KIVI Introduction SBM Offshore

Float4Wind™

Technology and execution

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SBM Offshore – expertise in floating systems since 1959

> $3.5 billion
market capitalization
AMS: SBMO

> 5,500 employees
onshore & offshore

> $21 billion
order backlog

> 25 years
cashflow visibility

> 2GW floating by 2030
Gas & Renewables

SBM Offshore is committed to the energy transtion

- We believe the oceans will provide clean energy for generations to come and we are taking action to make it happen
- SBM is targetting > 2GW Floating Offshore by 2030
- Introduction of the SBM TLP concept
- Float4Wind™: Design and Execution
- Evolution of our industrialization approach

Questions? Thanks!

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SBM's TLP Concept

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SBM TLP floater concept – key principles

Three design principles

- Low accelerations / motions at nacelle
- Floater on the light side : Light = cheap
- Catenary electric cable configuration
- Field proven components
- Mass ratio decreases with larger WTGs
- Limited footprint

- Catenary mooring system installation
- Small draft for WTG installation @quay
- Wet tow with conventional means
- Use of conventional anchors

- Modularity and low complexity components for supply chain based and flexible assembly
- No dry-dock
- Assembly with standard yard means

Vision at 3 scales of development:
- Prototype
- Pilot farm
- Commercial farm

SBM original floater concept (TLP1.0)

Mooring lines are inclined to cross slightly above nacelle
➔ Fixed point

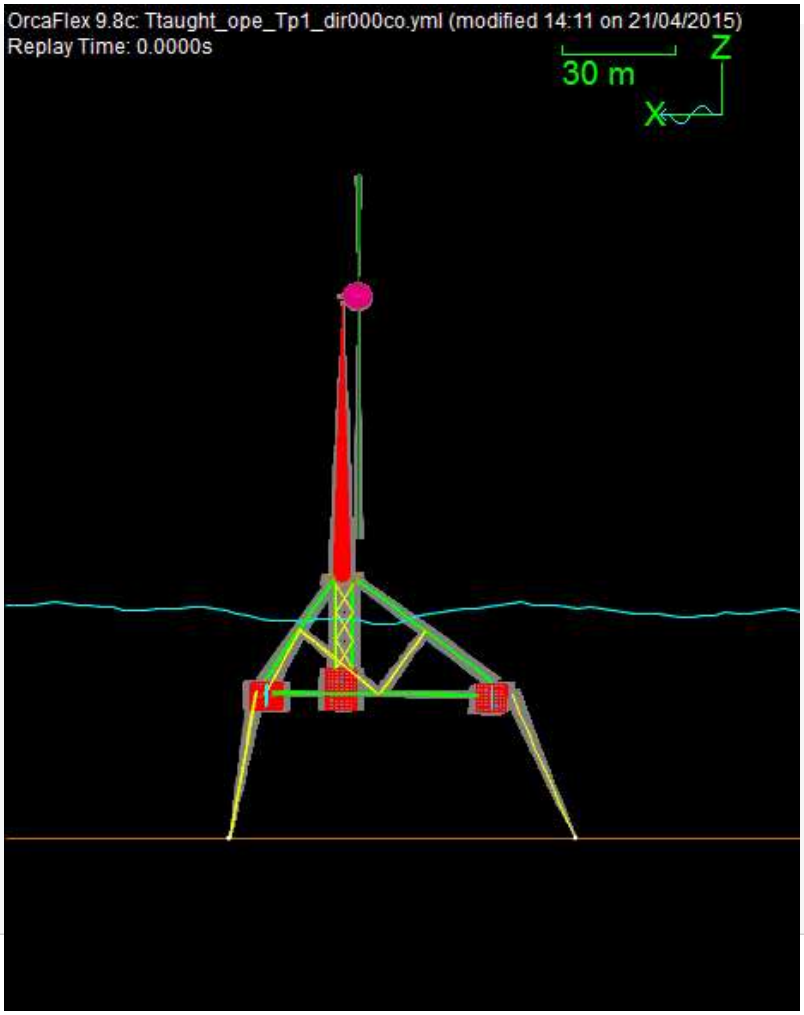
Submerged buoyancy
➔ Decreased wave loads

