Advancing lightweight construction in shipping: Expansion of the MariLight network

About this project

MariLightCluster

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Markets:

Material: Biocomposites, Basalt fibres, Glass fibres, Carbon fibres, Natural fibres, Thermoset plastics, Thermoplastics, Aluminium, Steel, Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Natural fibre reinforced plastics (NFRP)

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This project is funded by the Technology Transfer Programme Leichtbau (TTP LB) of the Federal Ministry of Economics and Energy.

Technology Transfer Program Leichtbau

Context

The maritime industry can make a decisive contribution to reducing CO# emissions. Lightweight construction - alongside alternative propulsion systems and new fuels - is a key lever for this. Innovative lightweight construction technologies enable shipbuilders to compete in the upper price segment of the market with highly complex special ships.

Thanks to lightweight construction, shipowners can reduce the draught of their ships or increase the payload so that the ships are better utilized. On the one hand, strengthening maritime lightweight construction makes the national industry competitive. On the other hand, innovative lightweight construction technologies can improve the climate and environmental balance of maritime transport.

Purpose

The Center of Maritime Technologies has founded the national maritime lightweight construction network MariLight.Net in order to exploit the potential of lightweight construction in the maritime sector and bring the technology into widespread industrial application. The aim is to further intensify the exchange of knowledge within the industry and facilitate cross-industry technology transfer. This is because the maritime industry is extremely heterogeneous: it manufactures various product sizes and types using different materials. This means that everything is involved, from small pleasure craft to cruise ships, from series products to special ships, and from steel to fiber-reinforced plastics (composites).

In the MariLightCluster project, CMT is further developing the MariLight network. The focus is on technology development and transfer. MariLightCluster supports the participating companies and institutions in establishing strategic cooperations and thus promoting innovations in maritime lightweight construction.

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Procedure

MariLight supports companies in implementing lightweight construction applications, strengthening their competitiveness thanks to innovative unique selling points and utilizing the potential of lightweight construction to achieve emission savings.
The team is developing a roadmap that demonstrates the potential of maritime lightweight construction for more sustainable shipping. The roadmap takes up the state of the art and identifies gaps in knowledge and the need for action, such as necessary research projects or regulatory adjustments.

At the same time, MariLight is driving forward the development of international regulations that can simplify the widespread use of innovative lightweight materials. This is done, for example, through involvement in committees of the International Maritime Organization (IMO) and the Strategy Advisory Council of the German government's Lightweight Construction Initiative.

At the same time, MariLightCluster provides a platform for a regular cross-industry exchange of knowledge and experience. The team organizes specialist events to promote technology transfer with other industrial sectors such as aviation, rail vehicle construction and construction.

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Funding duration:

Funding sign: 03LB1008 **Funding amount:** EUR 308 thousand

Final report

Further websites

foerderportal.bund.de/foekat/jsp/SucheAction.do?actionMode=view&fkz=03LB1008 - MariLightCluster in the federal funding catalog

marilight.net/marilightcluster/ - MariLight-Website

youtube.com/watch?v=SEavAjEGmc8 - Video about the MariLight network on YouTube

linkedin.com/showcase/marilightnet/ - Linkedin presence of MariLight

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Project coordination

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English (EN){{ Projektpartner }}

Lightweighting classification

	Realisation
Offer	
Products	
Services & consulting Training, Consulting, Funding, Standardisation, Technology transfer, Approval, Others (Networking)	✓

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Lightweighting classification

	Realisation
Field of technology	
Design & layout Lightweight manufacturing, Lightweight design, Hybrid structures, Lightweight construction concepts, Lightweight material construction	✓
Functional integration	
Measuring and testing technology	
Modelling and simulation Life-cycle analysis, Processes	✓
Plant construction & automation	
Recycling technologies Downcycling, Material separation, Recycling, Upcycling	✓
Manufacturing process	
Additive manufacturing	
Coating (surface engineering)	
Fibre composite technology	
Forming	
Joining	
Material property alteration	
Primary forming	
Processing and separating	
Textile technology	

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Lightweighting classification

	Realisation
Material	
Biogenic materials Biocomposites	✓
Cellular materials (foam materials)	
Composites Basalt fibre-reinforced plastic, Glass-fiber reinforced plastics (GFRP), Carbon-fiber reinforced plastics (CFRP), Natural fibre reinforced plastics (NFRP)	✓
Fibres Basalt fibres, Glass fibres, Carbon fibres, Natural fibres	✓
Functional materials	
Metals Aluminium, Steel	✓
Plastics Thermoset plastics, Thermoplastics	✓
Structural ceramics	
(Technical) textiles	