Towards a lighter Future

EU Project RAMSSES to develop a streamlined approach to introduce innovative materials in the maritime sector

Challenge

New materials – be it composites or high performance metallic materials – can help making ships and maritime products lighter, more cost efficient, more environmentally friendly and safer. However, to qualify innovative materials for maritime applications, they need to cope with extreme operational scenarios and environmental conditions. Moreover, to be cost efficient they need to be integrated in multi-material ship structures as well as into complex building and global repair, retrofitting and dismantling processes.

Figure 1: Project Kick-Off Meeting, 21-23.06.2017 in Hamburg

Approach

A new European project named ***RAMSSES – Realisation and Demonstration of Advanced Material Solutions for Sustainable and Efficient Ships*** aims to foster the application of new materials in maritime and inland waterway applications by

- Developing, demonstrating and validating **13 specific maritime products** to prepare for commercial market uptake immediately after the project. The demonstration cases in RAMSSES include innovative components and modular lightweight systems, maritime equipment, the application of high performance steels in load-carrying hull structures, the integration of composite materials in various structures, as well as solutions for global repair. The demonstrator teams are led by industry.
- Conducting a comprehensive **assessment of technical properties, life cycle cost and environmental performance** of the demonstrator cases as a basis for approval of the specific solutions, but also with the aim to re-use test results, material data and experiences for future similar applications and make this 'knowledge base' accessible to a wider range of maritime end-users and finally by
- Setting up a **Materials Innovation Platform** for information exchange and cooperation which is open to other projects. This will not only facilitate a systematic knowledge uptake and technology transfer from other sectors (automotive, rail, aeronautics and material sciences) into the maritime sector, but also make project results and accumulated expertise available to a broader community of maritime producers and operators, which will foster the application of innovative materials in the European maritime sector.

An important aspect of the work of RAMSSES will be to develop a "fast track to approval" for the application of new materials in the maritime sector. For SOLAS ships, this approach aims to make the 'proof of equivalent safety' more efficient and quicker, e.g. by using agreed standard risk scenarios, re-using test results carried out by certified institutions according to approved procedures and developing 'recommended design alternatives' with the help of the classification society involved in RAMSSES.

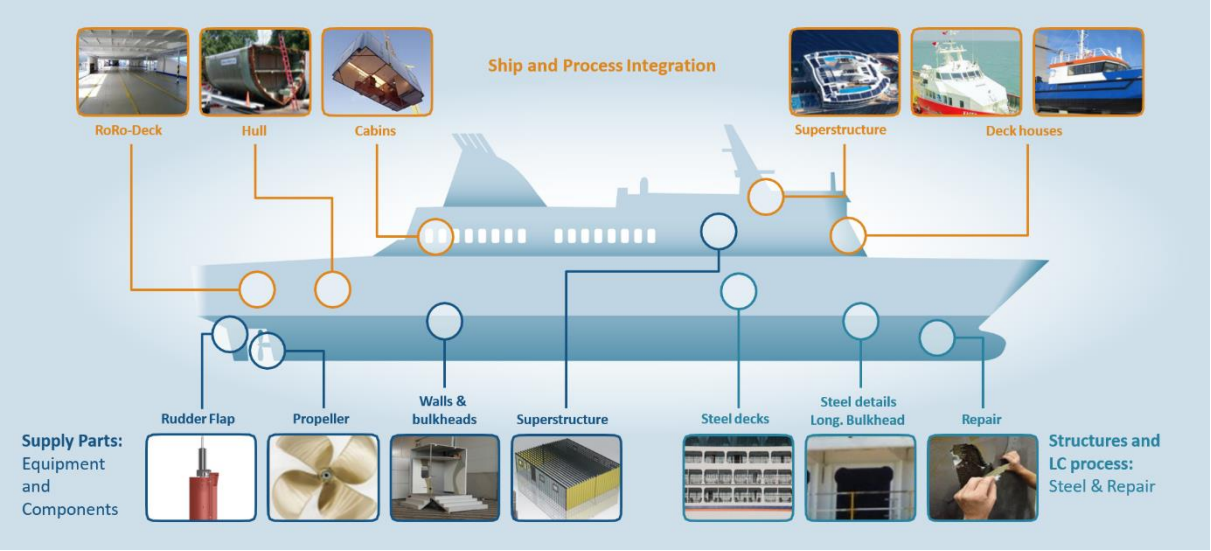

Figure 2: Application of 13 demo cases

Cooperation

RAMSSES will closely cooperate with the E-LASS network (www.e-lass.eu), a European network for lightweight applications at sea which was established in 2013 and currently has 240 members. Both initiatives will organise public events every six months. This cooperation will also be open to other European and national research projects of relevance. E-LASS will also continue to maintain the RAMSSES knowledge database after the end of the project.
Companies and individuals interested to participate in the network are encouraged to contact RAMSSES through www.ramsses-project.eu or the contacts given below.

About RAMSSES

The project has a total budget of 13.5 million € with an EU contribution of 10.8 million €. The consortium comprises 36 partners* from 12 European countries, dominated by industrial partners. The project started on June 1st 2017 and will last for four years. RAMSSES is coordinated by CETENA SpA – Centro per gli Studi di Tecnica Navale, Italy who is supported by CMT – Center of Maritime Technologies e.V., Germany – acting as technical manager and contact for the dissemination activities.

Website: www.ramsses-project.eu (under construction)
Contact: carlo.cau@cetena.it, roland@cmt-net.org, krause@cmt-net.org

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* Cetena, CMT, Balance, DCNS, Bureau Veritas, Damen Schelde, Meyer Werft, Meyer Turku, Baltico, Podcomp, Uljanik, MEC, STX France, Baltic Workboats, Airborne, Netcomposites, Swerea Sicomp, Rise, Fraunhofer AGP, IRT Jules Verne, TNO, ENSTA, Ecole Centrale de Nantes, Aalto, NTUA, Fincantieri, InfraCore Company, Galventus, Cardama, Netherlands Maritime Technology Foundation, Evonik, Becker Marine Sys-tems, Damen Gorinchem, OCS, Hutchinson, AIMEN