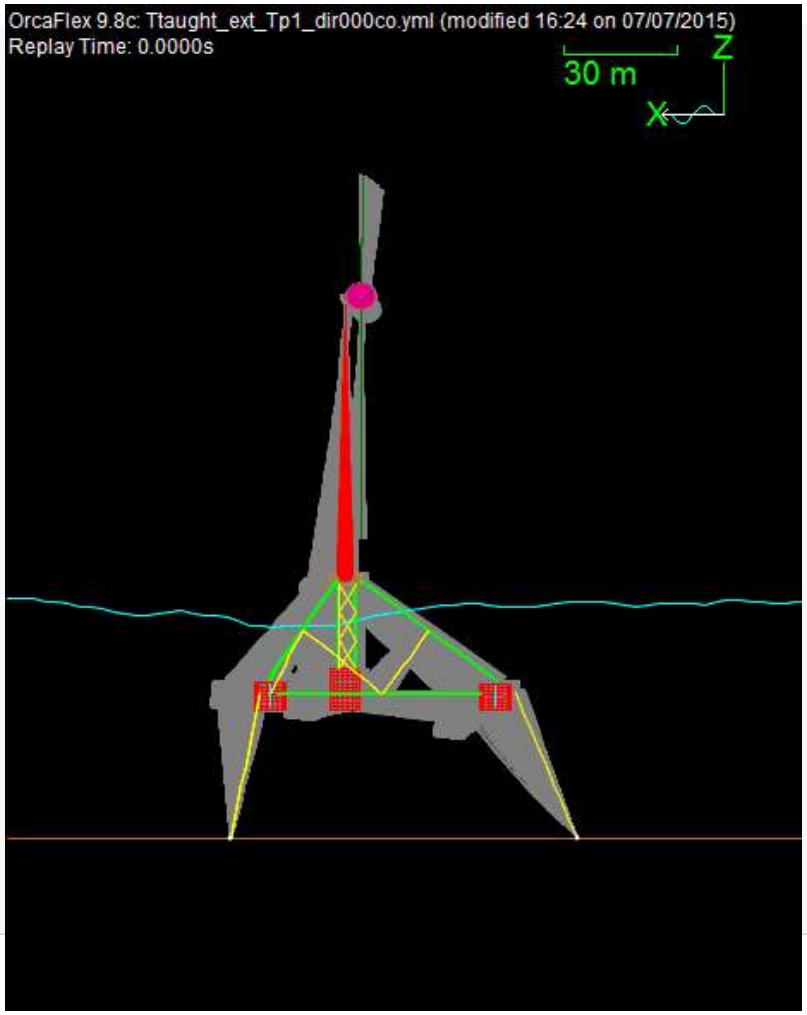
Minimal surface area
➔ Transparent for waves and currents

