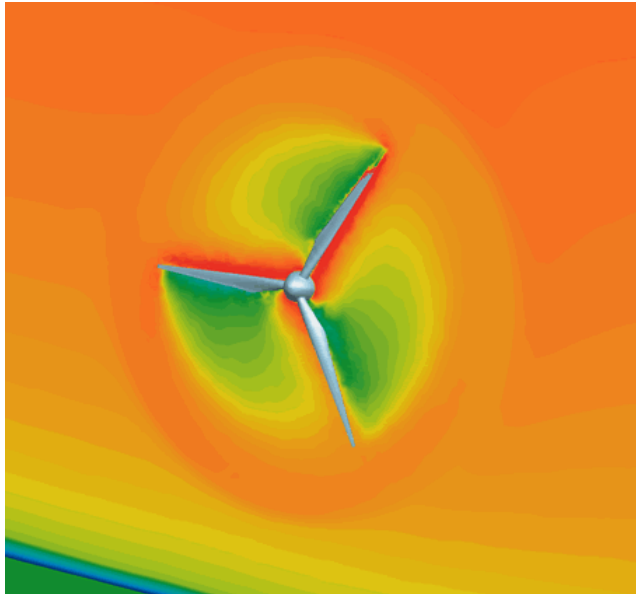


MEK4410 Offshore Wind and Aerodynamics of Wind Turbines

Topics for master's theses

Tor Anders Nygaard
torany@uio.no



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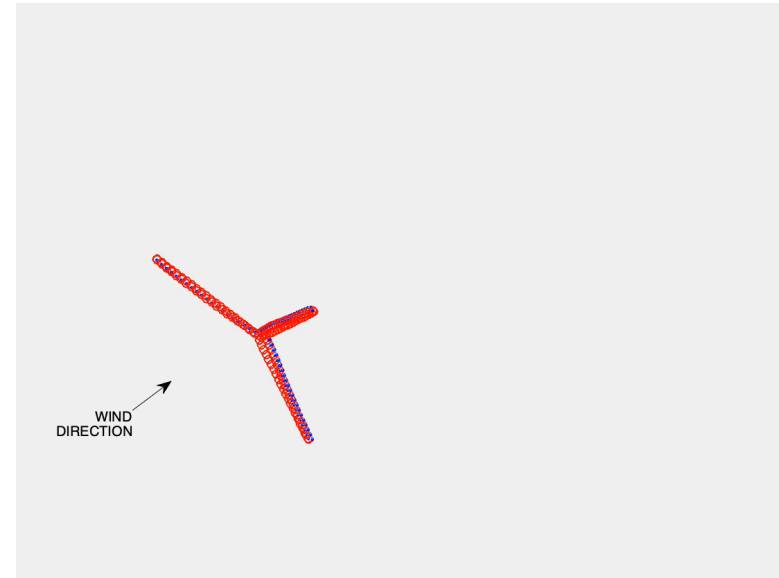
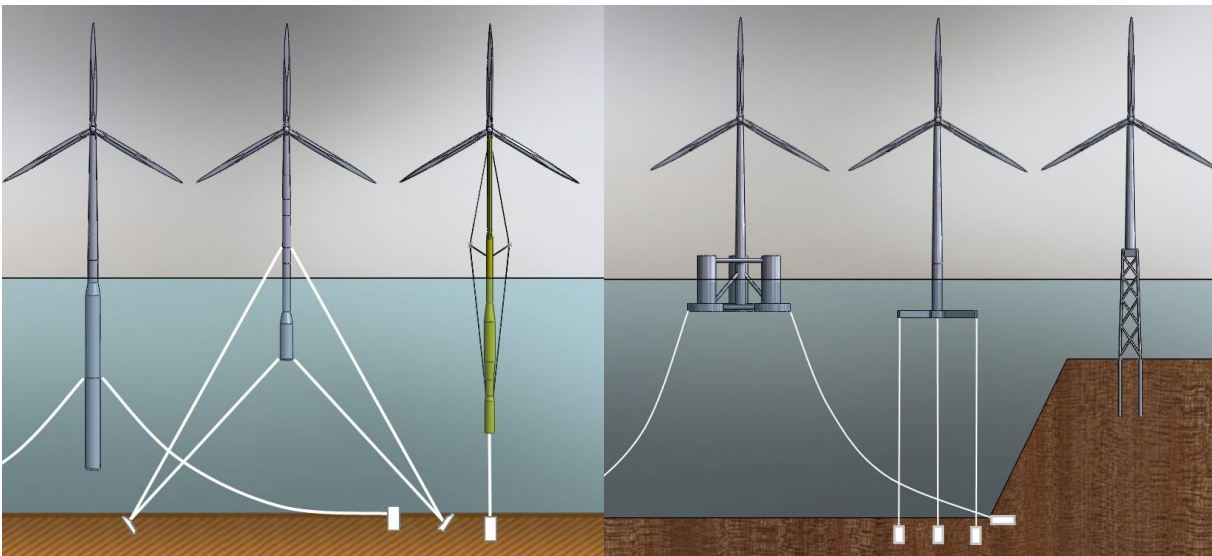


