



**Politecnico  
di Torino**



**MARINE  
OFFSHORE  
RENEWABLE  
ENERGY LAB**

Politecnico di Torino  
DIMEAS, dipartimento di Ingegneria  
Meccanica ed Aerospaziale

MORE Lab  
Marine Offshore Renewable Energy

## **Development of Operational and Maintenance strategies for Floating Offshore Wind Farms in the Mediterranean Sea**

- Recommended profile: Energetic engineering, Mechanical engineering, Engineering and Management
- Topics involved: O&M strategies, Offshore wind, Energy scenario
- Skills required or suggested: Matlab

### Proposal description

The transition towards renewable energy sources has positioned floating offshore wind farms as a fundamental component for achieving sustainable energy goals. However, the operation and maintenance (O&M) strategies of these offshore wind farms, especially in challenging environments like the Mediterranean Sea, remain underexplored. This thesis aims to delve into the **O&M strategies** specific to floating offshore wind farms, assessing their impact on the Levelized Cost Of Energy (**LCOE**) and examining how **metocean conditions** in the Mediterranean Sea influence these strategies. By integrating these analyses into the Matlab tool developed by MOREnergy lab, this research seeks to offer actionable insights into optimizing O&M strategies to enhance the economic viability and efficiency of floating offshore wind energy.

This research is anticipated to yield several key outcomes:

- A comprehensive overview of current and emerging O&M strategies for floating offshore wind farms, highlighting their strengths and limitations.
- Insightful analysis regarding the readiness and strategic importance of Mediterranean, particularly Italian, port infrastructures in supporting floating offshore wind farms.
- Quantitative assessments of how different O&M strategies can influence the LCOE of floating offshore wind projects in the Mediterranean Sea, taking into account the variable metocean conditions.
- Recommendations for optimizing O&M strategies to reduce LCOE, thereby enhancing the economic feasibility and reliability of floating offshore wind farms.