

Construction and Service

‘We are building offshore projects onshore’

“V164-8.0 MW designed for reliability and serviceability”

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The Joint Venture

Founded 1 April 2014, sole focus on offshore wind.



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MHI VESTAS OFFSHORE WIND

Agenda

1. The Key Objective

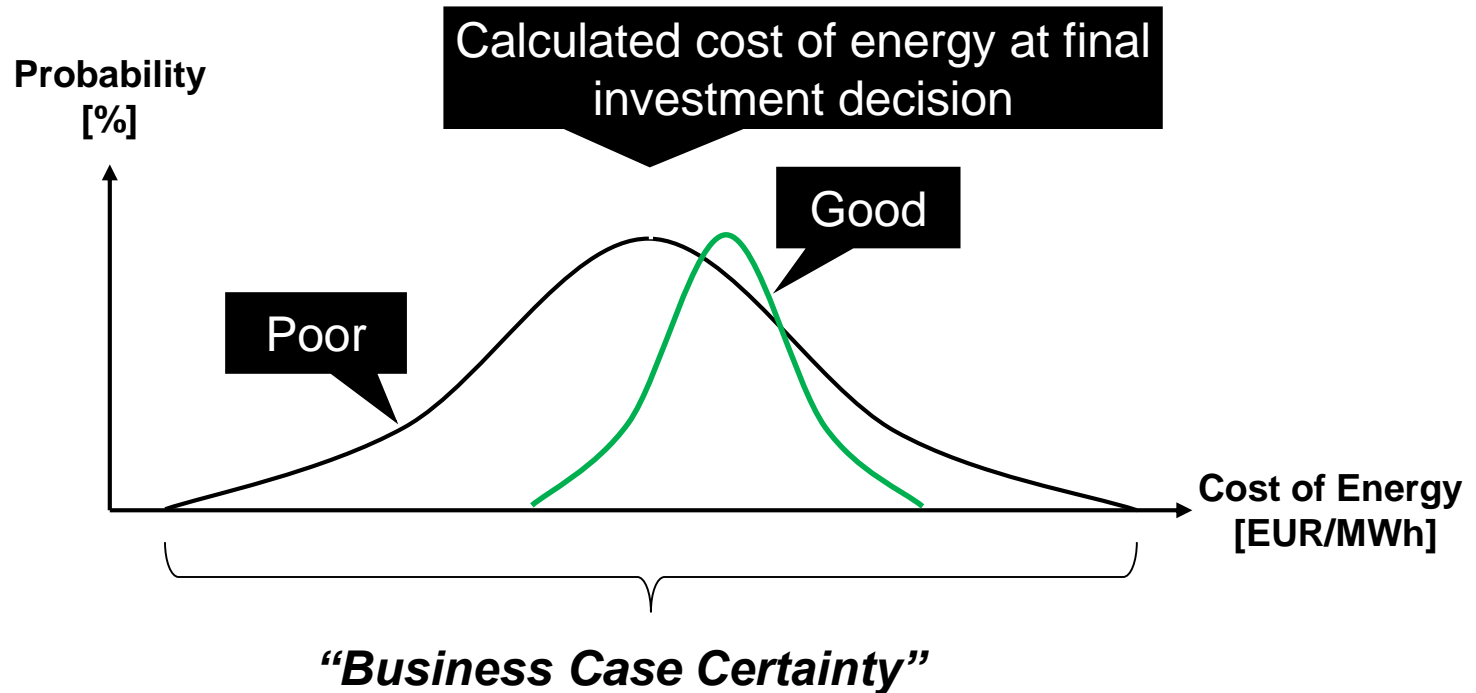
2. Pre-assembly & V164-8.0 MW setup

3. Fleet Performance & V164-8.0 MW Design for Serviceability

4. Summary

Key objectives – Improved Business Case

Cost of Energy Probability Illustration



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Introduction to pre-assembly concept

Lowering costs of offshore projects

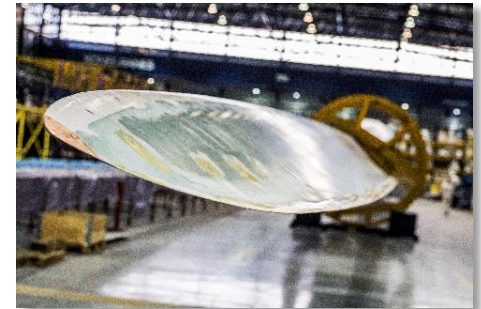
- Efficient setup with reduced logistics and pre-assembly costs
- Create synergies between projects and reduce mobilisation costs
- Better collaboration with manufacturing – push work back in supply chain



