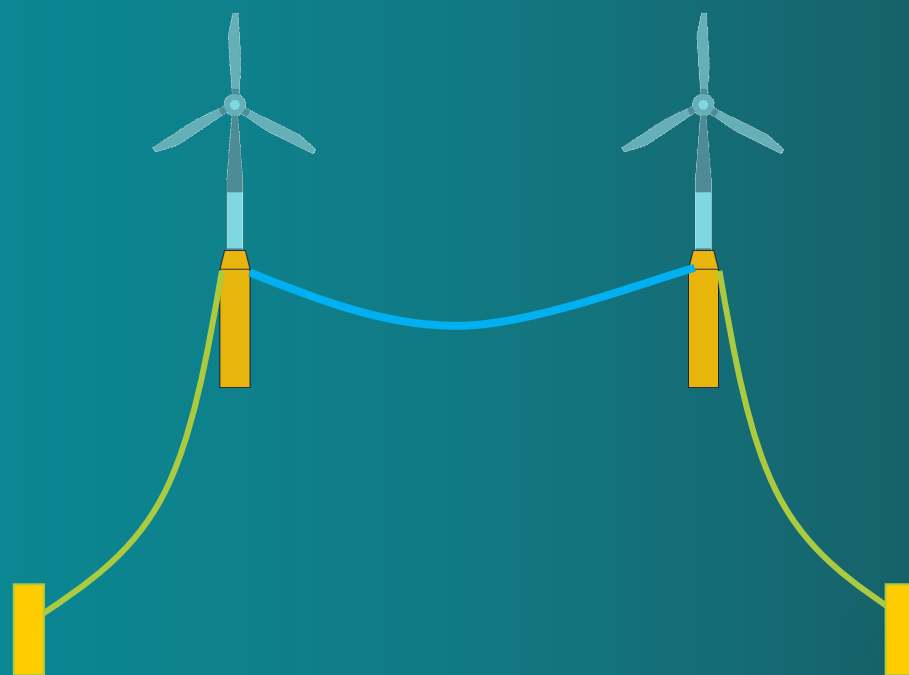


ESOMOOR: Enhancing shared mooring system design for floating Offshore wind farms

TRI 2Workshop Offshore Renewable Energy: from technology development to sustainability

Yanlin Shao, Technical University of Denmark



Problem/Challenge/Offer

Floating wind power

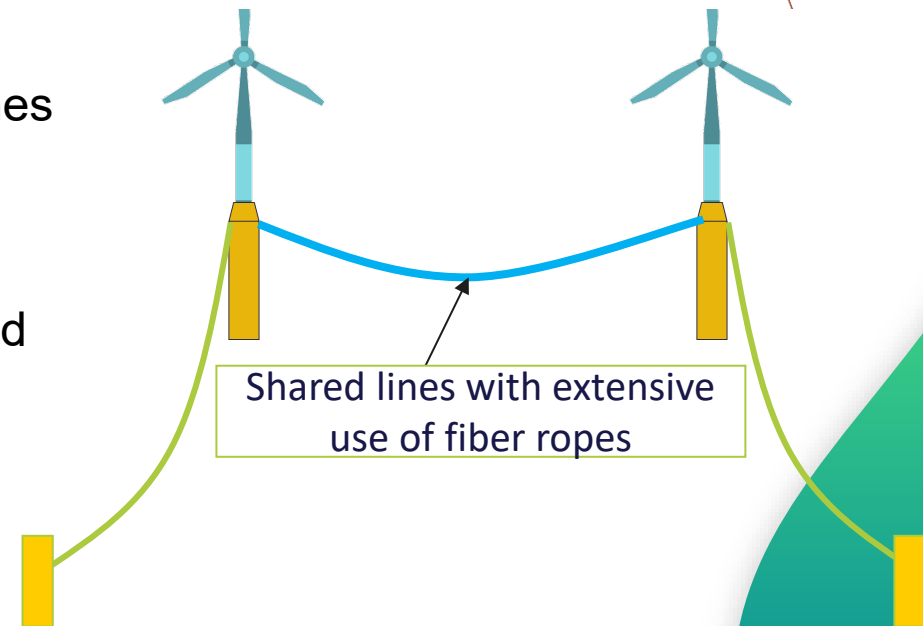
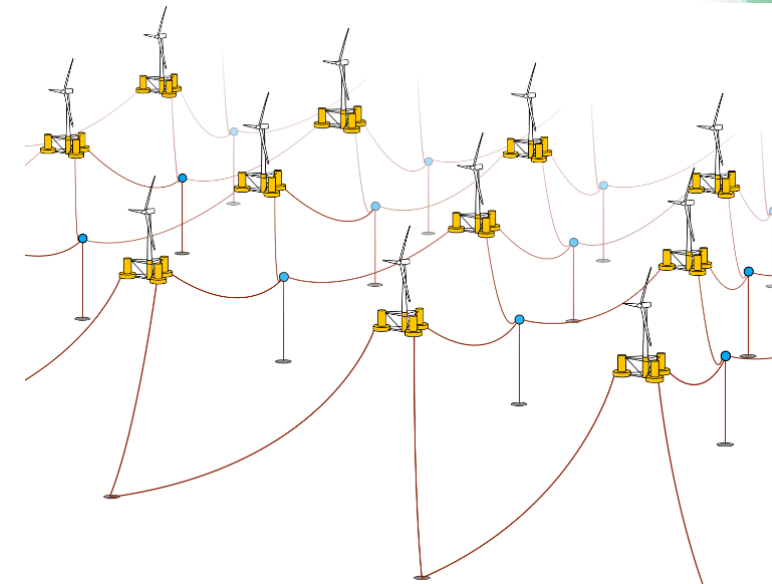
- Floating offshore wind will generate 15% of all offshore wind energy by 2050
- LCOE for floating offshore wind is currently 3 times that of fixed offshore wind

