



TSL concept could revolutionise shipping

Emma Murray reports on the major implications that the Trans Sea Lifter, designed by inventor Hermann J Janssen, could have for the transport of heavy lift and project cargoes.

An innovative barge-carrying system could revolutionise shortsea shipping, with huge potential benefits for the heavy lift and project forwarding market.

The Trans Sea Lifter (TSL), described by its inventor Hermann J Janssen, as a "table standing on two submarines", is a Small-Waterplane-Area Twin-Hull (SWATH)-type catamaran (see box, right).

TSL can exchange a full load of inbound for outbound barges in 90 minutes, and can carry barges of a variety of types and sizes, from canal-going vessels in the river-sea trade, to individual barges with up to 6,000 tonnes of cargo.

"There are many applications for heavy lift and project cargo," said Janssen. "Cargo can be taken straight to site. Heavy components could be loaded onto a heavy lift trailer, which can be moved straight up the beach or river bank. A floating crane could be carried at the same time.

"You can carry heavy lift cargo and then also barges with containers with other components needed for a site, so that you have everything in one place."

The TSL system's primary



application is shortsea shipping in both the feeder trade from hub ports and regional trades between secondary ports. It can execute five to seven times the number of round voyages per year that a conventional feeder vessel of similar slot capacity

can manage.

Other uses could include:

- Transport by barge of huge industrial plant modules directly to construction sites on rivers;
- Linking Third World countries to world trade by means of low-investment barge ports and TSL lines from there to hub ports on major sea lanes;
- Special temporary deployment with mission-specific flo/flo modules – for example as naval support ships, or for disaster relief, such as floating medical centres along a Tsunami-stricken coast.

TSL SYSTEM COMPONENTS:

- TSL Vessel: Innovative 1,800 teu flo/flo vessel
- Barges: Detachable cargo holds of any size and type
- Flo/flo operation: Fixed cycle time of 90 minutes
- Service: Ferry-like schedule outside port entrance/river mouth

SL vessel characteristics:

Length overall:	185.0 m
Length between perpendiculars:	178.3 m
Breadth:	Suezmax (70.0 m at WL)
Number of platforms:	3 movable
Platform size:	32.6 m x 76.5 m
Voyage draught:	12.0 m
Displacement:	41,840 cu m
Tonnage:	Gross 19.800 t

Capacity:

Container intake:	1,848 teu
Slot capacity:	1,151 teu (14 t IMO criteria)
Main engines:	4 x 11,250 kW @ 600 rpm
Fuel consumption:	178 g/kWh (IFO 600)
Stern thrusters:	2 x 740 kVA
Generators:	2 x 1,500 kW
Shaft generators:	2 x 1,200 kW

A SWATH designed to maintain speed

The TSL is a SWATH type catamaran (Small-Waterplane-Area Twin-Hull). The TSL's hulls are very slender at the water surface and thus offer a steady ride in waves beyond any typical mono-hull or catamaran.

Due to this minimal exposure to waves, the TSL can also sustain its service speed in rough head seas.

The following are the components of the hull:

- Above water, the TSL has a deck and platform structure;
- Under water, the TSL consists of two submarine-like bodies, the floaters;

The patented TSL sea frame is designed for quick changes of draught. In other words, within 15 minutes it can change from voyage draught, with platforms raised above the waterline, to loading draught, with platforms submerged below the waterline.

This draught change, coupled with dynamic positioning, provides the TSL with fully autonomous offshore cargo handling capabilities.

"The competitive advantage of the TSL system is that it breaks the conventional wisdom around the time management of vessel operations, because lay time for port operations is off the TSL schedule's critical path," said Janssen.

Janssen is confident that the first TSL vessel will be built and operational within the next three years. His company, Navtec Consult GmbH based in Emden, Germany, is currently exploring opportunities for its development.

The naval architect said he first had the idea for the system as a student when asked whether it would be possible to build a ship which had "drawers in its side" so that cargo could be quickly turned around.

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