

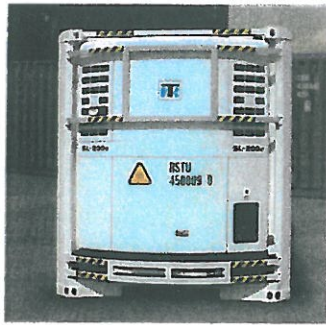
quality is better, while losses are reduced, because of improved monitoring and more effective early warnings whenever problems occur. In fact, human error has been squeezed out of the monitoring process. Finally, you also get automated reporting, improved documentation and reduced insurance premiums. Taken together, these generate a potentially very high ROI, if a shipping line takes full advantage of all the technology on offer," concludes Jørgensen.

**Unit 45 puts faith in diesel-electric high-cubes**

Rotterdam-based reefer box designer Unit 45 has recently introduced a new diesel-electric 45 ft high-cube container, which is capable of accommodating 33 pallets. Of the 400 reefer units the company expects to sell this year, the new design will account for around a quarter, with demand expected to increase over time.

Jan Koolen, managing director of Unit 45, explains that the new box has been developed specifically with rail use in mind. "Many road haulage companies are looking to use rail for part of the whole logistics chain. This isn't possible with a conventional electric reefer, because locomotives do not normally supply on-board power to the wagons they are hauling. As a result, we have introduced a reefer that has its own, in-built power supply."

Not only can the new intermodal reefers compete with dedicated road tractor-trailer sets in terms of capacity, they also hold 200 litres of diesel fuel, which allows them to compete on a like-for-like basis.



Unit 45 has launched a new diesel-electric reefer

"The inside of the reefer is 13.275m long, which means there is room for 33 Euro pallets. However, many supermarkets do not like receiving deliveries on such heavy pallets, which can be awkward to slot inside. As a result, we have invented a

At present, we are the only supplier of diesel-electric reefers, which we have built at two different manufacturers

**Jan Koolen, managing director, Unit 45**

double-stack system, which allows two smaller pallets to be stacked one above the other, separated by bars," explains Koolen.

The diesel-electric reefers are around 500kg–600kg heavier than a standard electric reefer and also cost around US\$1,500 more to buy. In addition, the more complex cooling unit adds a further US\$12,000–US\$14,600 to the total price. Interestingly, a chassis and diesel-electric reefer should still work out less expensive than a road trailer unit, according to the company.

The only disadvantage faced by Unit 45 when comparing its 45 ft high-cube diesel-electric reefer box with that of a road trailer, is that it has to be heavier, because of

the need to provide additional strengthening around the 40 ft position. This is needed because, being an intermodal box, the reefer will be routinely picked up by yard cranes.

Koolen stresses that, with the improvement in the reliability of diesel generators, maintenance costs for the new units will not vary greatly from those of conventional electric equipment. Indeed, he expects the typical customer for the new units to be very familiar already with diesel-driven technology, which means they will already have skilled personnel in place to oversee use of the boxes. However,

should there be a need to use the diesel-electric units on-board ship, the equipment will have to be made resistant to the corrosive effects of salt water.

"At present, we are the only supplier of diesel-electric reefers, which we have built at two different manufacturers," says Koolen. "We are using cooling technology developed by Carrier (Vector or Magic models), as well as Thermo King SL 200 or 400 units. In terms of performance, there is little to tell them apart." Nevertheless, he adds that Unit 45 is continually looking to improve upon the quality of its units, so is therefore undertaking both additional cooling capacity and heat linkage tests as a way of upgrading performance.

**Yangzhou Tonglee China's leading reefer manufacturer**

According to Chinese reefer box manufacturer Yangzhou Tonglee Reefer (YTR), the current market for reefer box products is basically stable. Furthermore, because competition is very fierce, prices are extremely low. However, while some companies are seeing a rise in demand for 45 ft boxes, YTR's experience is that the market is currently eager to acquire reefer units across a range of dimensions, from 10 ft to 53 ft, depending on the industry they are focused on.

YTR is the largest manufacturer of reefer containers in China – because, it says, it tries to make sure that its products are first-class and that its customer service is the best possible. Unsurprisingly, the company builds all its reefer boxes in China, basically because labour costs are low compared with more developed regions, but also because many of the raw materials used in manufacture are sourced from domestic producers.

YTR claims to have no preference as to what cooling technology is used in its reefers; it is up to the customer to choose. Instead, the company concentrates on its core business: that of building the reefer structure itself.

YTR calculates that the average working life of one of its reefer containers is in the region of ten years, but this depends very much on how the box is maintained and on what types of product it is used to transport. The company believes that a shipping line or a leasing company could make a return on its investment within two years. ■