

RAMSSES - Realisation and Demonstration of Advanced Material Solutions for Sustainable and Efficient Ships

GA11 meeting

2021-11-16/17

Presentation of WWP09

Dr. Thomas Elsken

BALTICO



RAMSSES - Realisation and Demonstration of Advanced Material Solutions for Sustainable and Efficient Ships

Plates and vessels build as truss structures in FRP

Presentation of WP09
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WP09: Modular lightweight system for less critical internal walls and superstructure

- Strand laying technique
- Plates
- Catamaran
- Remarks

Example: small vessel



Inner structure ...



... and the complete hull

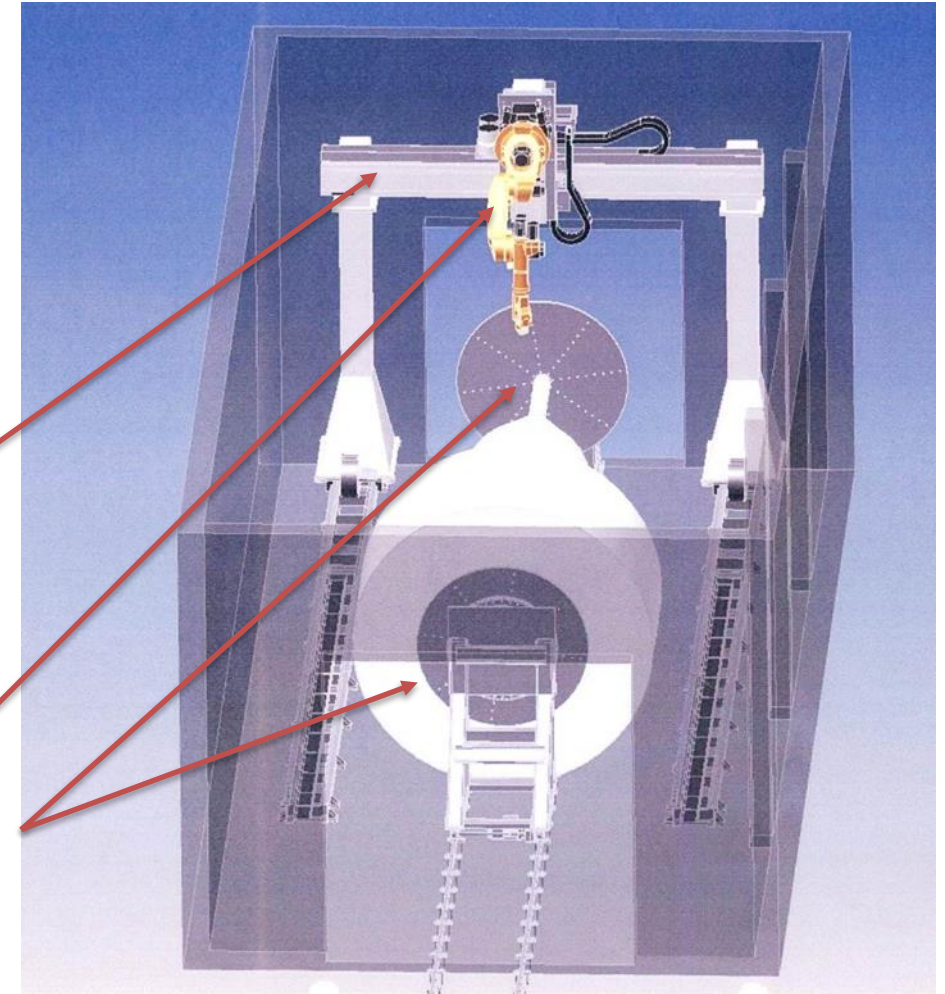
Basic components for technology

- Robot gantry system with 2 synchronous rotating axes
- Synchronisation with winding head
- Integration of thread guide and impregnating facility

3 axes gantry system

6 axes robot

2 synchronous turning axes



Applications of strand laying technique

- Deck houses, cabins, decks, hull structures, stabilizing fins, cranes
- Rotor blades, masts
- Bridges
- Carport
- Machine carrier, flexible couplings
- ...