Mooring system

- Mooring system related cost \approx 20% CAPEX
- If the 2050 target achieved, the required mooring lines when tied end-to-end, would wrap around the world twice.
- Supply chain problem if only steel materials are used

A possible game-changer:

- Shared moorings with extensive use of fiber ropes
- A technology that is still not mature



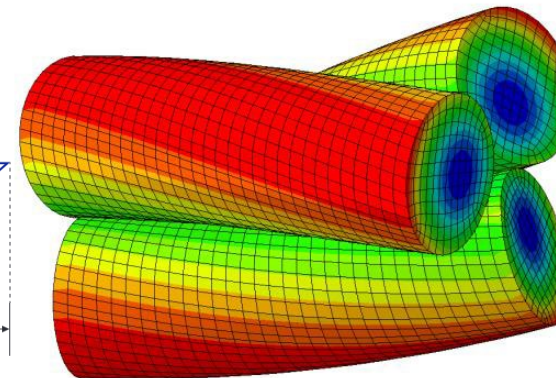
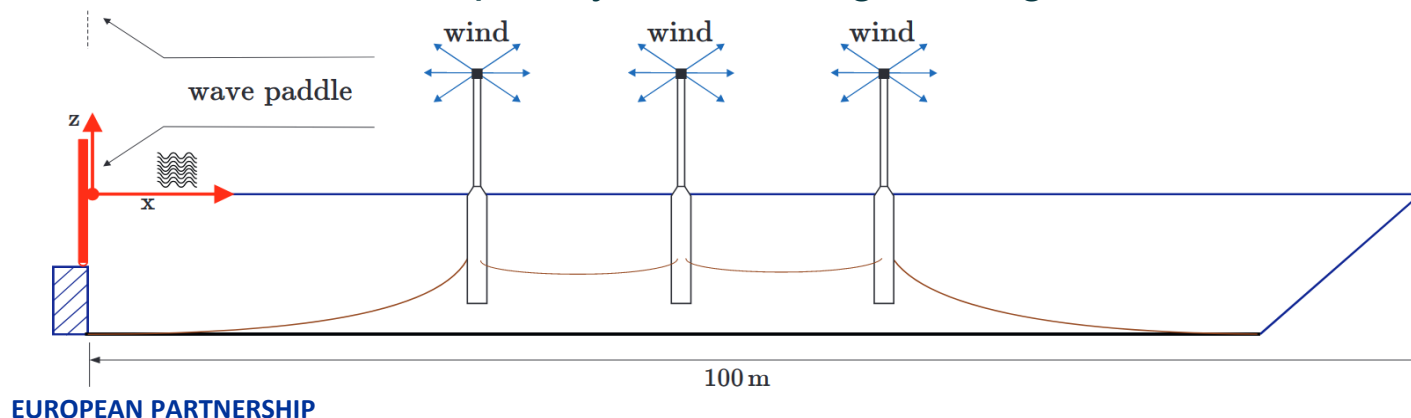
Specific needs, state of consortium

Specific needs

- Improved understanding of the system safety when the design, enhanced by shared moorings and new materials, follows standards that were primarily made for single units
- Numerical tools that can efficiently simulate the design with shared mooring, while consistently accounting the nonlinear properties of the fiber rope materials.
- Open-access data for the industry to validate their design and tools.
- Established design procedure to optimize the mooring and cable.

Consortium

- Team: 6 universities + 1 research institute + 1 certification body + 2 suppliers + 1 SME
- Multi-disciplinary: Ocean engineering + offshore wind + material science + model testing





ESOMOOR aims to *provide experimental and simulation-based prototype demonstrations* of floating offshore wind farms in an integrated system environment, *elevating* the associated technologies to a higher *TRL* and *increasing the confidence of end users* in applying shared mooring systems and fiber ropes in future large-scale wind farm deployments.

Consortium contact

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