle by innovation."

Bigger IEDs have, he says, made Iveco designers look very carefully at aspects including shields to dissipate blast energy and the location of underfloor assemblies. Also, the threat of shell splinters and ballistic penetration has designers adding more sophisticated armour kits. Open an armoured door with 8cm of glass and it's not easily confused with an ordinary door.

Ground-generated blast energy is dealt with by V-shaped under-belly deflector shields, which redirect energy, and clever location of underfloor components. Most notably, the transfer box on an AWD chassis has been moved rearwards to prevent heavy items being forced up into the armoured crew cell.

But it doesn't stop there: the physics of energy transmission make simply armouring a seat now insufficient. As blast ergs rise through the floor, structures securing seats to that floor will also transmit the force. So the LMV's seats are now suspended in mid-air, secured to the roof and floor by angled webbing.

Same but very different

Looking at the LMV stats, 'light' is a relative term. With a tare weight of 6,300kg, the SWB version is similar in size to Iveco's Daily van, but with just 1,200kg for payload and 3,500kg for towing. As for the power plant, it speaks well for the Daily that the same 3-litre, 4-cylinder unit that delivers fruit and veg in the UK is also hauling troops in Helmand. But why, then, was a V8 cylinder block sitting on a bench in the plant? What's wrong with the standard engine? The answer: for a plant to supply the defence industry, it has to gain many approvals – and can then only use components from similarly approved plants.

So brake assemblies from Brembo's approved plant are fine, but engines from a non-approved Iveco plant are not. It isn't a quality issue: the sheer cost of approvals is what makes specialist operations like Bolzano tick. Hence Iveco engines are built at the plant, too – but on an entirely different scale to production at Iveco's commercial Daily van Suzarra plant.

In fact, the whole operation is a hand-built affair, with gearboxes and pretty much everything else manufactured from scratch. This is a factory that works at the front line of technology, but uses a hand-built philosophy to great effect. At the Suzarra plant, there are 53 robots among the assembly operations for the Daily. At Bolzano, there are none. **TE**