



## University of Rijeka, Faculty of Maritime studies

**PROJECT ACRONYM AND TITLE:** PortEMS - Converged IT-OT Energy Management System (EMS) for the Transition of Port Communities into Smart, Low-Carbon Energy Hubs - IP.1.1.03.0070

**FUNDING PROGRAMME:** Integrated Territorial Programme 2021-2027

**PERSON RESPONSIBLE:** Prof. Edvard Tijan, PhD

### FINANCIAL DATA

Total budget	Budget assigned to the Faculty of Maritime studies
4.380.946,38 €	390.383,37 €
Eligible budget	Project grant
3.516.510,01 €	2.522.272,58 €

### SUMMARY

The overall objective of the project is to develop a comprehensive solution for a smart, centralized Energy Management System (EMS) Integrator for port communities. This solution will feature adaptive energy optimization, connectivity, and data-sharing capabilities across various energy subsystems based on IT-OT integration, with the aim of transitioning port communities into low-carbon energy hubs.

The project will result in the development of new adaptive algorithms for optimizing energy management processes to reduce CO<sub>2</sub> emissions. Additionally, a methodology for identifying key data for exchange and rules governing data exchange between applications will be established. A hardware-software architecture for managing horizontal energy systems in port communities will also be developed, with a core system for collecting, processing, archiving, and sharing data.

The research will focus on the application of artificial intelligence applied to the adaptability of control signals of interconnected energy systems during energy management operations. Historical measurements, analysis results, and offline simulations (using recognized software packages for power system operation analysis - NEPLAN and MATLAB/SIMULINK) will serve as data patterns for machine learning (neural networks and/or genetic algorithms). The expected project outcomes will revolutionize the philosophy of energy management in port communities by involving all key stakeholders while respecting hierarchies and authorities.

The newly developed hardware-software management architecture and adaptive solutions, tailored to the specific characteristics of individual parts of the port community's energy system, will provide the basis for patenting new IT-OT-based solutions. Ultimately, the application of project results should accelerate the green transition and offer technical support for the rapid transition of port communities.

Start date	End date
01.11.2024.	31.10.2027.



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### PARTNERSHIP

Br.	Partner organization	Country	Role
1.	JATRO INŽENJERING Ltd.	Croatia	Lead partner
2.	MEP Ltd.	Croatia	Partner
3.	RIJEKAPROJEKT – ENERGETIKA Ltd.	Croatia	Partner
4.	PROJEKTNI BIRO Ltd.	Croatia	Partner
5.	GDi Ltd	Croatia	Partner
6.	University of Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture	Croatia	Partner
7.	University of Rijeka, Faculty of Maritime Studies	Croatia	Partner

### WEBSITE: /



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Ministarstvo regionalnog razvoja  
i fondova europske unije



Financira  
Europska unija

### ADDITIONAL INFO:

Project team members:

- Prof. Edvard Tijan, PhD
- Prof. Saša Aksentijević, PhD
- Prof. Aleksandar Cuculić, PhD
- Ivan Panić, PhD
- Borana Vlastelić, MSc