Outline

- MEK4410 Offshore Wind and Aerodynamics of Wind Turbines
- Topics for master's theses
 - IFE CETP-2024-00789. FROST: Framework for Offshore Wind Turbines in Icy Conditions
 - IFE CETP-2025-00887. SPM-FRAME: Single-Point-Mooring Floating Wind Turbine Framework: Dynamics, Control and Farm-Scale Reference.
 - Efficient vortex methods for wind turbine and helicopter rotors.
 - Airbreathing propulsion for (RAMJET, SCRAMJET) and other topics with NAMMO.

MEK4410 Offshore Wind and Aerodynamics of Wind Turbines .

- Spring semester, 10 credits.
- <https://www.uio.no/studier/emner/matnat/math/MEK4410/index-eng.html>
- From fundamental aerodynamics, coupled analysis to industry applications on offshore wind turbines

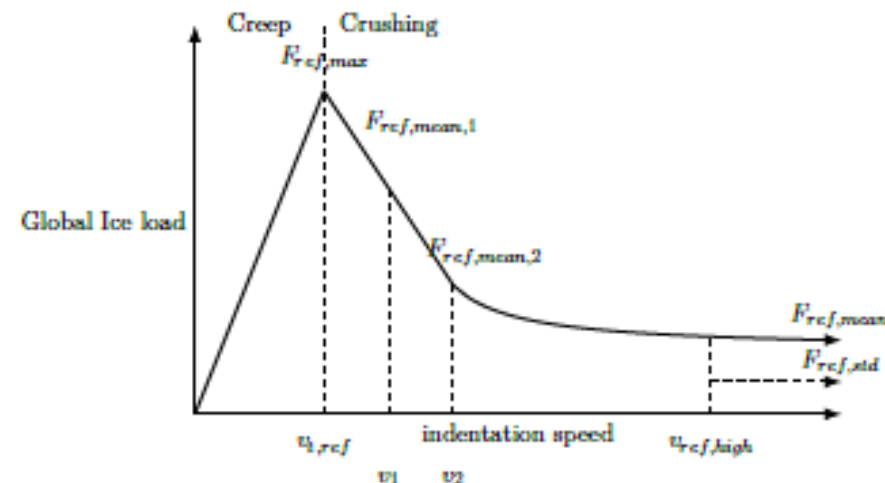
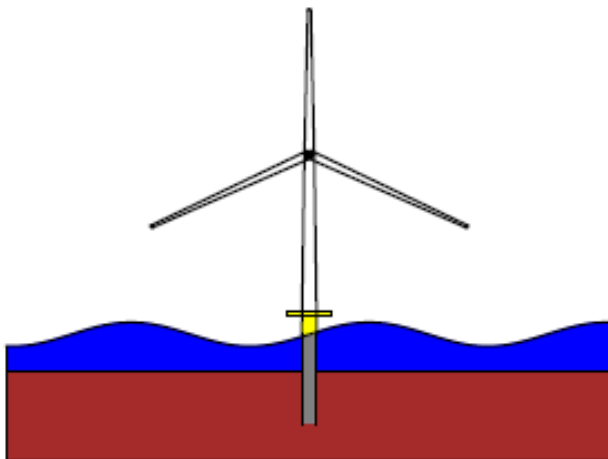


Coupled analysis: Solving aero-, hydro-, structural dynamics, control and soil/structure interaction simultaneously in time domain



IFE CETP-2024-00789. FROST: Framework for Offshore Wind Turbines in Icy Conditions

- Loads as drifting icefloe crushes against offshore wind turbine.
- Coordinated with IFE EU project, partners IFE, NTNU, RISE, TALTECH, EQUINOR, AIBEL, MULTICONSULT, NORCONSULT SVERIGE
- Previous thesis by Mikkel Krohn Sjursen (now PhD at Simula): Ice loads on offshore wind turbines. Offshore wind turbines in the Baltic Sea.



