Cool as a cucumber

Under pressure to cut emissions and reduce their carbon footprints, fleets operating refrigerated vehicles are swinging away from diesel-fired fridge units in favour of engineless electric models. So says Carrier Transicold, reports Steve Banner

Carrier Transicold has seen market penetration of engineless systems in Western Europe reach 40% over the past six years, reports Victor Calvo, the vendor's vice president and general manager. He believes that 50% of Carrier's sales will soon be electric across all segments.

In the UK, the trend looks set to be accelerated by the end of the use of red diesel in transport refrigeration systems. Expensive white diesel now has to be used instead – and is vulnerable to theft.

Go electric, and you need to decide where your power is going to come from. If the vehicle itself is electric, then one option is to use the traction batteries. That is the solution offered by Carrier's new Pulsor eCool.

Developed for light commercials, and capable of handling fully frozen as well as chilled traffic, it offers 4kW of cooling capacity. The current it draws typically reduces the van's range between recharges by less than 10km, Carrier contends.

So far as trailers are concerned, an option could be to use the kinetic energy produced by one of the axles and its brakes to drive a generator which charges a battery. The battery powers the fridge unit.

That neatly describes Carrier's Vector eCool system, said to be lighter than a diesel unit with a full tank of fuel despite the weight of the generator and battery pack.

"We've now sold over 200 Vector eCools in more than ten countries," reports Calvo.

Once the trailer is stationary at a regional distribution centre, then eCool can be plugged into the mains. Its battery pack can be fully recharged in less than two hours, reckons Carrier.

It has come up with another option called Eco-Drive. Suitable for powering fridge systems on rigids as well as trailers, it uses an engine PTO to propel a variable-displacement Bosch hydraulic pump. The pump drives a generator which delivers 400V of continuous three-phase electrical power to keep the fridge unit running without any need to fire up a diesel donkey engine.

INNOVATION DRIVER

Much of Carrier's development work is being undertaken by the former TRS Transportkoeling engineering centre which Carrier acquired in 2016. Based in Noordwijk in the Netherlands, with 35 employees operating out of a 5,000m² site, it has its own laboratory and workshop. It builds prototypes, then tests them in practical working environments in conjunction with operators.

Carrier's latest product line-up includes the new Vector HE 17. It combines all-electric technology with a compressor with variable-frequency drive. The motor's speed is continually altered to match the demand for air with the aim of increasing efficiency.

The switch to electrification is occurring in parallel with a move towards connectivity, says Calvo. "The whole cold chain will be connected, and the information produced will make it easier to monitor what's happening," he observes.

Connectivity helps optimise equipment utilisation, he contends, enables operators to control temperatures remotely, allows cold chain data to be shared with clients, and fires off alerts if there is a serious fault with a refrigeration unit. The aim is to achieve end-to-end visibility throughout the delivery process.

A connected cold chain undoubtedly brings benefits; but what would happen if a cyber attack were to be launched by somebody hostile to the West? Potentially the whole lot could be switched off, creating chaos. Carrier has taken steps to minimise the risk of this happening to its Lynx Fleet connectivity platform. Says Calvo: "We are as confident that it will not be hacked as any safety-conscious company can be." TE