VAHTERUS

Vahterus Takes Part in Collaborative Research Project INTENS

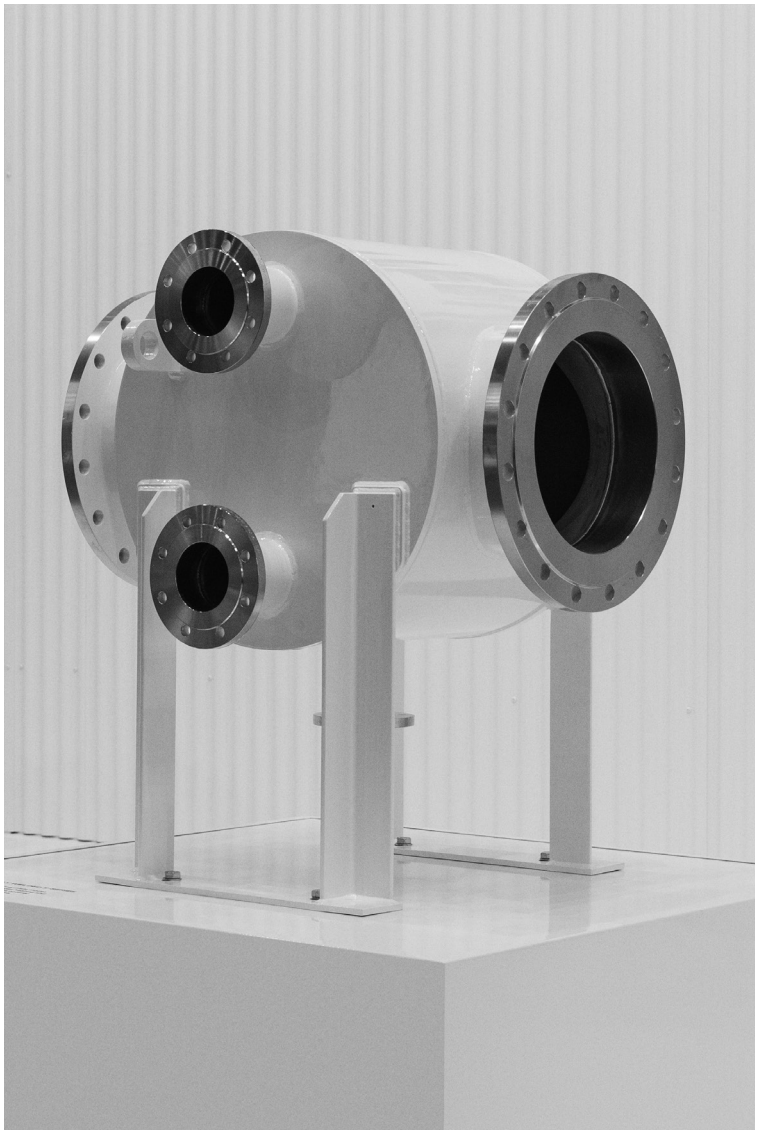
A consortium of experts in the marine industry, from ship owners, builders and designers to technology innovators and universities, is pooling knowledge and resources to develop efficient energy systems for the future. Vahterus has participated in the group since 2018, increasing expertise and gathering information on Plate & Shell Heat Exchanger design and use in ORC processes.

Finland has a long tradition of pioneering maritime technological innovation. **INTENS**, a VTT-coordinated research-industry collaborative project, is one of the most recent successful actions on smart and green shipping. The novel solutions and innovations generated can greatly improve energy efficiency and reduce emissions from ship energy systems, mitigate global climate change, transform the ways in which the maritime industries operate currently and pave the way for future shipping.

INTENS consists of 14 Finnish industrial partners and five renowned research organisations, covering the whole value chain of the Finnish marine cluster, including ship owners/operators, ship designers and builders, system/component suppliers, solution/service providers and technology innovators that have expertise in ship energy systems' design, building or operation.

Vahterus has been part of the collaboration since 2018. The aim of the project was to improve and increase expertise in ORC-processes, as well as gathering information of Plate & Shell Heat Exchanger (PSHE) design and use in the process. Utilising the collected data from the ORC tests improved the design of PSHEs in heat-recovery and heat-transfer processes. Increased knowledge of ORC processes also opens up opportunities for new customer ships and areas. 'Overall, participating in an extensive and wide INTENS project with participants from all levels of industry and research facilities creates new opportunities to cooperate with Finnish maritime industry', says **Kerttu Kupiainen**, Senior R&D Engineer at Vahterus.

'Vahterus started the project with a view to generating better solutions to ORC processes and optimising the design of PSHEs', Kupiainen adds. 'The tests, and being part of the consortium, has also led to new knowledge about heat recovery from exhaust gases and brought new contacts with maritime companies, providing a lot of information on how the field is developing. Many new and renewed relationships made during the project have generated multiple new projects'.



*One of the tested products was **Vahterus PSHE 5SH**, developed for gas applications.*

'From its inception, INTENS has given partners a unique opportunity to jointly research and develop industry-leading novel solutions and innovations to address the major challenges faced by the global shipping industry.' says Vice President of Mobility and Transport, **Johannes Hyrynen**, from VTT Technical Research Centre of Finland.

'Over 60 novel software and physical products and more than 150 scientific publications have been generated during the project, having led to significant research and business impacts and resulted in 26 new business and R&D projects with a total volume of over 22 M€, which further strengthens Finland's global position as a technology-innovation leader in ship design, system integration, building and operation', Hyrynen adds.

'The aims and expectations that Business Finland had for INTENS have been achieved. This can clearly be seen in the results generated and from the feedback and experiences of the participants', says Chief Advisor, **Matti Säynätjoki**, from the INTENS financier Business Finland. 'It also supported and showcased the objective of Business Finland to develop internationally competitive innovation and business ecosystems in Finland.'

'INTENS was a success story for Wärtsilä, that exceeded expectations', says Technical Manager, **Pasi Juppo**, from Wärtsilä Marine Power. 'Over 80% of NOx emissions reduction, 50% total hydrocarbon content (THC) reduction and around 2%-unit efficiency improvement have been achieved with novel advanced technologies. This wouldn't have been possible without good collaboration with the universities and partners.'

'Although the project itself has come to an end, the fruitful collaboration and co-innovation among the INTENS partners is continuing in many ways. The direct and indirect research and business impacts will be clearly visible, not only generating scientific and technological innovations but also creating sustainable and globally competitive businesses, and hence strengthening Finland's green and innovative global image in the years to come', says the INTENS Project Coordinator, **Zou Guangrong**, from VTT Technical Research Centre of Finland.

'INTENS project has been an important step for Vahterus R&D. Being part of the consortium has helped us gain valuable new knowledge and competence in the maritime domain. New and renewed relationships with partners have also fuelled multiple new projects', Kerttu Kupiainen summarises.

The INTENS (Integrated Energy Solutions to Smart and Green Shipping, http://intens.vtt.fi) consortium consists of 14 Finnish marine companies (NAPA Oy, Wärtsilä Finland Oy, Meyer Turku Oy, Dinex Ecocat Oy, Deltamarin Oy, Vahterus Oy, Pinja Oy, Parker Hannifin Oy, JTK Power Oy, 3D Studio Blomberg Ab, Jeppo Biogas Ab, Visorc Oy, Tallink Silja Oy and NLC Ferry Ab Oy) and five renowned research organizations (Aalto University, Lappeenranta University of Technology, University of Vaasa, Åbo Akademi University and VTT Technical Research Centre of Finland Ltd).

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