

# SUPER SAVER

Scania's new drivetrain promises fuel savings of 8%, along with redesigned diesel internal combustion engine, transmission, emissions aftertreatment system and rear axles. Lucy Radley sorts through the heavy metal

**T**here's so much talk about VECTO scores and alternative fuels these days, Scania's latest launch appears a little incongruous at first glance.

A brand new 13-litre drivetrain may not seem particularly green, but actually it's nothing if not practical and realistic. Like it or not, the combustion engine will continue to be the most widespread means of powering heavy vehicles for many years to come, so creating a cleaner, more efficient version of that is the best way to reduce emissions in the here and now.

The headline fuel saving promised by the Scania Super is an attention-grabbing 8%. The new DW6 engine itself is responsible for 5.7% of that 8%, when compared with the current 13-litre engine – 7% as against the 2016 version. A six-cylinder unit, it is available at 414, 454, 493 and 552bhp, the highest powered version giving 2,800Nm of torque from 900-1,400rpm. It's said to also deliver 30% longer operational service than its predecessor. The DW6 is also said to be the first engine in the European truck industry to break the 50% brake thermal efficiency barrier, a major milestone for Scania.

All this is achieved thanks to an upgraded high pressure fuel pump and fuel injection system, alongside a new single cylinder head, unique to Scania, enabling peak pressures of 250bar. The new engine also has a dual overhead camshaft and fixed geometry turbocharger, enabling both improved gas exchange and the addition of a

compression release brake (CRB) as an option at all power levels. This is a real alternative to fitting a retarder, improving engine braking by 350kW, while having a weight penalty of just 7kg. Combining CRB with Scania's retarder gives the operator a combined 600kW of wear-free braking force.

That high peak cylinder pressure may mean efficient combustion, but it also produces high NOx. This is dealt with by Scania's dual-dosing twin SCR system, which delivers AdBlue both immediately after the turbo, and again in the silencer unit. Together, this strategy enables the DW6 to meet current emissions regulations as well as future-proofing the unit – which is also, incidentally, capable of running on HVO (hydrogenated vegetable oil) fuel. Non-cooled EGR is used as well, but only in the overrun, as a means of keeping heat in the system, thereby improving catalyst life.

Designed according to Scania's low-rev/high torque/direct drive philosophy, DW6 benefits from minimised internal friction and a new engine management system. It also comes with the option of new, engine-driven PTO with an output of 1,000Nm, as against 600Nm on the previous engine.

It bears mentioning, at this point, that the twin SCR system uses around 5% more AdBlue than the single-dosing system found in the outgoing engine. To ensure it is still possible to carry enough AdBlue on the chassis to treat the whole of the fuel tank contents, there are now options for larger 123- and 150-litre AdBlue tanks. These tanks can also now

