DE-LIGHT TRANSPORT:

Developing lightweight modules for transport systems featuring efficient production and lifecycle benefits at structural and functional integrity using risk based design

A better payload to weight ratio is the key to **improved competitiveness, modal shift** and **reduced environmental impact** of European transport systems. Lightweight structures using innovative materials and more efficient design can contribute significantly to reach this objective.

DE-LIGHT Transport, a multi-national initiative supported by the European Commission's Framework 6th programme, investigates the design and manufacturing of lightweight materials in the **marine, rail and freight container industries**. This European project which started November 2006, aims to develop breakthrough technologies and industrial applications for lightweight sandwich structures. DE-LIGHT Transport will develop safe and environmental friendly transport systems for the transport sectors, which feature reduced operational and building costs.

The project therefore addresses both **production and operational aspects** of lightweight structures as the main impact factors on transport efficiency.

Sandwich materials, consisting of two thin facings separated by a low density core, can be used to produce structures that are both light and stiff. They also offer opportunities for the reduction of the number of parts through design integration, improved surface finish and lower assembly and outfitting costs.

DE-LIGHT Transport aims to further promote the use of sandwich structures by developing key technologies that will support the practical realisation of robust sandwich designs. Specifically, this will include:

- A multi-material sandwich design tool. **DE-LIGHT Transport** will implement a generic design approach that will allow the evaluation and optimisation of a wide range of material and structural mixes according to the requirements of a given applications
- Strategies for joining, assembly and outfitting – the bringing together and integration of separate sandwich panels and/or sub-components to produce finished structures. In particular, modular approaches for the off-line production of sandwich assemblies to exploit economies of scale will be developed
- Testing and validation procedures – to provide accurate and reliable methods of determining fitness for purpose.

The above technologies will be demonstrated within the project through the design and manufacturing of **six prototype structures**. These will include deck and deckhouse structures for ships, a rail vehicle cab, and a freight container. Risk-based design principals will be applied throughout to ensure that the new designs comply with existing regulatory frameworks.

It is anticipated that DE-LIGHT Transport will provide designers of vehicles for rail, road and ships with practical solutions for the implementation of innovative and lighter design concepts as an alternative to traditional design philosophy. In this way, the benefits of sandwich structures will be unlocked for a wider range of applications.

The DE-LIGHT Transport consortium consists of nineteen partners from twelve European countries and is co-ordinated by the Centre of Maritime Technologies (CMT).

More information is available at **www.delight-trans.net.**

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