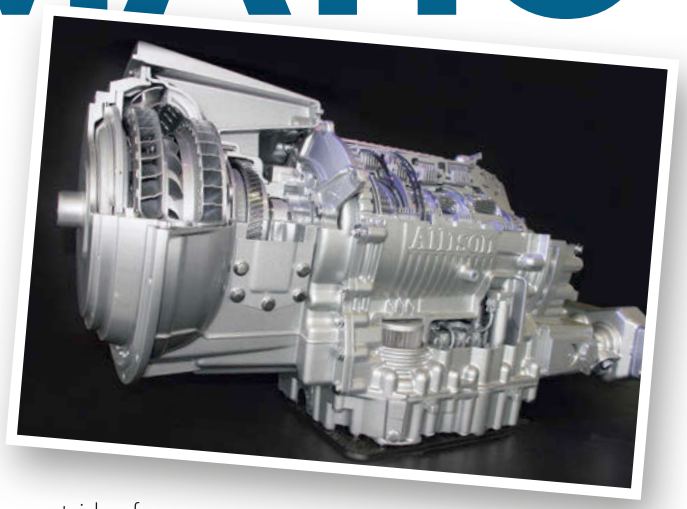
AUTOMATIC for the people

Allison Transmission seeks to expand from its core UK markets of firefighting and refuse collection, reports Richard Simpson



Allison Transmission has long held dominance in two niche markets in the UK: refuse collection and firefighting. But it says that dominance has led to a certain amount of stereotyping among fleet engineers who see it as offering products suitable only for those two applications.

However, each of those duty cycles places very different demands on a transmission: refuse collection demands excellent low-speed control, while firefighting (see also pp31-32) is all about smooth and rapid acceleration and braking. Both require a good PTO.

The supplier argues that its ability to successfully cater for both demands with the same set of hardware indicates the product's versatility.

Speaking at the company's European production and demonstration facility in Hungary, Sergio Camolese, Allison Transmission's director of market development in Europe, was cautiously optimistic about expanding outside of these core applications.

Questioned about the viability of fully automatic transmissions in a world where automated manuals were increasingly the norm and already provided the benefits of two-pedal driving, Camolese neatly turned the issue on its head. He says: "We see the increasing acceptance of AMT as a positive in getting full-automatics accepted. AMT has taken away the prejudice against two-pedal driving, but we question whether it takes away the market for full autos.

"We don't take a big chunk of the market in Europe, but we are the reference transmission for the construction industry in the States. We are also accepted as the best option for complex operations in harsh applications where service support is difficult." Camolese cited Astra, the specialist heavy-duty vehicle division of IVECO parent CNH, as being a good example.

"Astra will recommend us for third-world markets, because the product requires so much less in the way of maintenance than a conventional transmission," he says.

DRIVING IMPRESSIONS

A drive in an unladen Renault K DTI1 430 8x4 equipped with an Allison 4500 six-speed in place of the chassis manufacturer's Optitronic AMT took place on a moderately challenging off-highway test circuit at the Allison manufacturing plant.

While Optitronic has a reputation for being one of the best of the OEM AMTs, the Allison box appeared to give better low-speed control, particularly when pulling out of depressions or crossing severe ruts. Drive selection (pictured) is via a quadrant control that is similar to a car with an automatic transmission. There was no excessive transmission noise.

Then the author drove a Scania G490 8x4, again with the Allison 4500, but this time on a road circuit and with 10 tonnes of stone aboard. The truck was noticeably quicker off the mark, when compared to a similar truck fitted with Scania's Opticruise AMT.

-Richard Simpson

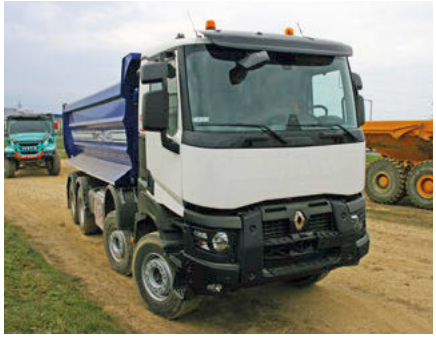
"In more mature markets, like the UK, performance is the selling point. For example, a roadgoing tipper truck can better challenge an off-highway articulated dumper in terms of off-road performance if it has an automatic transmission. Allison uses a torque converter in place of a conventional mechanical clutch [pictured at left of picture, p35]. The torque converter actually multiplies engine torque at very low road speeds, where power would be lost through a friction clutch. Where there is a linear construction site, like the HS2 railway for example, the ability to legally operate on public roads could be advantageous."