Distributed buoyancy ➔ Stability during towing with turbine integrated

Gravity based, piles or suction anchors ➔ Compatible with all soil conditions

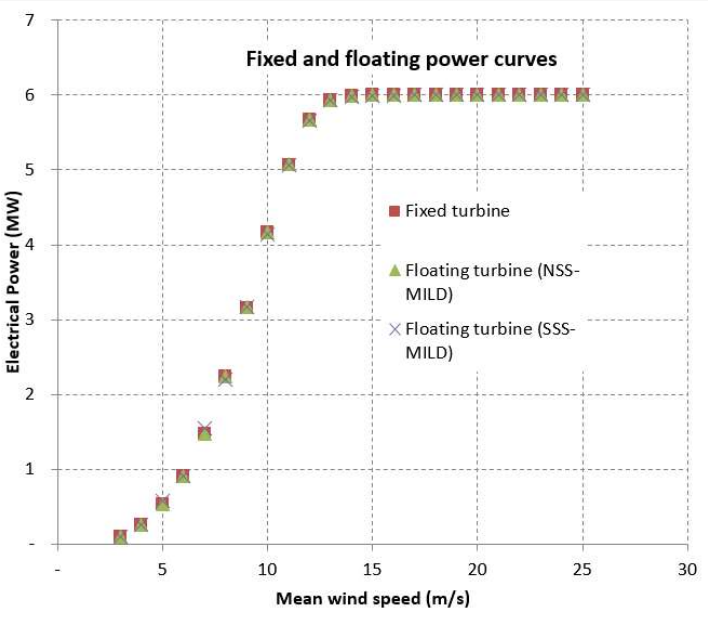
SBM's proprietary floater concept with inclined taught legs





Floater design for AEP maximization

- Several benchmarks of AEP done (6 to 15MW), fixed turbine Vs floating
- No noticeable difference in AEP of fixed vs floating on TLP
- Comparisons done using control system for offshore bottom-fixed, without modification
  - Robust prediction of AEP in early project phases
  - Less engineering loops between SBM and WTG OEM required to converge towards final design
- Reduced mooring footprint help maximizing the spacing between turbines for given maritime space
  - AEP optimization compared to catenary mooring technologies



Float4Wind™ Evolution: Design and Execution

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Our development roadmap to take a leading EPCI role with our technolgy

2016 - 2018

ABS

CONCEPT CERTIFICATION

2018 - 2024

SEVERAL DEMO / PILOT PROJECTS

2020 - 2024+

NEXT GENERATION TLP & COST-OUT PROGRAM

2024 - 2026

1ST FLOATING WIND FARM(S)

>2026

COMMERCIAL PIPELINE

Technology development and demonstration

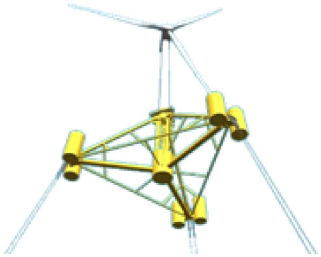
Industrialisation and calibration to LCOE

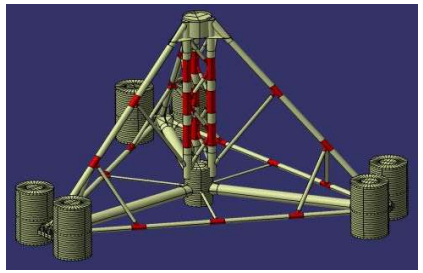
Floater improvement stream

- ✓ Not adapted to series production
- ✓ Manual process
- ✓ Complex fabrication used on large realization but not in mass production
- ✓ Casting

Change supply

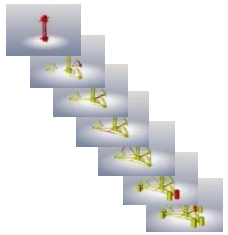
- ✓ Series production
- ✓ Automated process
- ✓ Suitable volumes with existing supply chain





