

# Cool operators



Refrigerated vehicle systems continue to see improvements, aimed at reducing costs, emissions and noise. Steve Banner looks at some of the developments to fridge units and the reefers they adorn

**Supermarkets are keeping a very close eye on developments in temperature controlled transport**

**O**n the face of it, the prospect of zero CO<sub>2</sub> emissions, zero fuel and silent running ought to prompt operators of chilled and/or frozen temperature-controlled trucks and trailers to opt for cryogenic refrigeration systems, rather than conventional diesel-powered fridge units. The fact that they have not done so in significant numbers may be due to concerns over safety.

Cryogenic systems release liquid nitrogen from onboard tanks at a temperature of -196°C into the load area, where it vaporises, absorbs heat from the surrounding air and rapidly chills down goods to which it is exposed. However, in doing so, it also chases away oxygen, making the air unbreathable in a confined space, such as a trailer body.

This is a problem that Ukrainian cryogenic units manufacturer natureFridge, for one, is well aware of, and claims to have resolved. Its packages now include a roller grille that cannot be released until oxygen levels in the cargo box are safe. The downside: this can involve a wait of up to two minutes, which is frustrating, if you're on a tight schedule. Against that has to be balanced minimal maintenance costs, virtually no noise and low operating costs – liquid nitrogen is much cheaper

than diesel and usage rates are low.

Indeed, an average cryogenic system gets through 15–16 litres per hour, at a cost of 7p a litre, according to M1 Transport Refrigeration, which distributes natureFridge in the UK. And the double-skinned liquid nitrogen tanks range from 420 to 950 litres – so that's plenty of capacity.

## **Cost and suitability**

What about upfront cost and suitability for different loads? A natureFridge cryogenic package will set you back 10% more than an equivalent diesel fridge unit. As for compatibility, while nitrogen gas will not harm most loads, the fact that it displaces oxygen makes it harmful to, for example, live seafood. However, advocates of its use contend that it can help prolong the shelf life of fruit and vegetables, because of the absence of pathogens.

A couple of other points: temperature pull-down is said to be up to three times faster than diesel-driven units. But while that is an advantage, any operator who thinks about installing these alternative fridges on their vehicles needs also to ensure that the tanks can be refilled with nitrogen, either at their destination or along the way, if they are away for a few days. Opt for the biggest tank and your system

will weigh about the same as a diesel one. Go for the smallest and you can add more payload. If you want some feedback, two natureFridge units have been in service with DHL on a contract with food retailer Nisa over the past nine months.

Meanwhile, manufacturers of conventional diesel-powered equipment have not allowed their products to stagnate. New from Carrier Transicold, for example, is the Vector 1950 MT (multi-temperature) fridge for trailers, which features micro-channel coils said to help reduce fuel usage per watt by 10%. And the firm recently launched its Supra City for rigid, which complies with PIEK standards (noise levels below 60 decibels for night-time deliveries).

Supra City meets the latter, thanks to an indirect air inlet and a cover including sound-deadening material, which reduces acoustic emissions. "Being PIEK-compliant means that Supra City cuts noise in low-speed mode to the same level as normal conversation," explains Carrier Transicold UK managing director Justin Grace.

Not to be outdone, Thermo King also has a PIEK-certified version of its new SLXe trailer refrigeration unit. Additionally, recognising that fuel consumption is a real concern for all operators, most multi-temperature versions of SLXe come with electronic throttling valve technology, said to make them around 8% more fuel efficient. And Thermo King is also further developing its CryoTech package with, among other things, the incorporation of the company's SR-3 temperature controller, which can include tracking, if required.

**Reefer update**

Turning to the fridge trailers themselves, the search for extra carrying capacity continues, with FreshLinc one of the operators taking advantage of the government-backed 10-year trial of extended artic lengths by putting a clutch of 14.6m Gray & Adams semi-trailers into service. Each has been fitted with Carrier Transicold Vector dual-temperature refrigeration units and can carry 28 pallets – two more than FreshLinc's standard 13.6m models. Making them work from a running gear perspective are BPW self-steer rear axles, which enable the new trailers to meet turning circle requirements.

Some operators, however, are making more use of trailers' maximum permitted height, rather than adding to the length. Spar distributor Blakemore Logistics has been putting 11.4m long double-deckers into service, which it says offer a productivity increase of more than 68%, compared with single-deck versions. Put another way, it gets 64 cages of chilled and ambient products into the new trailers, rather than just 38.

Interestingly, though, Paneltex managing director Chris Berridge is detecting increased interest in refrigerated urban artics with day cabs. He points to single-deck semi-trailers as short as 8m, singles or



**Above: Carrier Transicold's range features products that meet the PIEK standards, which relate to low noise levels for night-time deliveries**

twins, and positively-steered rear axles. "Operators are looking at them closely, because they're more manoeuvrable than big rigid," he contends.

Some are also looking at fitting under-slung fridge units, despite concerns about their vulnerability to damage and road dirt. This particular interest appears largely to be a consequence of increasingly strict safety regulations governing working at height that are making it difficult to carry out regular checks on nose-mounted units. "There are some sites that forbid the use of a ladder, in case somebody falls off and injures themselves," comments Berridge.

Switching to under-slung fridges would also make it easier to drop the height of some semi-trailers, and thus reduce drag and hence fuel consumption. "A lot of them are built artificially high to allow the fridge unit to swing above the cab," he explains.

That said, no matter how capacious or compact a temperature-controlled semi-trailer is, it will not last long, if the construction is not very robust. "Fridge trailers are used twice as intensively as they were, say, 25 years ago, which means the floor in particular has to be capable of taking a hammering," comments Andy Richardson, technical director at manufacturer Lawrence David.

It is a view shared by Schmitz Cargobull, which claims no fewer than 18 improvements on its S.KO Cool refrigerated trailer. These include reinforced door corners, steel sidewall border profiles and spring-mounted rear roller bumpers, with stainless steel rollers. Users also profit from its Ferroplast HDR (highly dent resistant) sandwich panels.

What about weight? Schmitz Cargobull's UK technical director Derek Skinner believes that the sheer payload capacity afforded by 44 tonne operation means some operators have forgotten the benefit to running costs of keeping a semi-trailer's unladen weight low. "Lighten it by 500kg and you can potentially save 1.25% on your annual fuel bill," he remarks. Which is worth having.

Nor should the ability of aerodynamics to cut fuel bills be ignored – something clearly appreciated by Blakemore Logistics. Its 11.4m double-deckers, referred to earlier, each feature wide-radius cappings on their leading edges, plus a sloping roof.

One senior industry executive calculates that a package of aerodynamic modifications on a temperature-controlled semi-trailer – and he cites side skirts, a roof-mounted vortex and radiused cappings – can cut fuel bills by 7% on high-mileage motorway work. Again well-worth having, given the high price of diesel. **TE**

**Below: Derek Skinner, technical director at trailer manufacturer Schmitz Cargobull**

