

# Composite Superstructure Concept®

EFFICIENT • ECONOMIC • ENVIRONMENT - FRIENDLY





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## CSC - The Philosophy

It has been well documented that reducing the superstructure weight of displacement ships can result in major improvements in operational efficiency.

The Composite Superstructure Concept (CSC) has been developed to enable operators of passenger/freight vessels to take advantage of the many benefits offered by using lightweight sandwich composite materials for the superstructure of vessels built to rule 17 of SOLAS Chapter II.

The Concept can not only result in many major operational benefits but also has a much lower environmental impact. In addition to new builds, it is equally suitable for retro-fits.

## CSC - What It Is

The Composite Superstructure Concept is a high strength, lightweight, sandwich composite construction system that comprises a structural core to which glass or carbon fibre skins are securely bonded using an industrialized and proven resin infusion process.

The final stage is the application of a fire insulation layer to the laminate surface to provide the required level of fire protection.

By varying the core and skin thicknesses, a fully integrated superstructure (decks and internal/external bulkheads) can be designed and engineered that exactly meets the global and local loading conditions.

Cruise ships and passenger liners are another ideal application for the Composite Superstructure Concept.



## CSC - Key Benefits

With its multiple benefits the Composite Superstructure Concept is the efficient, economic and environment-friendly approach. Its benefits include:

- Significant weight savings
- Increased payloads
- Built in thermal insulation
- Reduced fuel consumption
- Increased stability
- Will not rust, rot or corrode
- Lower through-life cost
- Less environmental impact
- Compound curves can be readily achieved

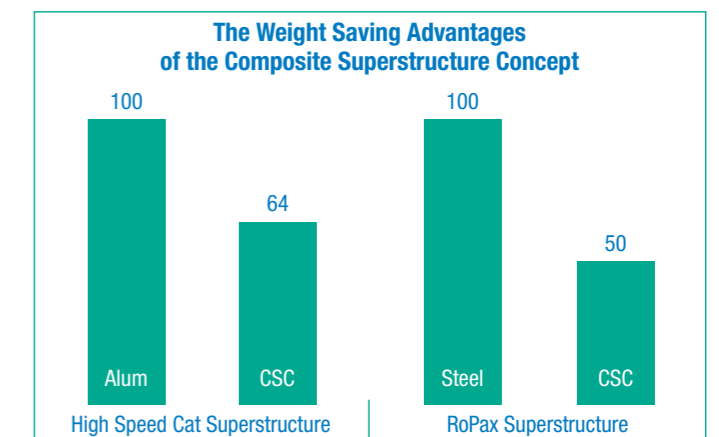
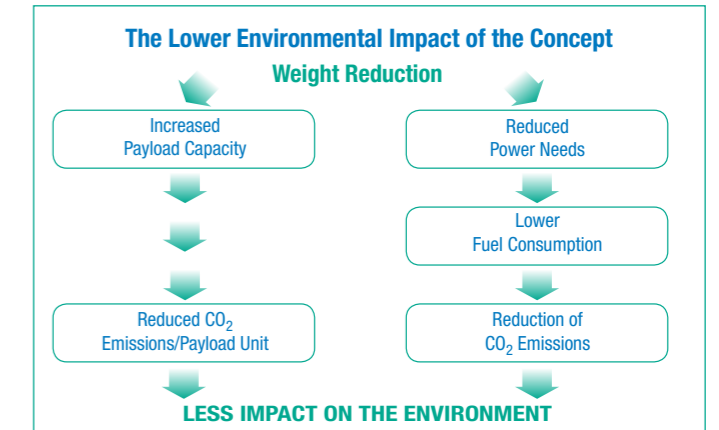
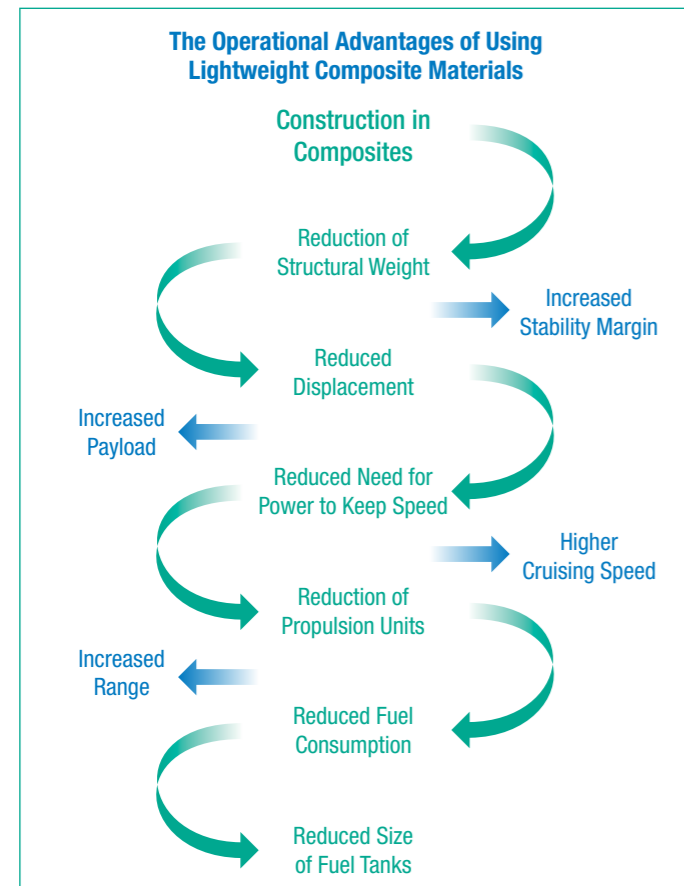
As can be seen here, the Composite Superstructure Concept has been subjected to stringent fire testing including the 'room corner' test.



## CSC - Application Areas

Although developed for superstructures, the concept can be readily employed for a wide variety of shipboard applications where a lightweight, corrosion-free solution is required.

- Superstructures (full or part)
- Deck houses (full or part)
- Balconies
- Architectural features
- Funnels
- Shelters/covers
- Cargo hatches
- Masts
- Pools





# Composite Superstructure Concept®

[www.composite-superstructure.com](http://www.composite-superstructure.com)

## A Joint Venture

The Composite Superstructure Concept is a joint venture between the shipyard Kockums AB (a member of ThyssenKrupp Marine Systems with more than 35 years experience of design and construction of composite ships), DIAB (a world leader in composite core materials and technology) and Thermal Ceramics (a division of Morgan Crucible that is a significant force in the world of fire protection and insulation systems).

All three companies have been heavily involved in the multi-faceted, government-sponsored LASS project, the aim of which is to improve the efficiency of marine transportation through the usage of lightweight structures. The group can guide and advise on any aspect of the structure - engineering, manufacturing methodology, fire protection or certification.

### **Kockums AB**

SE-371 82 Karlskrona  
Sweden  
E-mail: [csc@kockums.se](mailto:csc@kockums.se)  
[www.kockums.se](http://www.kockums.se)

### **DIAB International AB**

Box 201, SE-312 22 LAHOLM  
Sweden  
E-mail: [csc@se.diabgroup.com](mailto:csc@se.diabgroup.com)  
[www.diabgroup.com](http://www.diabgroup.com)

### **Thermal Ceramics Europe**

Tebay Road, Bromborough CH62 3PH  
United Kingdom  
E-mail: [csc@thermalceramics.com](mailto:csc@thermalceramics.com)  
[www.thermalceramics.com](http://www.thermalceramics.com)