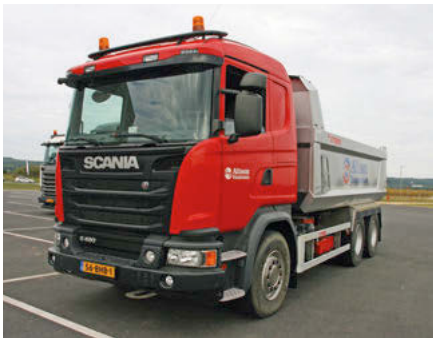
THE ECONOMICS

If operational performance is better, how do the economics stack up? Camolese explains that the premium for the product installed in an OEM truck chassis is decided by the chassis manufacturer, and this means it is unlikely that the Allison transmission is going to be cheaper than an AMT produced in-house.

"Fuel consumption will have an impact, but it is different for every application. Allison has released FuelSense 2.0, which allows calibration of the transmission to suit different applications and minimise fuel consumption at the expense of slightly less performance. An AMT will always be slightly better, though," he admits.

He urges operators to see beyond





this, and instead look at the total cost of ownership: "The Allison is easy to drive, needs little maintenance, and is bulletproof in service."

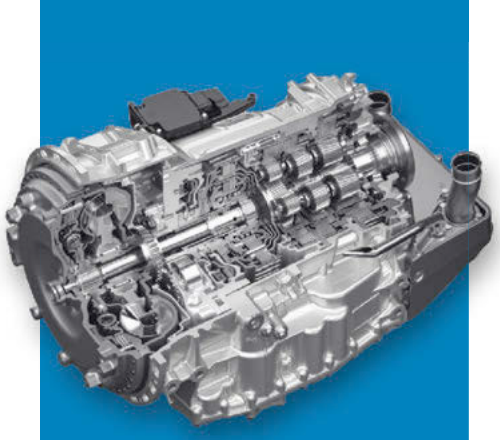
He adds: "Proponents of mechanical transmissions will also tell you that an Allison transmission is heavier than a conventional gearbox. This is true, on the face of it, but the installed weights are no different, because that figure for the conventional gearbox does not include the clutch."

Many drivers of AMT two-pedal trucks will criticise their vehicles for the moments when they cannot decide which gear to select. This is not much of a problem on the open road, but can cause frustration in heavy traffic, which is just when the driver should be able to focus on the surrounding situation, rather than be wondering what the truck is going to do next. There is no such hesitation where the AMT is replaced by an Allison, plus the torque multiplier opens opportunities for engine downsizing, reducing the vehicle's carbon footprint.

Ashley Brooks, Allison Transmission area director for UK and Ireland, argues: "The better launch provided by the Allison torque converter opens the opportunity to install a smaller engine for London operations. Instead of a 395bhp or 434bhp 13-litre unit, an eight-legger could go down to an 11- or even 9-litre engine without adverse impact on on-road performance. Obviously, that won't be true for operations in hilly areas: there is no substitute for engine displacement on long grades, but London and its surroundings are virtually flat and speeds low. There would be a valuable reduction in unladen weight as well as fuel consumption."

Gas-engined vehicles are another opportunity for Allison, he maintains: "Spark-ignition gas engines don't have the low-down torque of their diesel counterparts, but the torque multiplier of the Allison will compensate for this," he points out (see also feature, pp26-27).

Specifying the vehicle to take the characteristics of the Allison six-speed transmission into account is crucial, he warns. "We do see specialist Allison-equipped diesel-engined municipal chassis put into more general applications, without taking the higher-speed nature of the work into account. Hence you have complaints of the engine revving to 2,000rpm at 56mph, when a better choice of drive axle ratio could see this reduced to 1,500rpm." TE



ZF'S SECOND LIFE

A second version of the EcoLife bus transmission, EcoLife 2, offers improvements including potential fuel savings of up to 3%, stop-start capability for all model variants and reduced wear thanks to an optimised cooling concept. Shift quality has also been improved, according to the company.

"ICE-powered buses are still a central component of public transport systems and long-distance travel provision. It is therefore important to contribute to reduce emissions and increase efficiency in this area," says Dr Andreas Grossl, ZF's head of bus axle and transmission systems.

ZF has retained the basic principle of a six-stage planetary gearset with torque converter and primary retarder. Now, the torque converter includes a new torsional damper, enables fast and smooth shifting and stop-start, and accepts input torque of up to 2,000Nm. Also, total gear ratios have been extended from 5.469 to 5.727.