



Politecnico
di Torino



Tidal energy converters: modelling and techno-economic assessment

Thesis proposal at the Marine Offshore Renewable Energy Lab
Department of Mechanical and Aerospace Engineering, Politecnico di Torino

Recommended profile:

Aerospace engineering, Mechanical engineering, Mechatronic engineering

Topics involved:

Mathematical modelling; Resource assessment; Flow-structure interactions

Skills required or suggested:

Matlab and/or Python

Proposal description

Tidal energy is one of the most predictable sources of renewable energy, since it is related to astronomical cycles. Moreover, tidal energy turbines are among the most mature ocean energy technologies. However, the decision-making process necessitates of comparable techno-economic metrics, hence not only productivity, but also capital and operational costs.

Within activities related to a project funded by the European Commission, this thesis aims at:

- Implement a numerical model for the dynamics, structural integrity, and performance of tidal energy turbines
- Embed an appropriate parametrization to evaluate design alternatives for different installation sites
- Define and evaluate techno-economic metrics related to the productivity, costs, and consequent levelised cost of energy

The thesis is developed, abroad or remotely, in collaboration with Dr. Christian Windt, research fellow at the Technical University of Braunschweig, Germany.

Relevant reference: [link](#)

Contact references:

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