Making of plate



Laying of strands to build a plate

Examples

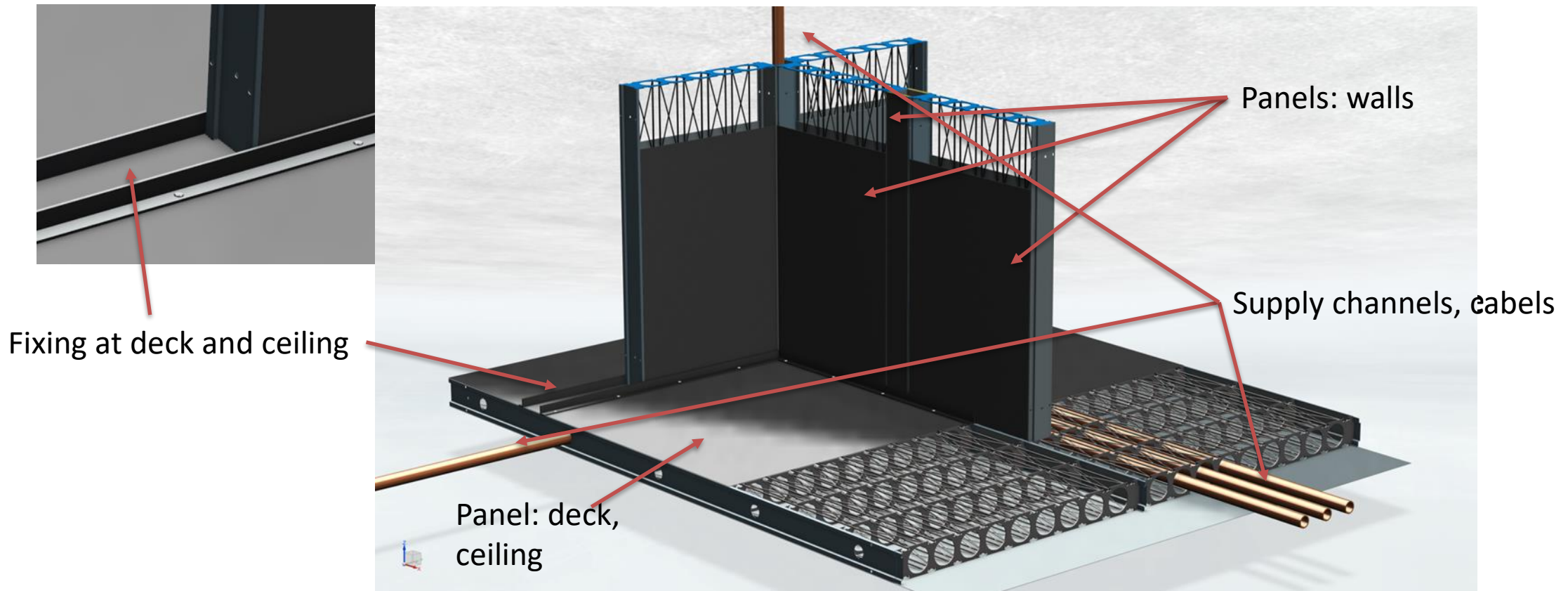


Simple plate



Main deck of catamaran

Cabin made of modules



Fire protection

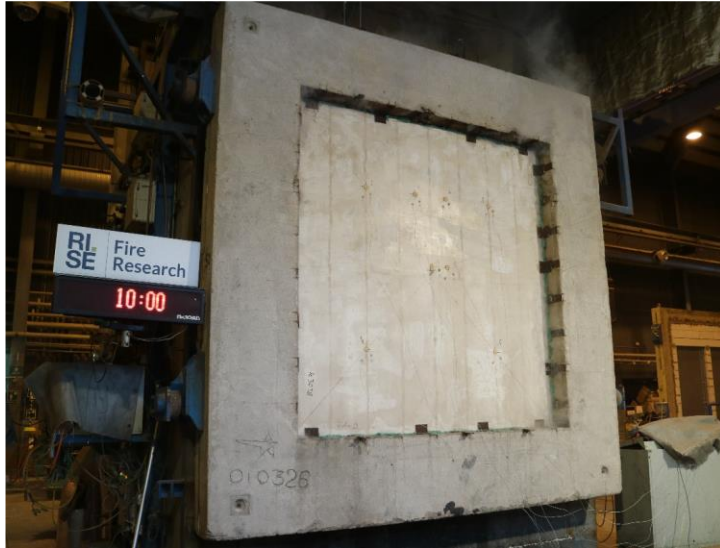


Plate before test



Plate after test



Fire exposed side after test

Plate passed fire test of a bulkhead according to FTP Code Part 11, that means 60 minutes of fire exposure.

Catamaran

- dimensions:
 - Each hull: 9m x 2m x 1.5 m (l x h x w)
 - Main deck: 9m x 2m x 0.2 m (l x h x w)
 - Solar deck: 6m x 3m x 0.1 m (l x h x w)
- Structural weight: appr. 650kg
- Modular: easy to assemble and disassemble
- Electrical propulsion, powered by solar modules
- Structural self-supporting design



Hull



Hull while laying strands, view into the inner structure, with finished surface

Main and solar deck



Main deck

Solar deck during production



Assembly: joining the solar deck



Assembly: putting solar deck on top of main deck and both hulls

Propulsion unit

Designed and made by BaltiCo



Test on water

Test drive of
catamaran



Thank you for your attention!