Floating wind – the future of offshore wind energy
Efficient numerical method for design of floating wind turbines - Part II

Floating wind turbines are considered as a key technology to make use of the available wind energy resources and to reach climate goals countries globally have committed to. Up to 80% of Europe's and 60% of USA's wind resources are in water depths over 60 m. For these water depths bottom fixed foundations are expected to reach their limits in terms of cost-effectiveness and feasibility.

Although floating wind turbines are proven to be technically feasible, as demonstrated by the pilot projects and pre-commercial wind farms already built and under development, the technology still needs to show that it can produce and offer electricity at a competitive price level. One factor reducing the electricity price level is the increasing turbine size, putting larger demands on floating foundation designs. Another major factor in reducing electricity price level is the cost related to the floating substructure. The floater designs are expected to be governed by the requirements and constraints of the supply chain and the developer. Supply chains will be complex with the need for yards that have sufficient capacity for large-scale serial production and ports that can accommodate the logistical needs of the floaters and components.

Therefore, efficient and reliable concept screening will be required in early project phases. Methodologies and tools available to designers today are time consuming and very computational demanding, leading to longer project execution times and allowing for fewer design iterations and potentially losing out on needed design optimizations and cost reductions.

As a continuation of the COWIfonden funded project "Efficient numerical method for design of floating wind turbines" (EMULF I), EMULF II has received funding. EMULF II aims to generalize the methodologies developed during EMULF I to a broader range of floater concepts, to enable more efficient concept screening in early phases of projects. The project is executed together with partners DNV (Det Norske Veritas), DTU (Technical University of Denmark) and NTNU (Norges Teknisk Naturvitenskapelige Universitet).

The outcome of this project will be shared with the industry to facilitate accelerated commercialization of floating offshore wind, so that global climate goals can be reached as soon as possible.