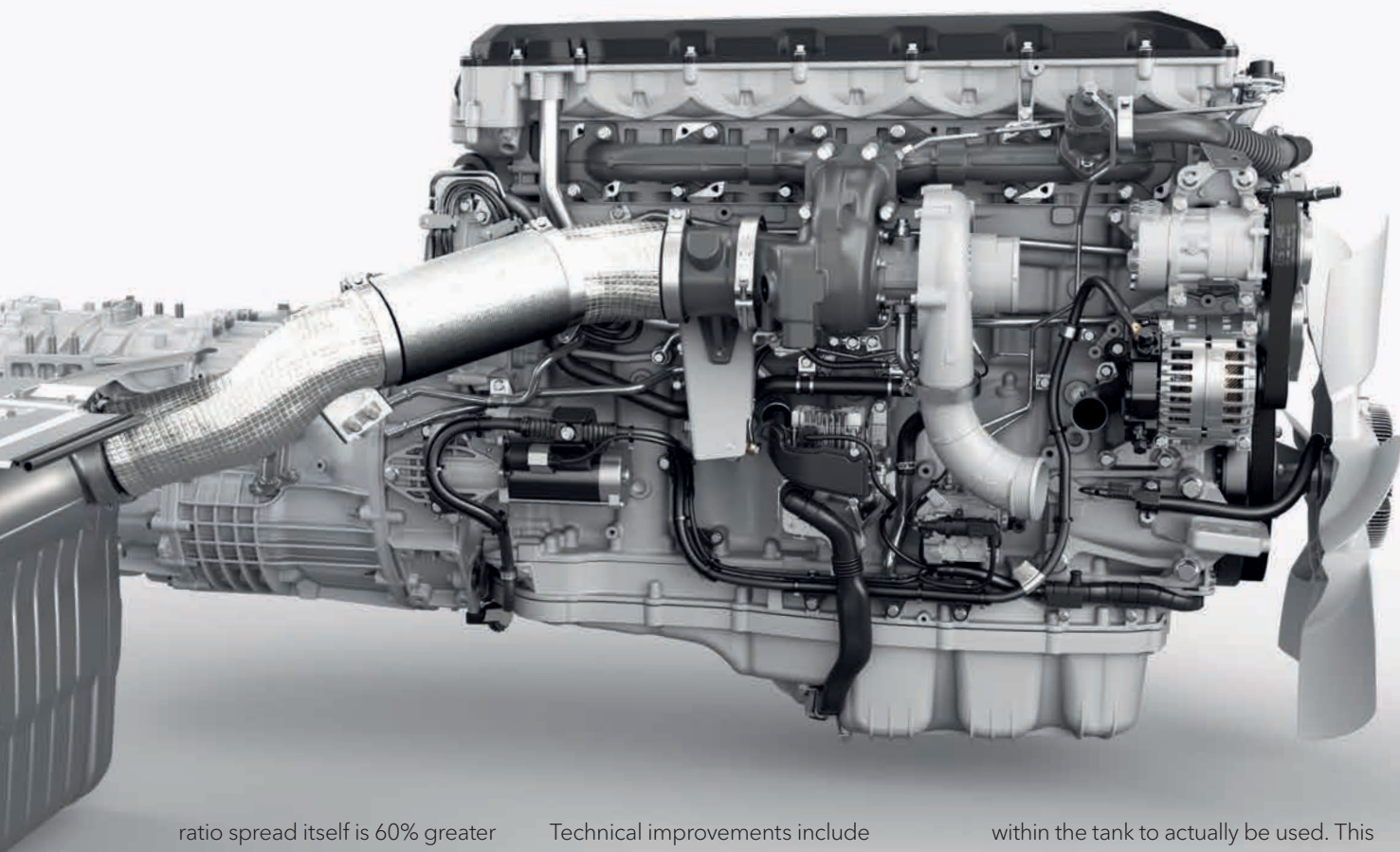


be hidden on rigid bodied trucks, if required.

## TRANSMISSION

Moving on, there is also a new Opticruise gearbox programme, which now has two performance steps. The first, G33CM, was released in 2020, and is aimed at engines over 500hp, producing up to 3,300Nm of torque. G25CM now joins that, for engines of 220-460hp and up to 2,500Nm. These are both overdrive gearboxes and offer around a 1% fuel saving in their own right, and an oil change interval of as much as 1,000,000km.

Technically identical, the G25CM has narrower gears which makes it physically shorter and 15kg lighter than G33CM, which in turn is 60kg lighter than the GRS905 gearbox it supersedes. G25 is a full 75kg lighter than GRS905. Both options offer 14 forward gears, including an overdrive and a crawler, and four reverse as standard. Because reversing now uses planetary gears, there is also now an option for eight reverse gears if desirable for the application. The gear



ratio spread itself is 60% greater than GRS905; the software driving it all has been completely rebuilt, and both G25 and G33 can be specified with two or three pedals.

Synchronisation is achieved by layshaft braking in the new gearbox, which means the synchronisers found in GRS905 have been removed. This allows space for wider gears to be employed, which increases durability and, more importantly, efficiency, which is as high as 99.8% in direct drive. Through this and other features, such as removal of the reverse idler gear, a variable oil level system with reducing overall volume, and improved surface smoothness of the gears themselves, internal losses are now 50% lower than GRS905.

No new powertrain would be complete without a new rear axle, and this one is no exception, although the range in its entirety - including two levels of strength, and tandem axles as well as single - will be introduced gradually over the course of the next two years.

The R756 single reduction rear axle available now offers nine ratios, ranging from 1.95 to 4.11. Weighing 27kg less than the R780 axle it replaces, thanks to new housings and reduced oil volume, it has service intervals of up to 750,000km, and a service life of 2,000,000km.

Technical improvements include improved lubrication, and reduced friction thanks to optimised bearings.

#### AND MORE

Scania Super includes several other developments. Firstly, Scania is now offering a Modular Architecture Chassis (MACH), a more flexible system designed to make it easier to specify where space needs to be left to facilitate bodybuilding. Among other options, fuel tanks can be positioned from the front or rear to optimise weight distribution, and air tanks hidden inside the chassis rails.

The second is called the fuel optimisation unit, or FOU. It attaches to the end of the primary fuel tank and enables almost the entire volume of fuel

within the tank to actually be used. This means that a reserve no longer needs to be carried to float the tank, reducing weight and increasing payload while still offering the same range as in the past. Inside the FOU is a low pressure fuel pump and filter and catch tank - in essence, the low-pressure fuel circuit has been moved to the primary tank, rather than being housed with the engine. By maintaining a head of fuel within the catch tank, the FOU ensures there is no risk of air entering the system as the vehicle changes direction or gradient, causing the tank contents to slop about. The new tank also has a D-shaped cross section, making it an optimal combination between the strength of a cylinder and the capacity of a cuboid. **TE**

While not yet approved for use in the UK, it would be churlish not to mention Scania Mirror View. Planned as a retrofit accessory, this is the latest system to replace the truck's main mirrors with cameras, which feed to screens mounted on the A-pillars inside the cab. Scania has mounted their cameras lower down than seen elsewhere. This gives a far more familiar view to the driver, although the overall set-up is in need of some refinement. One to watch in future. *-Lucy Radley*