V164 pre-assembly

Building on experience and moving more processes back to the factory

- Nacelles arrives fully assembled, tested and ready for installation from the factory => plug & play
- Blades delivered in a sea fastening, no extra handling between the factory and installation => plug & play
- Power Converter Module installed in the bottom tower section in the factory (post-manufacturing)
- Towers fully pre-assembly before load out => plug & play
- Pre commissioning moved back to the production facilities => plug & play

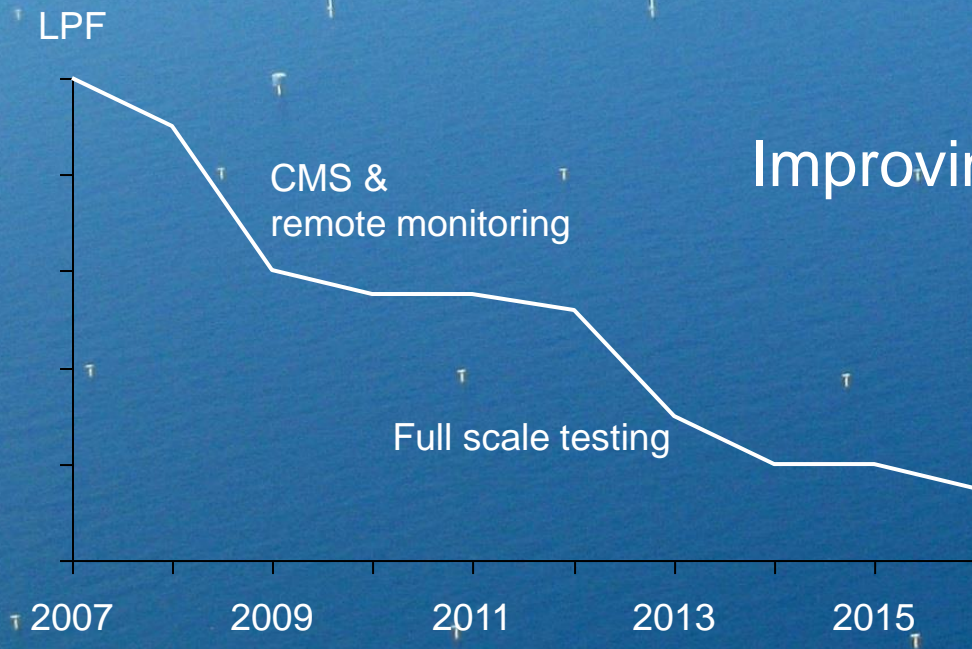


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Increasing Availability

Decreasing Lost Production Factor (LPF)



