Standardisation & industrialisation

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Selection of WTG, Make & Size

15MW – 20MW – 25MW ??

Economy of scale drive the chase for larger and larger WTG - Just easy math?

Field capacity **500MW** = **34** units a **15MW** WTG

25 units a **20MW** WTG

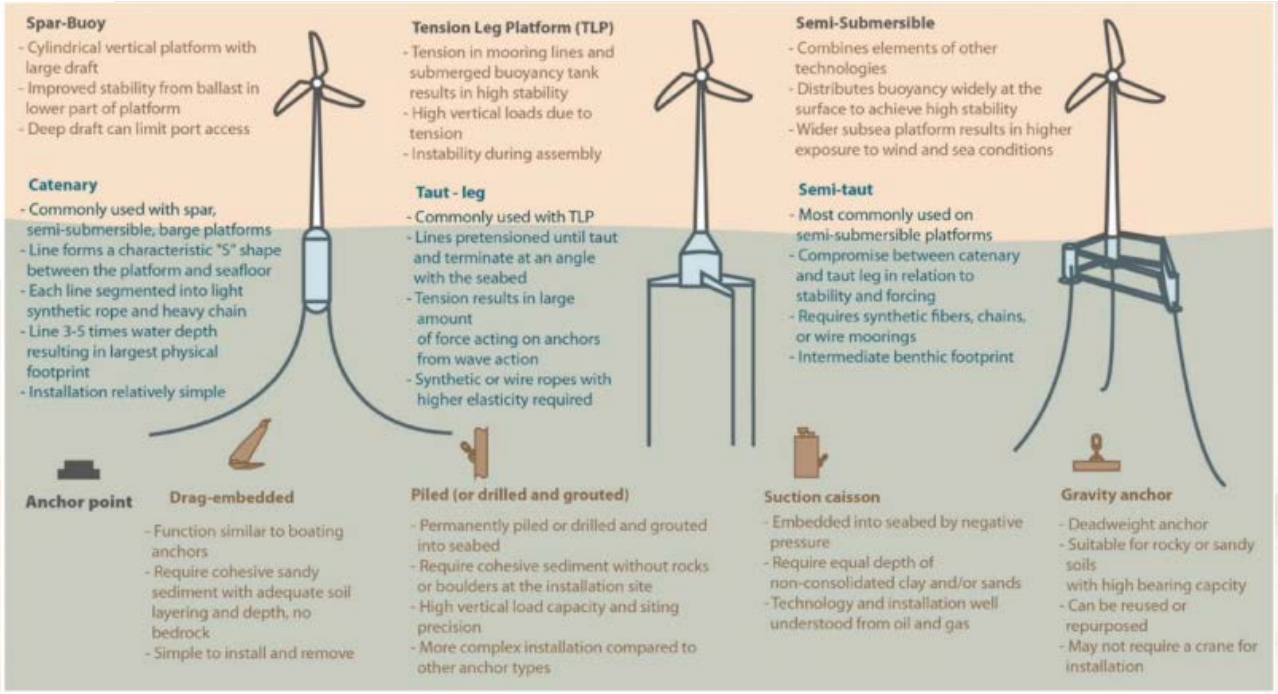
20 units a **25MW** WTG

Needs to be carefully considered

- Available **WTG technology** vs **installation year** – operational experience/track record
- Increased size and cost of **floater**, **cranes, mooring**, **installation vessels**…

Decide early on WTG size and make – this impacts floater design!

Selection of floaters and mooring



Source: Maxwell et al. 2022[1]

Floater design

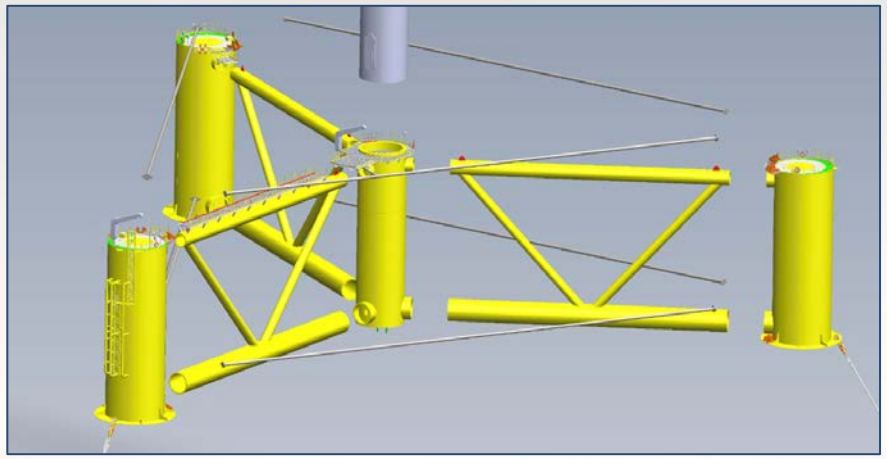
- Currently 100-140 floater designs
- Cost of floaters will drop significantly based on industralisation and standardisation
- Potentially only room for less than 10 designs
- Optimal floater design depends on several factors:
  - WTG size
  - Metocean data
  - Water depth and water depth at port
  - Local infrastructure and content (fabrication, assembly ports, steel vs. concrete etc.)

