

A man with a mustache, wearing a dark suit, light blue shirt, and red tie, stands next to the front of a white Mercedes-Benz Actros truck. The truck's grille and headlights are visible. The background shows an exhibition setting with a wall that has the word "efficient" partially visible. The overall scene is brightly lit, typical of a trade show or exhibition.

Georg Wieberg, head of truck product engineering, Mercedes-Benz, tells John Challen about his cross-brand hybrid vision and the need for greater innovation and development

Big ideas

Not content with taking over an entire hall of the IAA Commercial Vehicle show in Hannover, late in September, Mercedes-Benz further raised its profile at the event by picking up the trophy for Truck of the Year 2011. The manufacturer's Atego triumphed, signalling a big thumbs-up from the industry for hybrid technology, with Mercedes insisting that a key model in the range will be its BlueTec hybrid Atego.

It's food for thought. This truck's water-cooled, three-phase permanent magnet electric motor boasts a peak power of 44kW and offers 420Nm of torque. This power supports the downsized 4.8-litre, four-cylinder 218hp engine to ensure decent performance across the duty cycles, and a reduction in fuel consumption and CO₂ emissions of 15% is claimed.

According to Georg Wieberg, who is head of truck product engineering at the German giant, the Atego BlueTec represents just one of a trio of hybrid powertrains featuring on the three brands that fall under the Daimler banner – Mitsubishi Fuso, Mercedes-Benz and Freightliner. "The basic strategy is to have hybrids throughout each range: a lightweight hybrid powertrain for the Fuso, a medium unit for the Atego and a heavy duty powertrain, which will come in the future," he suggests.

His first hybrid – in the Fuso – has been around for three years, while the second, the Atego, has already successfully passed its first major hurdle: a trial with DHL. "Our work with DHL has given us the opportunity to gain feedback from real customer operations and allowed us to further develop the parallel hybrid," explains Wieberg. "We learned a lot about the technical detail, such as the right interaction between components on the truck and the right battery management system. We now have start-stop as an additional feature to further save fuel and the results of the test program in Stuttgart show between 10 and 15% reduction in fuel consumption."

Wieberg, clearly pleased with these initial findings, is not resting on his laurels, though. "The next step [for the Atego hybrid] could be the electrification of the auxiliaries, such as the steering pump and braking systems."

Big (hybrid) ideas

Success on the Fuso hybrid and happy operators using larger diesel-electric powertrains, too? It must be time to move onto bigger and better things – literally? Indeed it is, says Wieberg, and he indicates that a hybrid powertrain for the long-haul market is already in the study phase, housed within a vehicle "very similar to an Actros", he hints.

The German says that a number of simulations have already been completed and the results dissected. "We have one prototype in our global hybrid centre in Japan," confirms Wieberg. "We have already achieved fuel savings in the region of 5%, which is a lot for that class of vehicle."

While that saving is currently only achieved when traffic flows are optimal, it's the benchmark that Wieberg and his engineering team are working towards, with a view to making even greater savings in due course. Wieberg says the market can expect to see an Actros hybrid within the next three to four years. "When we can [achieve] simulated savings of 5% in a prototype, it makes sense to go farther," he says, adding that timeframes will be somewhat governed by the challenges of upcoming legislation. "We have to ensure all our powertrains

meet the requirements of Euro 6 before we can look too seriously at hybridisation. It makes no sense to change the engines before Euro 6 comes into force," he explains.

So what about workshops and those technicians that may not have had much, even any, exposure to hybrid trucks, especially not in the Actros class? Wieberg concedes that there will be a requirement for a great deal of training at or around dealerships selling, or maintaining such vehicles, but he has already devised a template in Germany. "We have three main service stations in Germany for the support of the existing 50 hybrid vehicles," he asserts. "We have also installed 'flying doctors' – experts who have a hotline to every service station – and they can go and educate and advise technicians."

Market share

Wieberg also expects a significant measure of collaboration to be forthcoming across the brands on the van and truck parts side. "Elsewhere, we are looking for synergies between the three brands specifically on the components side, and that includes engines, transmissions and axles," he says.

Why? "We need economies of scale on the components, because the investment on a new engine development is very high." There are inevitably challenges, for example, when offering engines across global markets, which have different regulatory regimes. "In the US, we have to meet EPA10; in Europe it will be Euro 6; and there are others elsewhere. So we are looking for 90% common parts, but then 10% bespoke parts for local applications," he explains.

Car crossover

One advantage that Mercedes-Benz Trucks has over some of its competitors is instant access to a full portfolio of passenger cars and their technologies. That is invaluable, according to Wieberg, and a benefit that could have an impact very quickly – for example, on the next generation of the company's active Brake Assist safety development.

"The second generation of Brake Assist allows us to detect obstacles that are not moving," he explains. "For Brake Assist 3, some suppliers are talking about combining camera and radar systems, which could detect even more, but there are risks. We have experience on the passenger car side, with DISTRONIC, and we can transfer [that know-how] to trucks. But we are trading carefully, because, if [the system] gets a wrong signal, the consequences could be detrimental." That's why Wieberg describes Mercedes' approach to development as taking small steps, as opposed to giant leaps.

Wieberg lets slip that one unconventional technology – which appeared on the ESF 2009 Mercedes passenger car concept – is now being evaluated for its trucks. This system's braking bag (which is effectively a large external airbag that fits onto the front axle for rapid deployment in emergency situations) was not due to feature on passenger cars for some years. However, now it looks like Mercedes trucks might get the system first. "For air suspensions, we have a lot of experience from the S-Class and we can transfer that technology to trucks," he smiles. "We have a similar airbag [to the braking bag] in development right now, and have organised our group research for passenger car and truck development so that many of the common aspects are working together." 