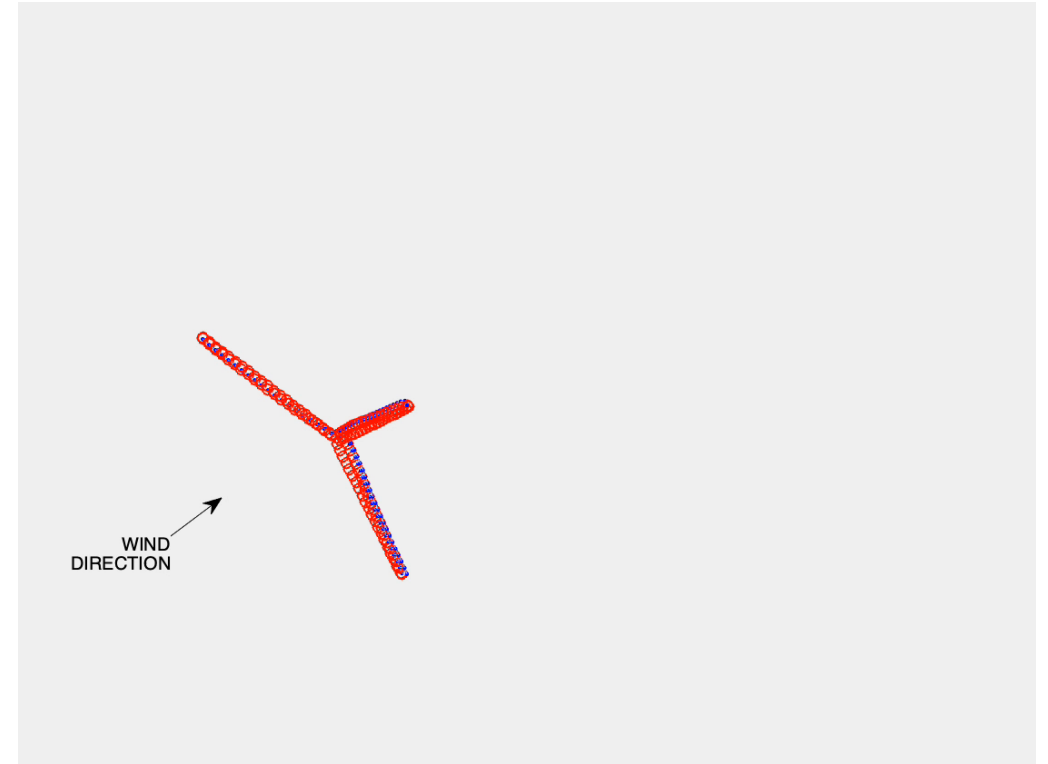
IFE CETP-2025-00887. SPM-FRAME: Single-Point-Mooring Floating Wind Turbine Framework

- New solutions for cost effective mooring systems.
- Partners: IFE, RISE (Sweden), Central Nantes / CNRS (France), METU(Turkiye), Fred. Olsen 1848, Seasystems, Freia Offshore (Sweden), Zephyr Renewable (Sweden)



Efficient vortex methods for wind turbine and helicopter rotors

- Previous theses:
 - 2025: Mustapha Ouitouit (now PhD at NTNU): A Comparison of Aerodynamic Models Used in Simulations of a Floating Offshore Wind Turbine
 - 2026: Simon Lederhilger (now at Von Karman): On Accelerating Inviscid Vortical Calculations. A Mathematical Perspective on the Fast Multipole and Vortex Lattice Methods
- Possible topics:
 - Efficient numerical methods
 - Turbulent diffusion in the wake



Airbreathing propulsion for (RAMJET, SCRAMJET).