Bracing simplification
Increase tube Ø

Use Industry standards

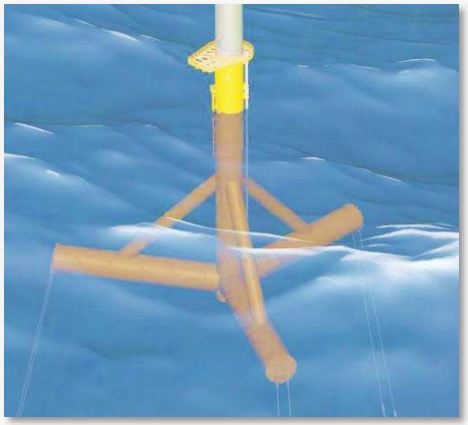


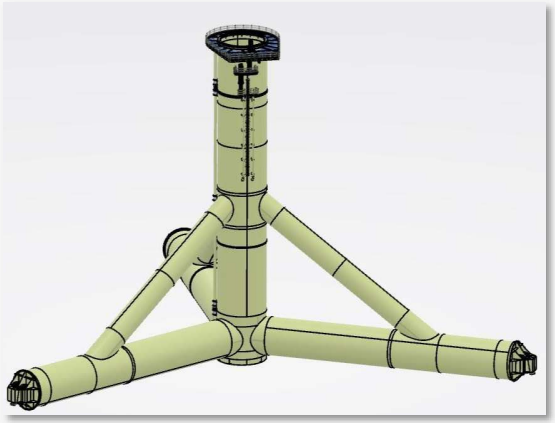
Assemble faster

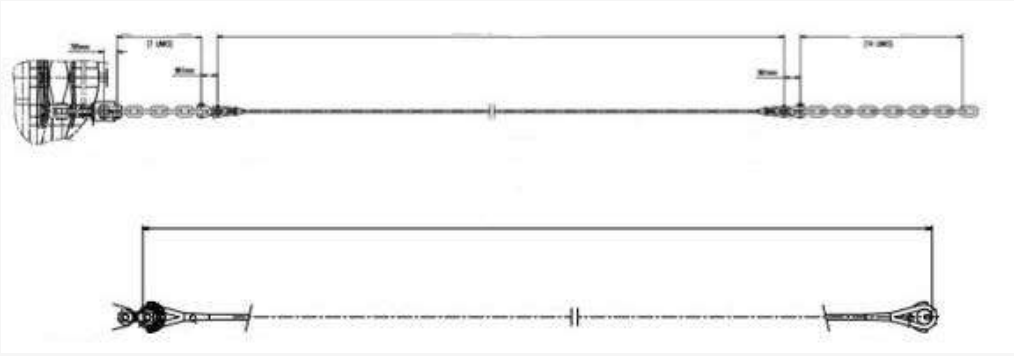
SBM's next generation floater F4W™: an industrial design

- **Optimized TLP**
  - Keep TLP benefits (low motion, small footprint…)
  - Drastic structural simplification
  - Removal of complex jacket type structures
  - Suppression of structural cast pieces
  - Structure solely designed for in-place requirements
  - Standard access similar to monopile
  - Transition Piece similar to bottom-fixed offshore wind

