

Last year's preview of Iveco's Glider concept truck sparked considerable interest. Brian Tingham finds out what's behind the massive efficiency claims

So how does an annual saving of around £25,000 worth of fuel sound for a 'typical' artic covering 100,000 miles per annum – currently costing operators at least £60,000? Impossible? But that's precisely Iveco's prediction for its Glider truck.

So says Giandomenico Fioretti, innovation and alternative traction manager at its Turin HQ, who reveals that the engineering team took as its inspiration the eagle. "Eagles don't move their wings much; they simply reconfigure them," he explains. "Our Glider is similar: it's about designing a truck for maximum productivity, using minimum effort."

That may sound slightly kitsch, but, with a target of 40% fuel and CO₂ savings, Iveco needed its designers to think outside the box. Still, it's easily said and less easily done. Indeed, Fioretti concedes that the project required a radical approach to engineering, facilitated by a major investment in IT to enable collaboration across its development teams.

Swoop to savings

So how exactly is that stated 40% going to be achieved? Fioretti says many of the technologies either exist or are just around the corner. He starts by pointing to the Glider's cab, which features built-in photovoltaic panels. "These are big surfaces, so we're 'functionalising' them. Admittedly, we're increasing the cost of the roof, but we're decreasing the cost of power generation," he says.

It makes sense: as does the fact that the roof sees plenty of sunlight and is constantly cleaned by wind flows. Fioretti expects 2kWh of energy, either for use directly or for the auxiliaries when the engine is off – with power stored in "a high specific energy battery pack". The result: 1% fuel saving.

It's small, but next up is recovering this truck's braking energy, through KERS, using a motor-generator on the transmission PTO. Electrical energy generated during braking charges the battery, while on acceleration the electric motor provides a power contribution to reduce engine demand. On long haul, Fioretti estimates fuel savings as high as 7%.

And so it goes on. Fioretti cites a beltless engine, with auxiliaries solely under electrical control – allowing the power plant to be dimensioned for traction only, possibly even downsized – leading to 5%. He also comments on thermal management, pointing to the Glider's closed front, which slices 8% off drag and shaves a further 1.5% off fuel usage.

"We still need thermal exchange," he agrees, "which is why we've gone for enclosed side skirts

The Eagle



has landed

and undercarriage, but converted the surfaces into heat exchangers, using low cost thermoplastic panels to drive dual-loop cooling for the engine, and the intercooler and power electronics. We're already doing something similar on a Daily: it doesn't even need a fan for urban delivery now."

As for the rest, the menu includes: low power LEDs for the interior and exterior (1% fuel saving, and allowing 'adaptive stop', where the brake lights 'grow' with braking intensity); eliminating mirrors; working with Michelin on tyre pressure monitoring and inflation (potentially 4%); and an automated fifth wheel that pulls the semi-trailer towards the cab at speed, to reduce turbulence between cab and trailer.

Clearly, that 40% remains a little way off, but expect some very significant improvements much sooner. And not just on Iveco's heavy trucks. **TE**