



'Savings in operating costs often weigh more than the initial cost as most owners want to keep these ships for 20 years or more'

Christian Damsgaard, Knud E Hansen's ro-ro chief

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Bahri replaced four 1980s-built ships with six smaller ones that have 45% better fuel efficiency

Knud E Hansen

> Key points

- The niche business needs of shipowners are paramount for designers
- Many deepsea ro-ros in service were built in the 1980s

It pays to be flexible



> Kari Reinikainen

Scandinavia

The global ro-ro sector demands design adaptability in replacing its fleet

Many deepsea ro-ro vessels used today were built in the 1980s. The need to replace them with modern ships has triggered investment in tonnage tailored to meet present needs.

Bahri, the listed Saudi shipping group, recently completed the renewal of its deepsea ro-ro fleet, which operates from the kingdom to the US East Coast via the Mediterranean.

"They wanted to replace four larger vessels with six new ones with a much improved fuel efficiency, achieved both by advances in hydrodynamics and design of engines," said Christian Damsgaard, head of the ro-ro unit at Knud E Hansen, the Danish naval architecture consultancy.

Vessels that Bahri had been using were built in the mid-1980s. It offered a replacement

design for evaluation to the Danish group.

"We thought that it wasn't really very good," Damsgaard told *IHS Maritime*. "We suggested that the ships should have one deck fewer and ... be longer than [in] the design."

The Danish group cited two reasons for these recommendations. By reducing the number of cargo decks, the vessels could be more versatile and flexible so they could carry different types of cargo. A longer ship with one fewer cargo deck would mean that ramps could be built with a lower gradient and that the ships would have better stability and require less ballast.

The hull lines of a longer design could be finer than those of the one Bahri put forward, which would produce lower installed power and lower fuel consumption.

On the other hand, the longer hull would also mean a higher capital outlay because such a hull is more expensive to build than a shorter and higher one, the Danes pointed out.

When weighing the various cost elements – more expensive hull but lower engine output – against each other, the extra cost in choosing the longer hull would be somewhat mitigated.

Damsgaard had said he would have to obtain yard quotes for both designs to pin down exactly what the difference would be, but in the end Bahri accepted the design that Knud E Hansen suggested without the need for this.

"In this business, the key is to find a design that is optimal to the

particular owner," Damsgaard said. "Savings in operating costs often weigh more than the initial cost, as most owners want to keep these ships for 20 years or more."

Consequently, most owners are not particularly concerned about the secondhand market value of deepsea ro-ros. They often retain their ships until they are fully depreciated, so there is only a limited second-hand market.

Damsgaard said "flexibility" was the key word today when it came to what owners of these ships want. But what this buzzword means in practice can vary significantly among owners.

Bahri wanted better efficiency than in its old ships and

> ACL's G4 vessels vs their predecessors

	ACL G4	ACL G3
Length	296m	292m
Breadth	37.6m	32.2m
Dwt	45,000	43,100
Ro-ro deck area	28,900m ²	18,900m ²
Car deck height	2.20m	1.65m
Car capacity	1,300	1,000
Teu	3,800	1,850
Fuel consumption	70 tonnes/day	75 tonnes/day
Stern ramp capacity	420 tonnes	420 tonnes

Source: Knud E Hansen





placed great importance on flexibility, but was not much interested in containers.

By contrast Atlantic Container Line (ACL), which has also worked with Knud E Hansen, wanted significantly larger vessels than its previous generation and a marked increase in carrying capacity for boxes.

Called the G4 class, the replacements are much larger than their predecessors (see table on page 20).

Finally, in September 2013 Knud E Hansen unveiled a design produced in co-operation with Stena RoRo in Sweden for a ro-ro reefer ship. In November this year, the Danes published version two of this design, which incorporates several changes.

"In order to optimise the cargo handling on the under-deck areas, the bridge and engine have in version two been positioned forward [in] the ship and, as we found that there is a very large backhaul cargo potential to Central America, we have increased the height of the four inside decks to 4.5 m to allow for general ro-ro cargo. On the backhaul, the ship is an ordinary ro-ro ship," the company said.

The revamped version has a capacity of about 12,500 high-cube pallets – 6,800 on cassettes inside the ship and 5,700 in refrigerated containers on the weather deck.

The ship can be loaded and discharged in 12 hours, the same as the first version – but a marked reduction on the 36–48 hours that is required by conventional reefers.

"On the backhaul, the ship has 4,400 lane meters, equivalent to about 900–1,000 cars, but with the new design general project cargo can be transported as well," the company said. ■

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