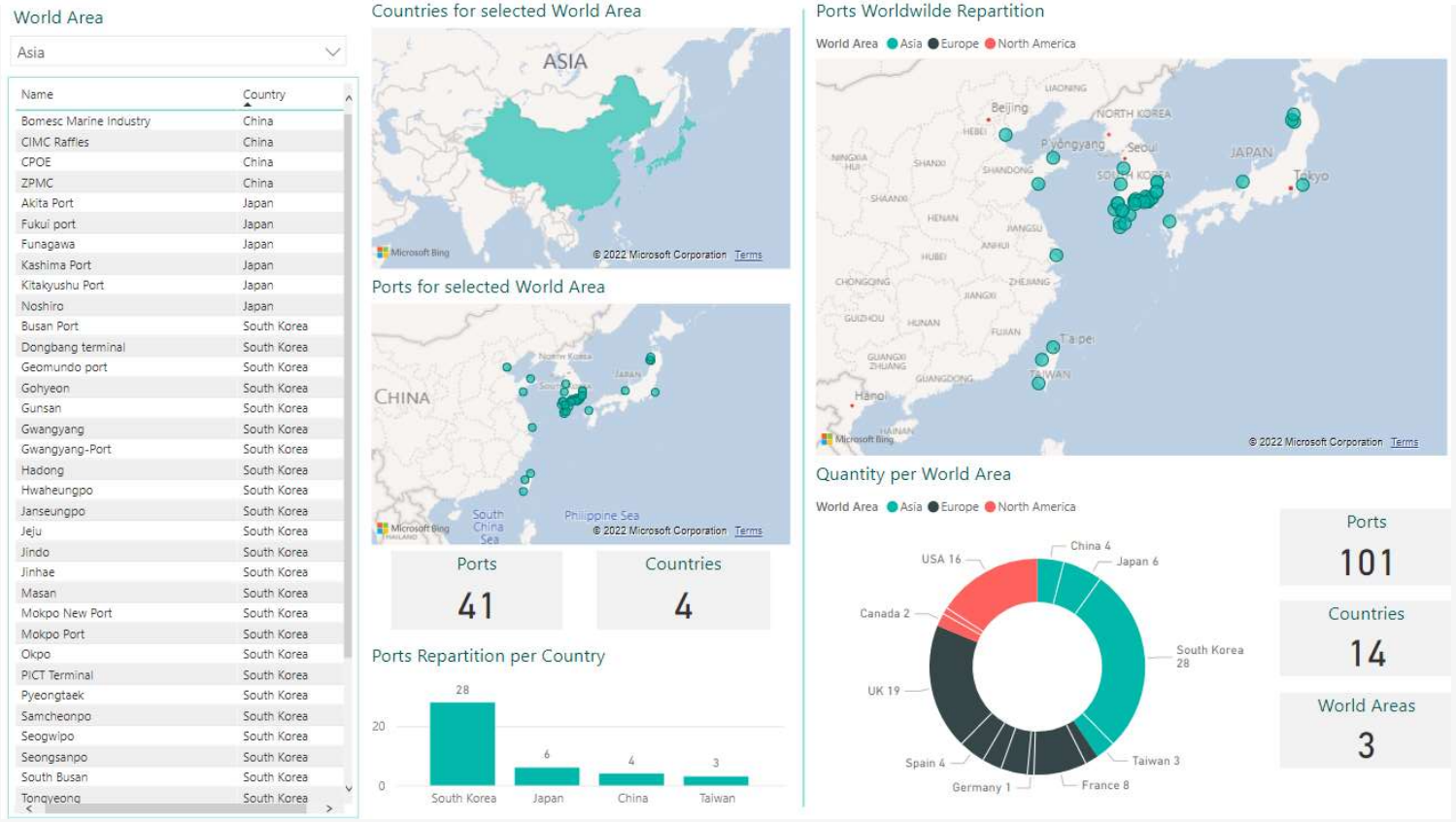
- **Switch to fiber rope moorings**
  - Allows simplifying/removing costly mechanical components
  - Reduces complexity and number of parts in mooring system
  - Reduces fatigue issues by removal of steel components







