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FLORENCE - ITALY

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Conference on  
Wind Engineering



## Wind Engineering for Modular Sustainable Energy Islands

### Summary outline:

Nowadays there are more than 350,000 wind turbines spinning around the globe with about 10% of them combined to alternative sustainable energy systems (photovoltaics, wave and tidal energy systems etc.). Due to continuous technological advances, the concept of modularised construction of offshore floating platforms aka modular sustainable energy islands (i.e. offshore wind power combined to other renewable energy sources and energy storage) seems to have recently become far more cost effective and much more widespread than expected, and energy Islands are expected to become during the next decade the top source of Sustainable Energy generating capacity in the world.

As a matter of fact, modular sustainable energy islands act as a platform to maximize collection and conversion of the renewable energy sources and efficiently transfer them to the network, exploring cutting-edge related technologies for efficient energy storage and transportation.

In the present mini-symposium cutting-edge Wind Engineering topics and how these could advance the artificial sustainable energy islands will be presented and thoroughly discussed. Wind energy resources and weather forecasting relevant for floating islands, neural networks and digital twins for modelling of wind energy structures on energy islands, optimisation of large floating platforms for wind turbines and lifetime management of energy constructions will be topics that will be in details presented and discussed during the works of the mini-symposium.

### Topics;

- Wind energy resources in floating artificial islands
- Offshore weather forecasting relevant for floating structures
- Graph neural networks for generative modelling of wind energy structures
- Digital Twins approaches in modular sustainable energy islands
- Optimization of large floating platforms for wind turbines
- Lifetime management of energy constructions

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