

RoRo

Electrically-driven lightweight plywood car decks



FINNLINES PLC



MacGregor has developed lightweight liftable and hoistable car deck panels, which incorporate plywood in their construction to reduce their weight considerably compared with steel equivalents. We now promote electric-drive versions to further enhance efficiency and environmental credentials. The panels can accommodate car lashing fittings.

The challenge

Finnlines PLC, part of Grimaldi Group, is one of the largest European specialist freight and passenger service shipping companies.

Finnlines has used MacGregor as a key supplier for many projects. In 2011 they contacted us as they needed hoistable car decks onboard their new series of six ice-class RoRo newbuildings.

The vessels were going to handle a great number of cars and also needed the flexibility to be able to adjust to different types of cargo on different routes.

The solution - patented lightweight car deck concept

We supplied and installed about 5,450 m² of lightweight car decks for each vessel. In 2011 the first two of these 10,500 dwt ships, *Finnbreeze* and *Finnsea*, followed by *Finnsun*, *Finntide*, *Finnsky* and *Finnwave* were

delivered from the Jinling Shipyard in China, featuring the first examples of electrically-driven lightweight plywood car deck panels.

The individual panel configuration options gives Finnlines the flexibility to adjust to different cargo mixes on different routes.

MacGregor scope of supply

- Turnkey supply: design, fabrication, installation assistance and commissioning.
- Lightweight plywood car decks for six vessels about 5,450m² per vessel.
- Electric operation
- The car deck panels feature a patented lightweight open beam construction with a plywood top plate to minimise their weight and therefore their impact on ship stability.
- The lightweight cardeck panels save about 100 tonnes compared with steel car decks versions that have a total weight of approximately 600 tonnes.
- Newly-developed lashing system, attached to the secondary stiffeners, which also act as support for the plywood panels.

Finnlines is known for its commitment to the environment and this is reflected in the design of the newbuildings.

Besides the improved cargo-transporting possibilities, the new ships were built with a strong focus on reducing their carbon footprint and minimising the environmental stress per transported cargo unit or tonne.

"The ships are not only new but highly innovative," Finnlines said. "Among their key features are hoistable car decks on two levels that allow us to handle more

cars than is normal on ships of this size.

The individual configuration options of the car deck panels also give us the flexibility to adjust to different cargo mixes on different routes. And with the clearance on the main deck rising to 6.3m when the car decks are completely hoisted, we can also accept higher cargo on these new vessels."

Adding car decks and ramps to an existing vessel can have an adverse impact on stability. The lightweight MacGregor products were well suited for this conversion project.

MacGregor introduced the new concept of electrically-driven, lightweight car decks following the success of these first plywood car deck platforms. The newly-developed lashing profile is also a very special concept. The lashing is not attached to the plywood panel itself, but to the steel secondary stiffeners, which also act as a support for the plywood panels.



The car decks panels accommodate car lashing fittings.



The panels feature a lightweight open beam construction with a plywood top plate to minimise their weight and therefore their impact on ship stability.

R&D has environmental emphasis

MacGregor prioritises environmental protection in product development. Its latest patented lightweight car deck concept meets this R&D ambition in several ways:

- Compared with steel the panels have a lower cost and lower weight with the same durability and lifetime.
- Lighter decks improve vessel efficiency in terms of payload and flexibility of operations.
- Lighter decks and ships allow increased speed or reduced fuel consumption.
- Stability benefits are gained by reducing weight high up in the vessel's structure.



Lloyd's Register Quality Assurance certifies that the Quality Management System for MacGregor is ISO 9001:2008 compliant.

MacGregor is the world's leading brand of engineering solutions and services for handling marine cargoes and offshore loads. MacGregor products serve the maritime transportation, offshore and naval logistics markets, in ports and terminals as well as on board ships. Our cargo flow solutions integrate cargo access, stowage, care and handling functions to suit a particular ship's cargo profile. This benefits its productivity, environmental impact and profitable service lifetime. www.macgregor-group.com

MacGregor is part of Cargotec. Cargotec's sales totalled EUR 3.3 billion in 2012 and it employs approximately 10,000 people. Cargotec's class B shares are quoted on NASDAQ OMX Helsinki under symbol CGCBV. www.cargotec.com

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