

Efficient, flexible,

With the massive Hannover commercial vehicle event just days away, Brian Tinham previews some of the attractions for transport engineers and fleet managers

'Commercial vehicles: efficient, flexible, future-proof': that's the slogan for the 63rd week-long IAA (Internationale Automobil-Ausstellung) Commercial Vehicle show, opening in Hannover, Germany, on 23 September. Putting a brave face on an industry in a spot of bother? Not a bit of it, if Matthias Wissmann, president of organiser VDA (German Association of the Automotive Industry) is to be taken at his word.

"At this IAA, we will show just how important commercial vehicles are in providing services to society, business and consumers," he says. And, shrugging aside last year's carnage across the

sector, he adds: "IAA will show that the commercial vehicle industry is shaping the future and has an excellent chance of emerging from the

crisis in a stronger position." Plainly, this year's event looks set for interesting launches and previews. So let's look under the bonnet – particularly at advances aimed at improving efficiency, costs and the environment.

Firstly, if for no other reason than it's on its home turf, MAN looks set to reveal some fascinating developments. The company – which, on 29 July, released half-year figures for 2010 showing a 70% improvement year-on-year in commercial vehicles, driven substantially (but not only) by Brazil – says it will show new trucks and buses, as well as prototypes and technology programmes, all aimed at improving efficiency, but also safety.

Addressing the press at the firm's IAA preview in Munich, MAN SE chief executive Dr Georg Pachtla Reyhofen said that focal points for IAA will include MAN's improved TGS and TGX trucks (with D20 and D26 engines, ranging from 320bhp to 540bhp), as well as the latest TGS WW for the Middle and Far East, Russia and Africa (18 to 41 tonnes, 350–480bhp D20 and D26, but at Euro 2 or 3). He also pointed to the

IAA is not just about interesting new technology for trucks: talk to the manufacturers about custom specifications



future-proof

VW range – Volksbus, Delivery, Worker and Constellation – all of which will be shown, following MAN's takeover of VW Truck and Bus 18 months ago, under the curious banner, 'More you didn't need; less you didn't want'. And he urged visitors to look at MAN's hybrid technologies: both the TGL 12.220 prototype truck and Lions City hybrid bus.

On the TGS side, we were shown a TGS 35.440 four-axle tipper, a TGS 18.400 set-down skip loader and a TGS 26.400 transporter with loading crane. At IAA, visitors will see similar trucks, but the underlying technologies are just as important – such as MAN's TipMatic transmissions, the EasyStart hill-holding system, its PriTarder and HydroDrive hydraulic front-wheel drive assistance.

PriTarder is a primary braking system that works directly on the crankshaft, and operates well, even at low speeds. It comprises the EVBec engine brake water retarder, providing 600kW of braking power for deceleration or holding speed downhill. MAN claims a 60kg weight saving, compared with secondary retarders – and it's maintenance-free. The system is integrated into MAN's BrakeMatic electronic brake management system and, on all-wheel or HydroDrive-equipped trucks, works on all wheels.

If you haven't looked at HydroDrive before, it is aimed at operators with vehicles usually operated on-road, but occasionally needing additional traction. It weighs slightly more than a rear-wheel drive, but 100kg less than the alternative all-wheel drive, so there's the obvious fuel saving – which is why MAN has sold 5,000 units to date.

Consistently efficient

As for the rest, it's about electronics, on the one hand, and a holistic approach to fuel saving on the other (MAN's 'Consistently efficient' theme). For the former, MAN's ESP (electronic stability program) now includes its lane guard system (LGS), adaptive cruise control (ACC), electronic braking (EBS) and continuous damping control (CDC). That's a lot of safety equipment, which, on the run-up to 2013 (when EU legislation will require forward-looking emergency braking and lane departure systems on new vehicles), is worth examination.

Meanwhile, on the 'Consistently efficient' side, Frederic Jakowatz, MAN's head of product strategy, explained that attaining fuel efficiencies is no longer about any single initiative. He gave the example of a 440bhp 40t gvw TGX long-haul combination, with

Timpatic transmission, the Intarder Eco and aerodynamic kit. "Typical fuel consumption will then be around 33 litres per 100km," he postulated.

How can you improve on that? Jakowatz listed several approaches: adding air management (using a multi-disc clutch to deactivate the compressor), he said, saves 90% of auxiliary plant operation and 0.5 litre per 100km; going for the new generation of high-efficiency Trucknology alternators yields 0.1–0.2 litres; and using 42W daytime running lights, instead of the standard 300W, brings in 0.1 litre per 100km.

