



**PROJECT ACRONYM AND TITLE:** The development of Marine Diesel Engine Digital Twin

**FUNDING PROGRAMME:** Call for funding of Institutional research projects of the University of Rijeka financed from source 581 – Recovery and Resilience Mechanism (University of Rijeka, Institutional Research Projects)

**PERSON RESPONSIBLE:** Dean Bernečić

**Project total cost** 53.146,95 EUR

**SUMMARY AND OBJECTIVE:** Twin Marine project has the goal of developing a digital twin (DT) of a marine engine inside a virtual reality (VR) environment. The physical engine situated in the Educational Workshop Torpedo of the Faculty of Maritime Studies Rijeka will be upgraded with measuring equipment capable of monitoring the parameters of the engine. Collected data will be used to build a 3D model of the engine and perform the condition analysis using the finite element method (FEM). Based on the 3D model, a digital twin of the engine will be developed using VR technology and it will be connected to the physical engine. The developed solution will be used for the digitalization of the maritime education and training (MET) process.

**OBJECTIVES:**

- Integrating advanced sensors to monitor marine engine operating parameters,
- Numerical analysis of engine response based on experimentally collected input data,
- Creating a 3D model of a marine engine in virtual reality,
- Connecting the real engine with its digital twin by transferring experimentally collected data and numerical analysis results,
- Developed digital twin testing.

Start date	End date
1 October 2025	30 September 2029

#### PROJECT TEAM

No.	Member	Affiliation	Role
1.	Dean Bernečić	University of Rijeka, Faculty of Maritime Studies, Croatia	Head
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9.	Zoran Pavin	University of Zadar, Maritime Department	PhD student
10.	Lech Murawski	Gdynia Maritime University	Researcher
11.	Dario Ogrizović	University of Rijeka, Faculty of Maritime Studies, Croatia	Researcher