Installation of Anchors for Mooring System of Floating Wind Turbines

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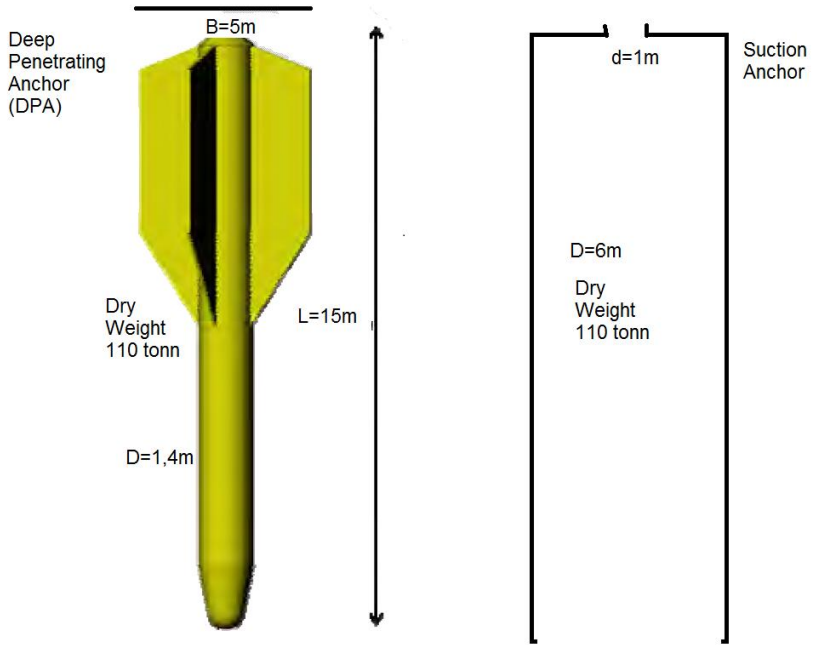


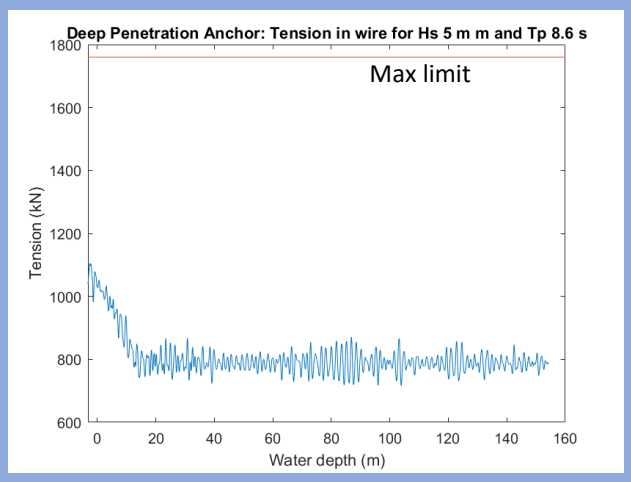
Deep Penetration Anchor Vs. Suction Anchor

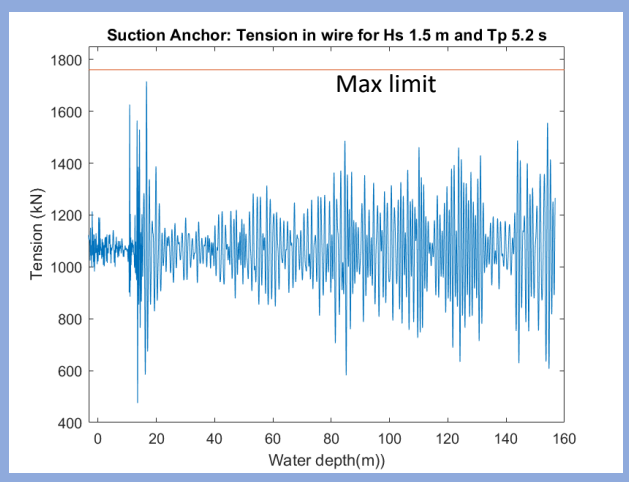
Motivation

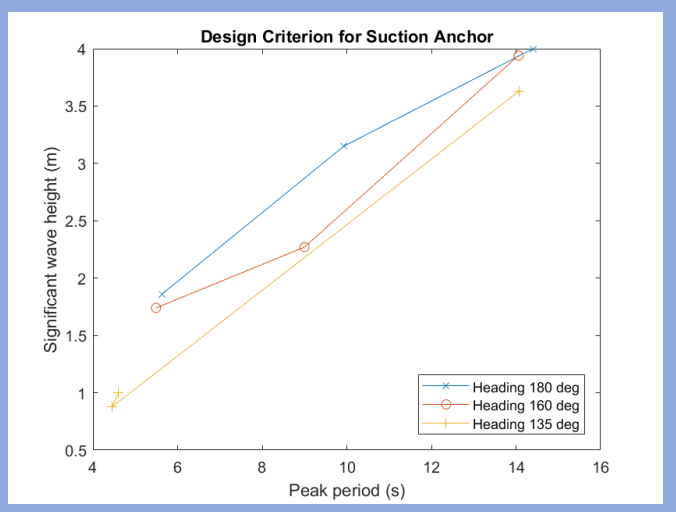
The mooring system and installation of the anchors are important factors for floating wind turbines. The capital expenditure is a large part of the wind turbines and can be reduced if the marine operations are optimised. Comparing the two anchor concepts Deep Penetration Anchor and Suction Anchor to find out which will be preferred in a marine operation perspective.

Method

- Numerical simulation models established in SIMA
- Hydrodynamic parameters estimated
- Simulation and evaluation of the lift as a weather critical activity - various significant wave heights and peak periods used. Tension in wire compared.
- Establish design criterion and operational limits
- Weather operability to be assessed, evaluating variations in weather window for different months)







Current results:

Suction Anchor

- Splash zone a critical phase
- Design criterion dependent on peak period and direction of the waves.
- Resonance in wire can be critical for low peak periods
- More challenging to install during autumn.

Deep Penetration Anchor

- The lift can be performed in unlimited weather conditions, vessel and other factors limits the design criterion.
- Shorter planned operation time. The installation not that dependent on season
- Resonance not critical during the lift

Deep Penetration Anchor is recommended for floating wind turbines