e5 Lab Launches *ROBOSHIP* Project to Promote Zero-Emission Electric Vessels ~ Evolving with Electric Vessels and Digital Transformation~

TOKYO—e5 Lab Inc. (President: Tomoaki Ichida; Headquarters: Chiyoda-ku, Tokyo) today announced that the company—aiming to realize a sustainable society—has started developing the *ROBOSHIP*, the standard models of electrically powered vessels to realize zero emissions, as well as an integrated system called the "*ROBOSHIP BOX*," which brings together telecommunications, the Internet of Things (IoT), and software. Through this initiative, e5 Lab is working to address critical issues facing Japan's ocean shipping and maritime industries, including a shortage of seafarers, environmental concerns, safety, and the sustainable growth of the shipbuilding/ship machinery sectors. With strategic partners in Japan and overseas, the development project team targets the commercialization of electric-powered merchant vessels that adopt world-class propulsion systems at the most competitive price in the global market.

Developing Standard Models of Electric Vessels, *ROBOSHIP Ver. 1.0*, Thoroughly Committing to Cost Competitiveness

The team developed two types of electric vessels in the *ROBOSHIP Ver. 1.0*, with standard gross tonnage specifications — 499 tons and 749 tons. They will be able to achieve the same speed and sailing range as vessels currently in service, while achieving zero-emission operation in port, due to the large-capacity storage batteries in combination with a diesel-powered generator. These vessels will achieve higher energy efficiency than other vessels in service with the e5 Lab partners' knowledge and experience, as well as the world's most efficient electric devices (DC grids, PM motors, AI technology).

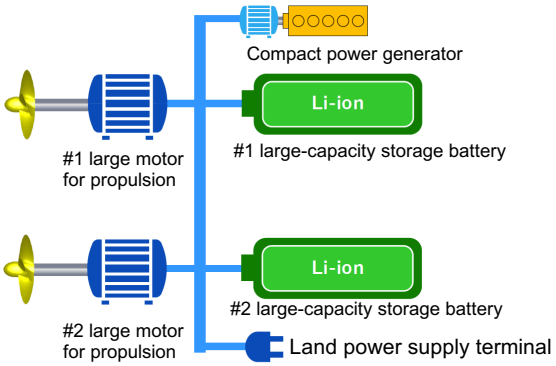
The *ROBOSHIP Ver. 1.0* can significantly reduce not only the workload of seafarers, but also lower the risk of mechanical problems and decrease maintenance costs, because the motors are powered only by electricity. The team's current target is to keep construction costs less than 5% above the cost of comparable existing vessels. The *ROBOSHIP Ver. 1.0* is slated for delivery within 2022.

Electric Vessel, DX Accelerate Evolution of Ocean Shipping and Maritime Affairs with *ROBOSHIP BOX*

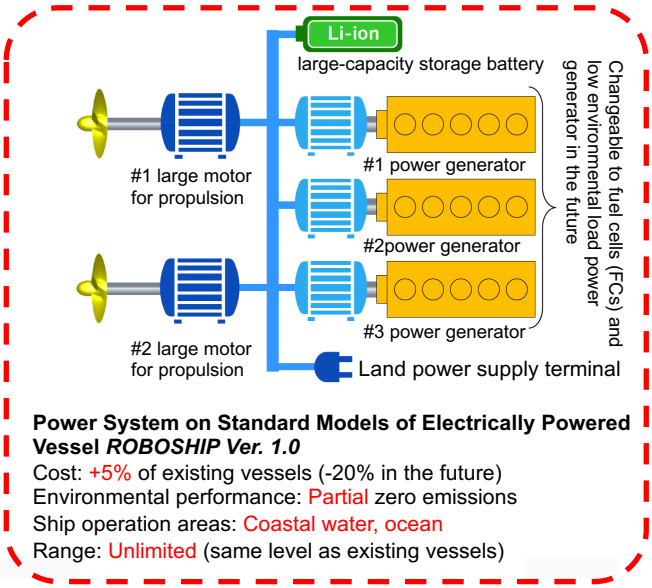
e5 Lab, along with the partners, will promote the *ROBOSHIP* and accelerate maritime digital transformation (DX) by **offering the *ROBOSHIP BOX*** as well as **the EV powertrain,** which is a key technology of the *ROBOSHIP*, **to all interested shipyards and shipowners.** The *ROBOSHIP* BOX is the foundation that connects the vessel and shore and enables shore-side support using digital technology. The broad application of the *ROBOSHIP* and *ROBOSHIP BOX* will realize competitive and value-added vessels from various aspects such as environmental friendliness, economy, quality, and performance, with the goal achieving a transition to electric vessels and digitalization in the ocean shipping and maritime industries.