Mooring lines and anchors

- Dependent on hydrodynamic loads, fatigue, water depth and seabed conditions
- Conventional vs new technology
- Cost, availability and installation speed

1) Maxwell, Sara M., Francine Kershaw, Cameron C. Locke, Melinda G. Conners, Cyndi Dawson, Sandy Aylesworth, Rebecca Loomis, and Andrew F. Johnson. 2022. "Potential Impacts of Floating Wind Turbine Technology for Marine Species and Habitats." Journal of Environmental Management 307 (2022) 114577. https://doi.org/10.1016/j.jenvman.2022.114577.

How Moreld Ocean Wind is standardising floating wind



Focus on the complete OFW field development - not only one floater

- **Modular design** - flexibility in scale fabrication, transport and storage
- **Low marshalling site requirements** - allow selection of site close to field
- **High load-out frequency** - mechanical connections and load out with ring crane
- **Slender design** - Conventional & low spec. mooring and T&I vessel spread

How to start - studies

Early phase / feasibility studies

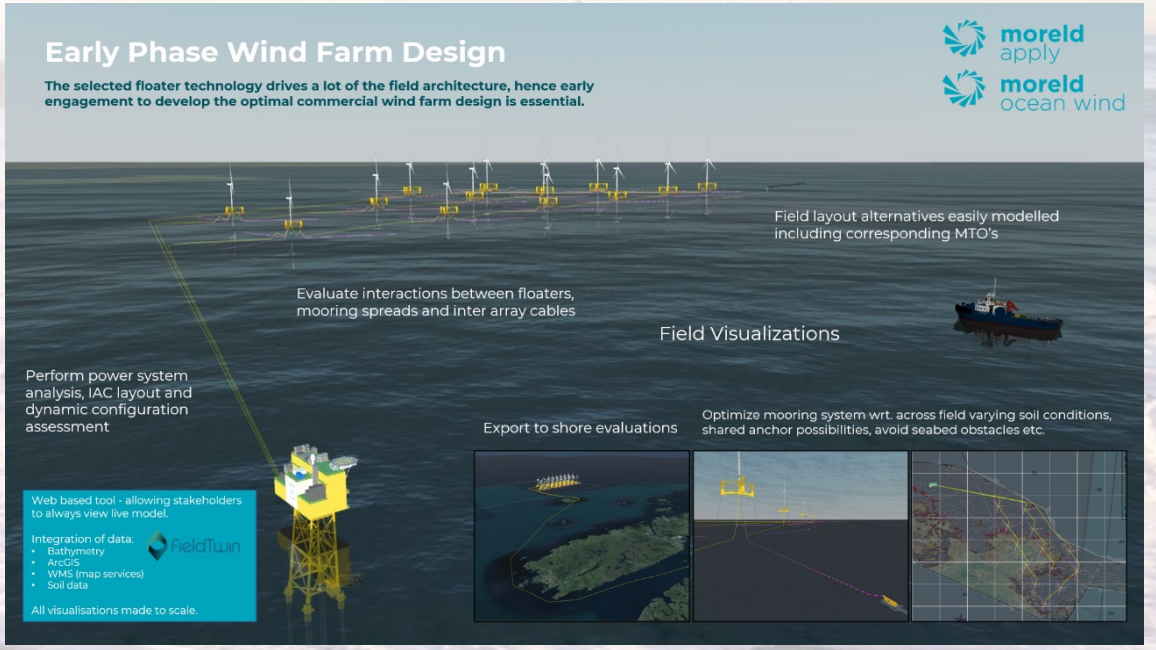
- Local ports and supply chain screening
- Preliminary EPCI execution plan
- High-level EPCI execution schedule
- High-level EPCI CAPEX estimate

Pre-FEED and FEED

- Floater structural design
- Mooring (SKS) design and analysis
- Develop project specific supply chain
- Project execution risk analysis
- Advanced EPCI execution plan with procedures for fabrication, transport, assembly and installation
- O&M plans
- EPCI execution schedules
- CAPEX/OPEX estimates

Optional

- 3D Field modelling
- Carbon footprint calculations **(steel vs concrete)**
- OpSim® simulations
- Innovation and cost optimisation



Thank you for your attention

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