

MINERVA – Modular Integration of Naval Energy Systems for Resilient Vessels Application

Dissemination and Communication package

Approved by GA: 13.10.2026

Approved by EC: 13.10.2026

Project summary

MINERVA – Modular Integration of Naval Energy Systems for Resilient Vessels Application – aims to accelerate the design and integration process for energy systems of naval vessels with a modular and hybrid propulsion and hybrid HV/LV DC power system architecture, together with a novel virtual modelling, simulation and testing approach.

MINERVA will adopt three key innovation areas for military use:

- 1) fuel-flexible hybrid propulsion systems,
- 2) DC electric power systems and energy storage and
- 3) a joint modular design, modelling and test approach of these technologies, considering various specifically developed military use cases.

The project will demonstrate a new set-up in a holistic virtual environment combining distributed physical test facilities with joint virtual modelling and simulation environment with advanced and AI-supported & physics-informed digital twins.

The Results of this project will help to define a suitable propulsion system for the future naval vessels, which is robust and interoperable, and complies with the naval requirements. Specifically, project main objectives are:

1. **Innovative solutions for future ship classes.** We will define the best fitting propulsion and power solutions for specific use cases and customer requirements.
2. **Modular propulsion and power systems.** We will standardize the interfaces between these systems and utilize scalable modular components.
3. **Acceleration of design and development.** We will shorten the development cycle of the propulsion and power system through standardized modular solutions and novel model-based system engineering approach (MBSE) which includes the use of physics-informed Digital Twins.
4. **Efficient collaboration methodologies via MBSE tools and environments.** We will emphasize novel ways to collaborate throughout the value chain from Primes (Tier 1) to RTOs and SMEs.

Coordinated by NVL, the consortium brings together 20 Beneficiaries and 5 Affiliated Entities from 10 Member States and Associated Countries.

With budget of close to 20 MEUR, the project will run from October 2026 to September 2029.

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Logos

Project logos are available in these folders:

[MINERVA logos](#)

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Project logo:



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