

# TECHNOLOGY



**S**emi-trailers have long been the poor relation to their tractor unit cousins. Not just in terms of technology and glitz, but also operations and maintenance. Why? Most fleet engineers would argue that, traditionally, they just haven't merited the attention, certainly during the specification process.

But, while tractors' purchase prices and complexity understandably remain differentiators, trailer technology is on the move. Everything from telematics to aerodynamics and lifting-decks is increasingly in demand. And that changes the balance.

So, what should operators be considering today when it comes to acquiring trailer assets, whether leased or purchased? Which attributes are

**Semi-trailers ain't what they used to be: they're much more sophisticated, efficient and productive. Or at least they should be. Brian Tingham explains**

likely to deliver a worthwhile return on investment, and which might they want to give a wide berth?

Who better to ask than Ryder's Dave Grogut, who is not only responsible for the rental giant's technical trailer sales, but also sports a solid engineering background? With a 5,900-strong fleet comprising trailers from most of the majors - including Cartwright, Gray & Adams, Montracon, Schmitz Cargobull and SDC - as well as UK-wide workshops

and the Bullwell mobile maintenance fleet, he's about as close as you can get to what works, and what doesn't.

"We're always looking at ways to do things better, and we're in a good position to feed those back to manufacturers," says Grogut. And he doesn't just mean issues around trailer docking that affect buffer position, ride height, etc. "For example, we recently designed alternative brackets for mounting Moffett forklifts, which had been causing damage to some customers' trailers." Similarly, he recalls solving lifting-deck issues associated with crates and pallets fouling sensors and pulleys on cable-actuated systems.

Grogut says it's worth checking your operations before specifying one technology over another. Four-

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# TRAILER

ram moving-decks are a good option, he advises – although be aware of complexity and check their abilities with non-uniform loading. Likewise tilting mezzanine decks. And don't thumb your nose at ratchet decks: they can make for versatile and low-cost solutions.

Looking at the bigger picture though, Grogut confirms that trailer technology is advancing, although uptake still lags capabilities. Pointing to telematics, he says Ryder trailers are increasingly fitted with GPS tracking, but adds that they are also equipped to handle remote diagnostics, ready for when the facility becomes mainstream. "It's about future-proofing Ryder's assets so they're ready to communicate trailer ECU data, such as brake performance, and to respond to geo-fencing, etc, when customer demand strengthens."

## REEFER REVOLUTION

Much the same applies to refrigeration kit, he says, pointing to Carrier Transicold, Frigoblock, GAH, Hubbard and Thermo King (see panel). "Reefers are changing, too. Over the next two or three years we expect to see operators wanting telematics on fridges in order to improve preventive maintenance and uptime. Ryder has used Microlise [telematics] on tractors for years, but now we're moving it on to virtually all new trailers. Taking advantage of information in trailer ECUs is an obvious next step."

What about running gear? Grogut emphasises that reliability remains critical, so the company's standard tri-axle curtainsider spec is BPW. "We want an axle that's reliable, comes with good technical support and that we can take

apart," he explains, although conceding there are other good axle manufacturers. Beyond that, while stating that Ryder's preference remains drum brakes, he suggests that trailer brake KERS (kinetic energy recovery system) is on the agenda. "People are interested because of its potential for fuel savings. So we're keeping a watching brief."

Moving on to aerodynamics, Gandert Van Raemdonck, who looks after Wabco's Optiflow R&D, provides an aerospace engineer's insight. Reminding readers that aero drag is proportional to speed squared – so interventions make most sense for motorway trunking – he states that at 85kph (53mph) fully 50% of engine power is lost to drag. That's a lot of fuel and emissions.

"Although most tractors are fairly well designed with aero kit, when it comes to trailers you're looking at large bricks being pulled through the air," he asserts. And hence Wabco's and others' attention to side skirts, boat tails and roof and undercarriage profiles. But while many may look similar, the key to success is not just mitigating turbulence, but also fashioning leading edges that mimic aerospace profiles, he says.

"That's why our boat tails deliver 1.1 litres of fuel saving per 100km at highway speed, almost double the nearest competitor," insists Van Raemdonck. Beyond that, he urges fleet engineers to remember the importance of light-weighting. "It's no good adding trailer side wings and tails to improve aerodynamics but without considering materials. That

## Two-way comms for next-gen reefers

Thermo King unveiled the first telematics-enabled refrigerated trailer unit at this year's IAA Show. Dubbed SLXi, it is claimed to offer up to 20% fuel savings compared to its predecessor, thanks to customisable temperature profiles, reduced engine speeds and a 27% larger condenser coil.

However, in a sign of the times the new unit can also be accessed remotely – a facility long since available on rigidids but not semi-trailers. A Thermo King BlueBox device collects data, which is then accessible via a free smartphone app or other Bluetooth-enabled display.

As a result, says Thermo King's Steve Williams, drivers in the cab can see anything from trailer zone temperatures to alarm codes and low fuel warnings. They can also control defrost cycles and setpoints, etc. Furthermore, for technicians there's now a two-way USB port for fridge data and software updates. "We're bringing fridge telematics into the next generation," he says.