Add in a modest speed reduction of 4km/h; go for some light-weighting on the chassis, suspension, axles and wheels to improve truck loading; improve tyre rolling resistance (by implementing MAN's tyre pressure system); and cut out some of the external paraphernalia that increases wind resistance – and he estimates savings of 2.6 litres per 100km. "At 150,000km pa, that's 3,000 litres saved and, at today's prices, eur 3,750 per truck."

MAN's (and others') final serious piece in the fuel-saving jigsaw, though, is the driver – and IAA visitors will be able to quiz MAN instructors about ProfiDrive, said to deliver an average 10% saving, due almost entirely to working on an anticipatory driving style.

But there is another way: Eberhard Hipp, senior manager in MAN's Central Research

It may look like a standard truck, but under the covers lurks an array of electronics and mechanical engineering aimed at optimising fuel usage and safety



Division, urges visitors to check out MAN's work with the technical university in Munich, simulating trucks on roads. "The system maps road topography in a database and combines that with GPRS data, so that vehicle systems can optimise gear changes, speeds, etc, automatically" he explains. "It also works with forward-looking cameras that detect traffic warning signs, such as road works or speed restrictions, to make real-time adjustments."

Hipp explains that this system is not yet ready for road-going trucks, but should be on sale within the next two years. "This could be very big for fuel economy and safety," he says. "The system will also be adaptable to different haulier's driving strategies, with codes mapping to allowed acceleration, speed, max/min distance to the next vehicle, etc."

MAN concedes that well trained drivers should be able to do much of this for themselves, but points to hidden gradient sequences that are difficult for anyone to get right. Hipp also alludes to a separate multi-company vehicle-to-vehicle wireless project, being undertaken in Germany, aimed at optimising traffic routing on the fly. Both are well worth a look.

Meanwhile, for dual-fuel and gas trucks – and their contribution to saving the planet and operators' fuel bills – stands you should visit include Volvo, Scania, Iveco and Mercedes-Benz.

Green technologies

Volvo, for example, says it will use IAA to "stake out a path for the future [with] new green technologies". Lars Mårtensson, environmental director at Volvo Trucks, says that star of its stand will be a Volvo FM, powered by a 460hp 13-litre diesel engine, running on methane gas in dual-fuel

mode. He insists that this FM is 30–40% more efficient than earlier gas (spark ignition) engines. And he adds: "We are showing that gas is no longer limited to urban traffic, but is also ideal for longer-distance operations."

Quiz him on Volvo's work with technology firms Clean Air Power, Hardstaff and Westport for its 7 litre dual-fuel engine. Also, does experience to date confirm the 40% emissions reductions? What about the additional on-cost? And how about Volvo's progress with its bio dimethyl ether-fuelled trucks?

While you're there, it's worth taking in Volvo's hybrids for stop-start truck operations. Check out its hybrid driveline, based on a 7-litre engine, due for launch on the Volvo FE platform in 2011. Volvo is currently the only truck manufacturer offering hybrid technology at 26 tonnes. And, talking of hybrids, Volvo Trucks is sharing its stand with Volvo Buses, which will present its first series-produced hybrid city bus – the Volvo 7700 Hybrid.

Meanwhile, back on gas engines, Scania's contribution to IAA will include its new 9.3-litre 270 and 310hp units, now available on trucks, as well as buses. These comply with the EEV (enhanced environmentally friendly vehicle) standard and are based on the firm's Euro 5 EGR (exhaust gas recirculation) engine, and come with eight chassis-mounted gas tanks, having a capacity of 640 litres (1,200 litres in roof-mounted tanks on its buses).

Other novelties on Scania's stand will include the firm's ethanol engine, running as per the diesel cycle, while the firm's engineers will also be on hand to discuss 100% biodiesel and/or biogas options. Again, it's all about green fuel and cost savings, but Scania, too, points to drivers – so look out for the firm's Driver



Support system, which provides on-board assistance for drivers, ideally as part of a management campaign to reduce fuel bills.


Just as interesting to many transport engineers will be Scania's tempting new R 730 truck, making its debut alongside its equally new 16.4-litre V8 engine (rated at 730hp and 3,500Nm), which has a reinforced overdrive gearbox and the Opticruise transmission and Retarder. The heavy haulage tractor unit on display will also feature Scania's new hub reduction and progressive parabolic springs, as well as its combined traction panel on the dashboard for difflock operation and traction control.

And for those concerned about Euro 6, Scania's new common-rail engine platform will also be on display. With the combination of technologies currently being tested, it's worth trying to get time with Jonas Hofstedt, Scania's senior vice president of powertrain, to discuss the firm's five- and six-cylinder inline and V8 engines – all of which, he says are already Euro 6 ready.