Hubs Screening

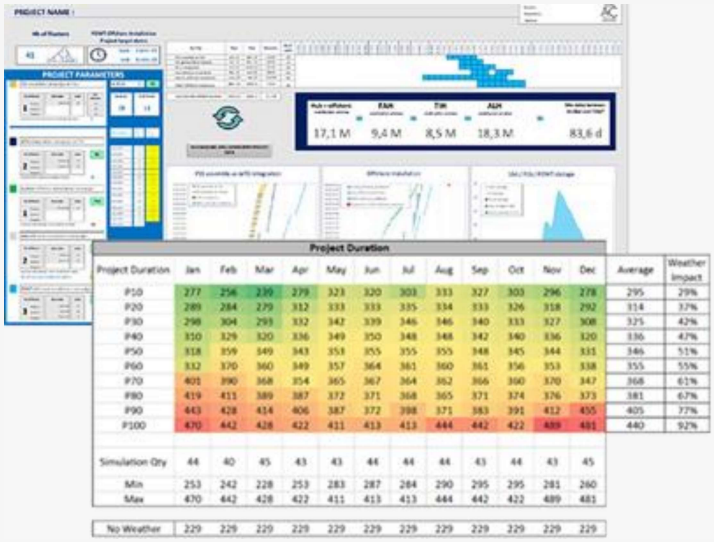


Hubs requirements in line with most of the existing infrastructure

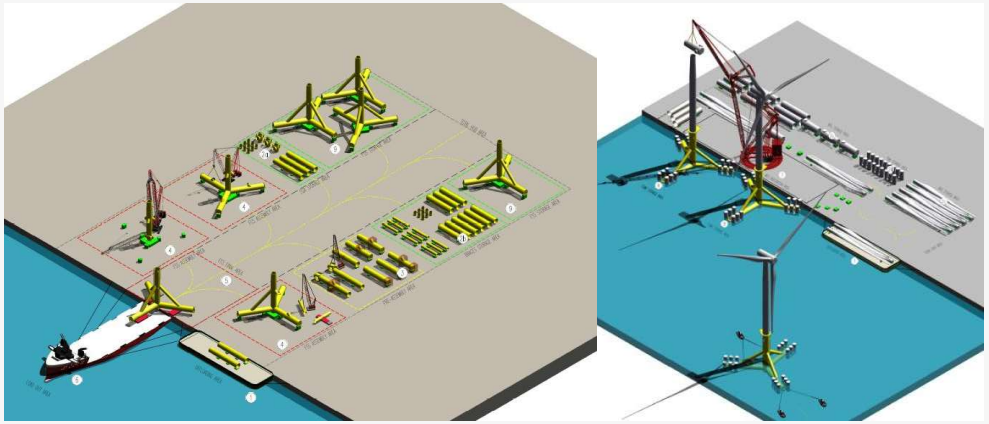
Smart & Digital Tools to support series production

Specific tools developed in-house to assist tailored & local execution

- Line of balance
  - > Sequencing project needs : components, storage, quay side, etc...
  - > To adapt supply chain to assembly hub productivity



- Auto planning
  - > To manage series production for construction & offshore works
  - > To anticipate, control and monitor volume of storage & stream of production
  - > Performing weather risk assessment

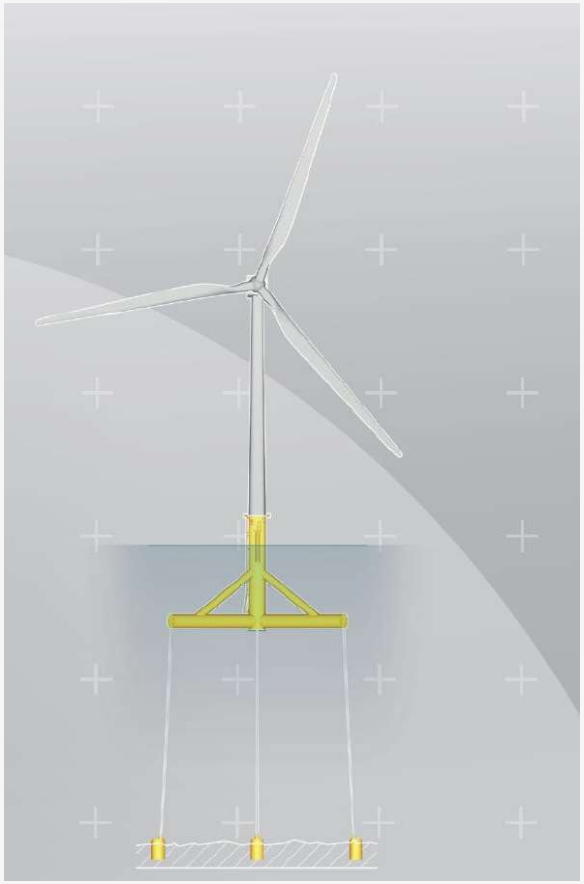


SBM Offshore is committed to the energy transtion

- Design evolution from pilot to industrial approach
- Float4Wind™
  - Excellent power production thanks to inclined legs TLP design principle
  - Respect for the seabed with small environmental footprint
  - Industrialization based on modular tubular components, international suppliers
  - High degree of local content with assembly, logisitics and installation
- Parterships and alliances are key to make it happen faster...
- We look forward to take to the seas with your energy!

Questions? Thanks!

Float4Wind™ Performance Environment Industrial



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