High-performing existing fleet

Improving already reliable components

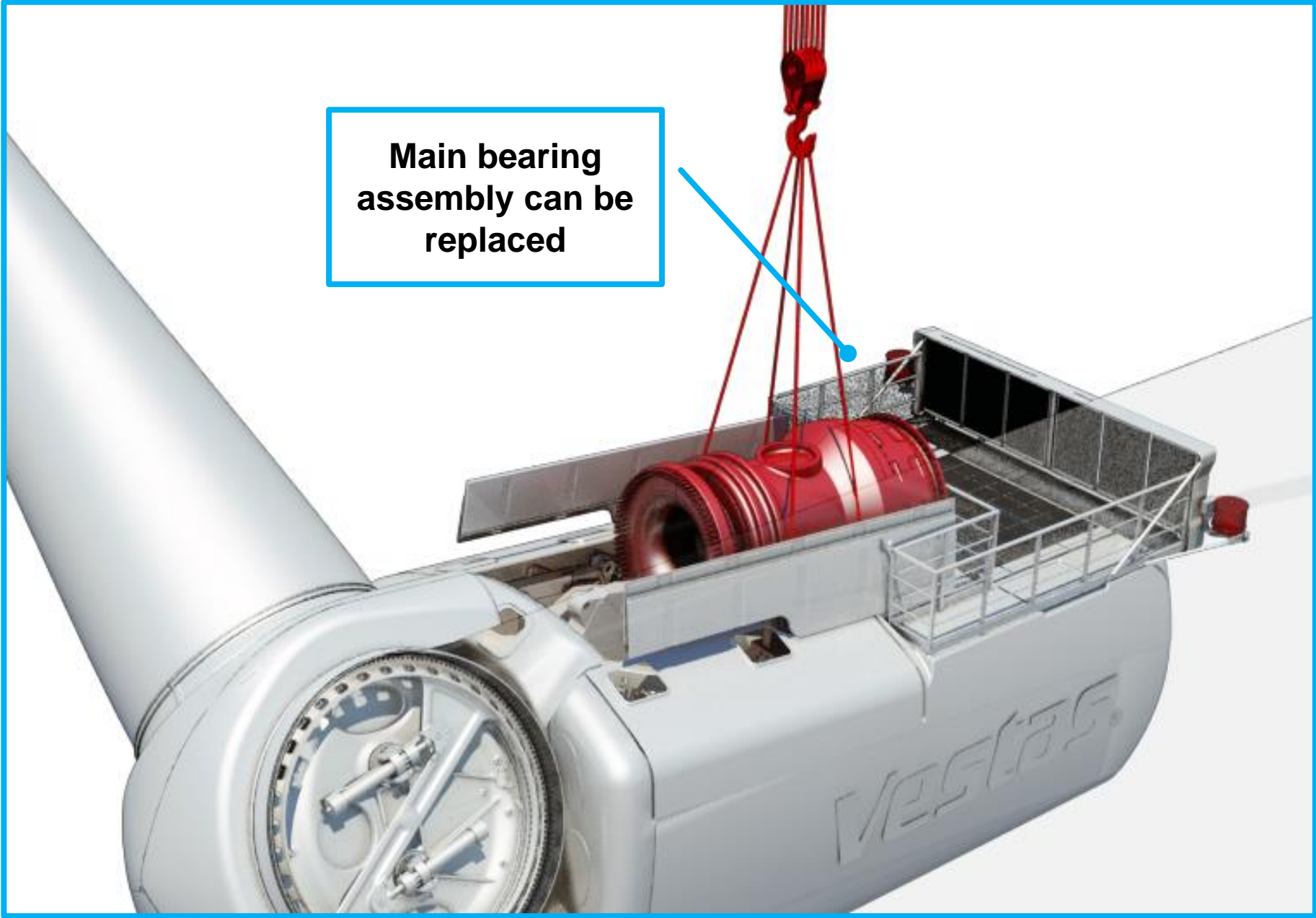
Full scale testing

CMS/predictive maintenance

Helicopter access

Double-Loop Learnings

**Main bearing
assembly can be
replaced**

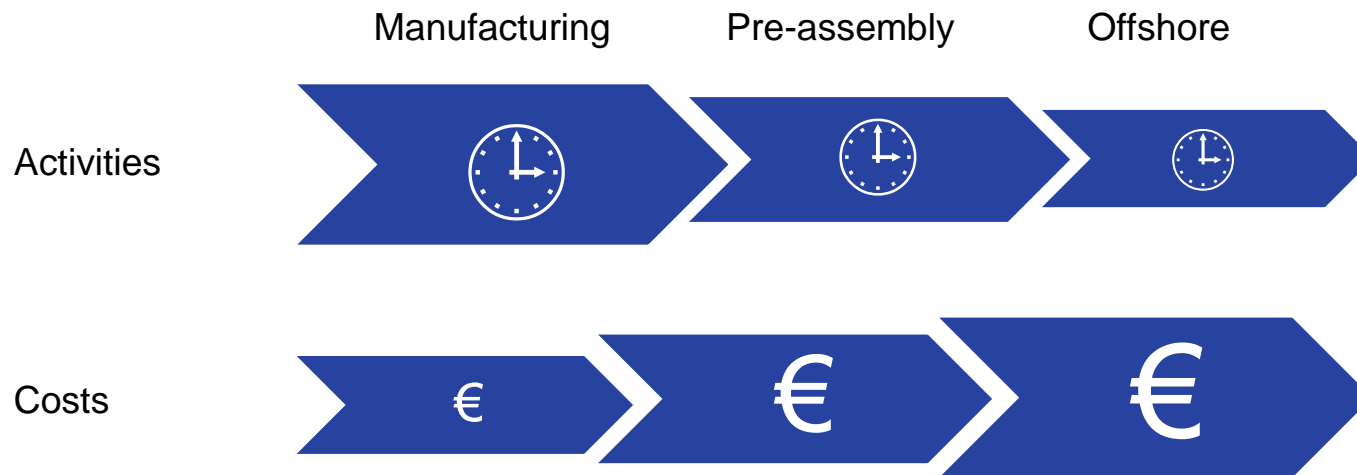


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Cost reduction needs to be considered looking at the entire value chain, from design, production, pre-assembly, installation and servicing.





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Thank you for your attention!