What about Iveco's carbon-cutting offerings? On the natural gas side, recent contracts with Tesco.com (25 EcoDailys, powered by compressed biomethane) and Coca-Cola (a 21 tonne Stralis trial unit, also on biomethane) indicate confidence the firm enjoys with some big-name users. But take the opportunity to talk to Iveco about its trials with hydro-methane, a mix of natural gas with 30% hydrogen, claimed to offer even greater reductions in CO₂ emissions.

For now, there are 28 natural gas EcoDaily variants, plated between 3.5 and 7 tonnes, each powered by a 3-litre engine rated at 136bhp and up to 350Nm torque. As for the Eurocargo, the range is 12 to 16 tonnes, all powered by the Tector 6 (5.9-litre, six cylinders), producing 200hp and 650Nm. Finally, on the trucks, Iveco's Stralis Active Day and Active Time gas variants are available in rigid and tractor formats, from 18 to 34 tonnes – all with six-cylinder 7.8-litre Cursor 8 engines, producing up to 300bhp and 1,100Nm of torque.

But it doesn't stop there: Iveco is also doing well in electric van technology, with the EcoDaily Electric 3.5 and 5.2 tonne vehicles in series production. Motor power is 30kW continuous (60kW peak) for 35S EcoDaily Electric models and 40kW continuous (80kW peak) for 50C models. Ask about these vehicles' load carrying capacity: with all drive components and batteries housed either in the engine compartment or the chassis side rails, the claim is 'no compromise'.

Also ask about Iveco's diesel-electric drivelines. On the parallel hybrids, like most of the competition (MAN, Mitsubishi Fuso, etc), its technology uses regenerative braking, but it's worth examining the detail. Available trucks are Eurocargo hybrids in 7.5 and 12 tonne gvw versions, with the 16-valve, four-cylinder FPT tector EEV diesel engine, rated at 160 and 180bhp respectively. 

Transport suppliers' technologies

IAA is not just about the big truck manufacturers, so here is a glimpse of just some of the suppliers' offerings. TRW Proequip says it will be exhibiting alongside its OE (original equipment) parent TRW Automotive, showing steering and suspension parts, brake pads, shock absorbers and steering gears – including XCAP, a new design of tie rod end. As for the OE side, it's all about DAS (driver assistance systems), with TRW Automotive promising to demonstrate how such systems help protect drivers and passengers and assist in avoiding or mitigating the impact of accidents.

Meanwhile, if your interest is retrofit emissions reduction, get along to EminoX's stand. The company will be showing its SCRT, claimed to eliminate up to 80% of NOx and virtually all particulates, hydrocarbons and CO by combining CRT (continuously regenerating trap) with SCR (selective catalytic reduction). EminoX says that its equipment achieves emissions standards equivalent to Euro 5, even on Euro 2 engines, and that almost 400 have now been supplied across Europe. Ask about the variants, which EminoX says can be calibrated for an increasingly wide range of truck driving cycles. Also, look out for its new ART (active regeneration trap) full flow burner DPF (diesel particulate filter), which uses a silicon carbide filter in a modular stainless steel system, for low temperature applications.

Staying with the 'green' theme, the star of Grayson Thermal Systems' stand will be its new electric fan, installed alongside a Grayson Cassette 2 Plus cooling system. The module is aimed at both retrofit and OE markets, and Grayson claims that trials show at least 7% fuel improvements. The firm also reckons it optimises powertrain durability, cuts service interventions and reduces noise and vibration by only switching on fans and pumps when required. Interestingly, Grayson suggests that fans can also be run in reverse to help remove blockages. While you're on the stand, ask about systems currently being developed to optimise performance of electric and hybrid drive vehicles.

However, going green is also about minimising weight, so it's also worth stopping by Motor Wheel Service's stand, where the xlite range of forged aluminium commercial vehicle wheels is to be unveiled. Said to be five times stronger and 40% lighter than standard steel equivalents, they are forged from a single billet and are available in 17.5, 19.5 and 22.5in sizes, with three finishes – machined, polished and xBrite. Ask MWS about its claims of "unique safety features, reduced vibration and longer wear on surrounding parts", and about fuel savings from the weight reduction.

Finally, turning to semi-trailers, UPM, Dow Automotive Systems and Don-Bur will be presenting an innovative approach to mounting floors to trailer bodies. On show will be a Don-Bur trailer featuring UPM's Wisa-Truck Plus plywood floor, bonded with Betamate adhesives from Dow Automotive Systems. The trio make the point that this combination eliminates the need for mechanical fixings, and also claim that it offers increased structural rigidity, improved durability and corrosion protection.

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