

Improving the combustion efficiency of internal combustion engines (ICEs) through HFI (Hydrogen Fuel Injection) technology

Sector: Marine energy

Short description of the needs:

Challenge: Many fishing and cargo vessels still operate with outdated and highly polluting diesel engines. Complete replacement of propulsion systems is often economically unsustainable and incompatible with operational downtime requirements. Therefore, there is a need for immediate solutions capable of reducing emissions without replacing existing infrastructure, accelerating the decarbonization of the maritime sector.

Objective: The project aims to support a rapid energy transition for small and medium-sized vessels while ensuring operational continuity for shipowners. The proposed solution is an HFI (Hydrogen Fuel Injection) retrofit system that can be integrated into existing internal combustion engines to improve combustion efficiency and significantly reduce pollutant emissions. The system is managed by an electronic control unit that guarantees safe and autonomous operation without requiring intervention from the crew. The approach also includes integration with renewable energy sources for onboard energy production, supporting both system power supply and overall energy efficiency improvements.

Cooperation opportunities: The project foresees the involvement of research institutions for the development and validation of the technology in real operational environments, with particular focus on optimization of hydrogen production and management, energy efficiency, combustion improvement. The objective is to develop, test, and validate the retrofit solution while ensuring reliability, safety, and scalability for the maritime sector..

More info: For more information apply to eccentric@t2i.it

Company: Acca Industries

Point of contact for the brief/challenge: t2i – Trasferimento Tecnologico e Innovazione