e5 Lab and its partners will continue to develop and market the *ROBOSHIP*, fostering sustainable development in Japan's ocean shipping and maritime industries and fueling the creation of new values.

[Powertrain System on Standard Models of Electrically Powered Vessels *ROBOSHIP Ver. 1.0*]



Pure EV System
Cost: +50~80% of existing vessels
Environmental performance: Full zero emissions
Ship operation areas: In port, calm water
Range: ~100 nautical miles



Power System on Standard Models of Electrically Powered Vessel *ROBOSHIP Ver. 1.0*
Cost: +5% of existing vessels (-20% in the future)
Environmental performance: Partial zero emissions
Ship operation areas: Coastal water, ocean
Range: Unlimited (same level as existing vessels)

[Main Characteristics of Standard Models of *ROBOSHIP*]

1	Maximize value to shipowners	Not only solve urgent issues—measures for environmental protection, efficiency of logistics—for shipowners, but also offer **cost benefits to shipowners at the same cost as current ships**.
2	Maximize environmental performance/ value	Can build electric vessels with excellent environmental performance at the same cost as current vessels. Measures not only for **zero emissions** (CO_2, Sox, NOx, PM) **in ports and harbors**, but also comply with full zero emissions by converting to low environmental burden power generators in the future.
3	Maximize economic value	Can offer a top-quality, cutting-edge product in which Japan excels, at the largest scale and with price competitiveness, through standardization, which is a general business model in other industries. Everyone can leverage **cutting-edge technologies** by offering them as a **package** of such as telecommunication, software, IoT, and AI **(ROBOSHIP BOX)**, and this will accelerate innovation. e5 Lab will offer **an open platform** leveraging cutting-edge technologies.
4	Maximize industrial value	Offer **a new growth engine** for Japan's ocean shipping and maritime industries that face many difficult issues, through standardized, cutting-edge electric vessels and the platform. e5 Lab will spur innovation in Japan's ocean shipping and maritime industries, making them **growth industries that will drive the nation's economy**, by offering not only technologies and products, but also new value and a new business model.
5	Maximize future value	Provide the integrated digital platform "ROBOSHIP BOX," which packages "offshore high-speed communication," "ship common OS 'Marindows' (tentative name)," "security/AI/robotics," "automation/remote system," "onboard IoT infrastructure system," and "applications" (safety, medical, management) for seafarers/shipowners/ship management companies. Create **new values and business opportunities** by **continually updating** the vessels and peripheral infrastructure system.





About e5 Lab Inc.

A provider of ocean shipping solutions based on electrification and digitalization of ocean-going vessels. e5 Lab's mission is to create sustainable coastal shipping, which is the lifeline of Japan. The company aims to contribute to society through its efforts on safe operation of vessels and global environmental conservation, by combining cutting-edge technologies and ideas to create added value, and solving the issues facing coastal shipping.

▼ Website
http://e5ship.com

▼ "e5 Lab Inc." promotion video
https://www.youtube.com/channel/UCYovzRhRIYyxHr7MoYCUU3g/feed

Ships for the future
ミライのフネを考える。

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