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Press release

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Wärtsilä, Fincantieri SI, Seastema and University of Trieste collaborate to develop innovative technologies for marine electric microgrid

The University of Trieste / Digital Energy Transformation & Electrification Facility with Wärtsilä, Fincantieri SI and Seastema, have signed a cooperation agreement for a project, co-financed by the Italy General Secretariat of Defense, which will develop innovative technologies related to marine electric microgrid (marine smart grid) and will build, in Trieste, a technological demonstrator (ETEF) to test new solutions for marine power systems and related components.

The maritime industry is moving towards the electrification of the main and auxiliary systems, thanks to developments in fields such as power electronics, distribution systems, electrical machines, fuel cells and energy storage systems. New technologies allow a variety of energy solutions for the modern ship platform improving efficiency and reducing or even eliminating harmful emissions. In addition to testing new concepts of intelligent power systems and related protection systems, ETEF will be used to validate intelligent energy management systems.

As a key pillar of the smart marine grid, the ETEF program will allow Wärtsilä, Fincantieri SI, Seastema and the University of Trieste to:

- develop and demonstrate an innovative modular electrical distribution to generate and control electricity in a microgrid configuration;
- develop and demonstrate modular DC (direct current) power supply systems to manage active, passive and transient loads in collaboration with customers and suppliers, including fuel cell and battery applications;
- develop the related control systems and pre-test new equipment before installation on board, thus reducing integration times and risks.

The new technology for marine electric microgrid today focuses on military applications, but in the future it will also increase its importance for commercial ones through the flexibility of integrated electricity systems and active control.

The project will last 5 years during which both the companies' and University research teams will develop critical skills.

Commenting on the agreement, Andrea Lombardi, Operations Director of Fincantieri SI, added: "The development of an innovative project in the world of direct current electricity grids paves the way for electrification in the naval field, allowing the application of technologies aimed at reducing emissions, area where Fincantieri SI holds a leadership in terms of know-how".

Alessandro Concialini CEO of Seastema said: "Controlling new network architectures (smart marine grid) and optimizing their management to reduce environmental impact as well as increase efficiency are strategic priorities for Seastema, well fitting into our distinctive know-how on naval automation and control".

Professor Giorgio Sulligoi, Head of the Digital Energy Transition & Electrification Facility, University of Trieste, said: "At the University of Trieste we conduct research on the technological and methodological concepts of the electric ship aimed at improving its environmental, maritime, building and design key indicators. The ETEF technological demonstrator will constitute a shared research infrastructure of the Trieste scientific and industrial system, to consolidate its position in the areas of energy and digital systems engineering for future ships".

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