And that's not all. Also making its debut at IAA was the Hybrid Drive concept, which combines technologies from Thermo King and sister firm Frigoblock. The new device allows the fridge to run via an inverter off the tractor's alternator, or via its diesel engine. Thermo King reckons that could save 5,000 litres of fuel per year for operators running intensive distribution applications.

Incidentally, BlueBox telematics also enables communications for load protection, while its geo-location feature can automatically switch between diesel and the truck Enviro Drive power source, as required. There's clever.



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will result in poorer performance due to increased axle weight. We use a lot of engineering plastics.”

What about the problem of expensive damage particularly to side skirts and boat tails? Van Raemdonck concedes the risk, but claims experience shows that adding value to trailers encourages drivers to take more care. “We have examples in France where we installed side wings and the operator now has less issues, even with tyres.”

That brings us neatly to construction, security and refrigeration choices – all subjects close to the heart of Derek Skinner, technical director at Schmitz Cargobull. “Weight is always an issue because the pressure is on to achieve solid, reliable structures while maximising payload potential,” he agrees.

“We’ve introduced bolted structures, with roll-formed Z sections instead of welded I beam chassis – similar to truck chassis. That’s on top of our all-galvanised approach.” And he points to the dual benefits of weight reduction and ease of repair. “The current release is on our curtainsiders, but the next step will see us using it on reefers.”

Aside from the chassis though, Skinner points to question marks over post-less curtainsiders – popular among many operators for their fast, safe loading and unloading attributes, but potentially a worry in terms of slipping

cargo. “Without posts, achieving load security might necessitate a net or inner curtain. But that means double-handling curtains.” And you’re back to square one.

That said, Skinner agrees that operators are under increasing pressure to contain loads by certified means – and hence the rise in demand for EN 12642-XL-approved trailers. Not only do they enhance security and provide an apparent answer to operators’ duty of care, but there’s also plenty of evidence supporting better residuals.

#### **EN 12642-XL**

Nothing wrong with that, especially as he believes operators generally now understand the limits of the standard. “Most know that EN 12642-XL doesn’t mean they no longer need restraints, particularly where uneven loads are concerned or they are divided en-route.”

Ryder’s Grogut agrees, adding only that then it’s a matter of appreciating which restraint systems are best for your load types. “We’ve looked at most systems so we know where they’re suited and where they aren’t. If you’re transporting paper bales, for example, you want systems that fit close to the roof, with rollers at the outer edges of the trailer, because there’s a reduced chance of damage or catching on the load. But if you need flexibility, side straps are best, or suspended straps using a rigid track

bar positioned close to the roof,” he says.

Turning to reefers, however, Skinner suggests that – aside from exercising caution over construction options because of their implications in terms of repair costs – there are three key aspects to consider. “Your choice should be determined by the cost of refrigeration, the effectiveness of the cold air distribution and the application itself.”

As ever, the former is essentially about the efficiency of the fridge unit and the bodywork insulation. But the second point has to do with the load itself. “If the top surface of the load is erratic, that can lead to turbulence, which might reduce circulation to the rear,” he says. “If that’s the case, we might recommend air shoots, so that a proportion of the cold air is ducted to the rear two-thirds.”

As for the application, the overriding consideration (beyond chilled, frozen and multi-zone equipment choices), is drop frequency and maintaining temperature in the face of multiple door openings. “We recently equipped one fleet with air curtains at the rear,” says Skinner. “They seem to be proving their worth, compared to the alternative of slatted plastic curtains, which are fine at first but annoy operators and can present hygiene problems.” Some operators also specify electric or pneumatic shutters that open and close automatically. “You have to do the cost-benefit analysis.”

But the last word goes to Ryder’s Grogut, who observes that trailer health and safety technology has come on in leaps and bounds. “We’re now spec’ing cameras on the near side, under the rave, and at the rear, as part of our new reversing system.

“And on Ryder driver and vehicle contract trailers, we’re also installing grab handles no more than one metre off the deck and 1,800mm off the floor, as well as 400mm of anti-slip surface at the rear. We’re also spec’ing automatically operated interior LEDs.” **TE**

## **Electronic brake performance monitoring**

XPO Logistics, Kuehne & Nagel and DHL are among early adopters of Axscend’s latest development, which enables electronic brake performance monitoring. That’s in lieu of roller-brake testing, as per DVSA (Driver & Vehicle Standards Agency) requirements.

Managing director Tim Steer says rollout of its latest devices has been “complicated somewhat” by the DVSA’s impending Operator Excellence programme, which has left many operators considering their options. However, he describes the equipment as a “killer app with an easy ROI, compared to the all-up costs of four or five roller-brake tests per year”.

Incidentally, Axscend’s device is not just another box to bolt on to your trailer. “It can handle TPMS. It can monitor all lighting circuits. And it can integrate docking software.”