

Floating Wind Solutions

Advancements in Digital Wind Energy Technology

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Aker Offshore Wind



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Quest Offshore

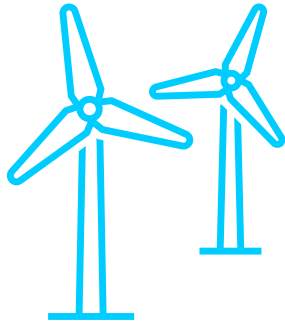


The Westin Houston, Memorial City 28-29 June 2021

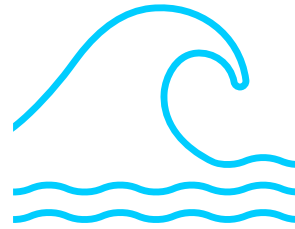
Agenda

1. Aker Offshore Wind in Brief
2. State of the Industry
3. Digitalization Case Study
4. Summary

Aker Offshore Wind in Brief



Pure play offshore wind developer, headquartered in Norway, focusing on assets in deep waters. The company aims to source, develop and operate offshore wind farms



Aker Offshore Wind aims to deploy cost-effective solutions based on **decades of offshore experience**, in close cooperation with local and leading global partners



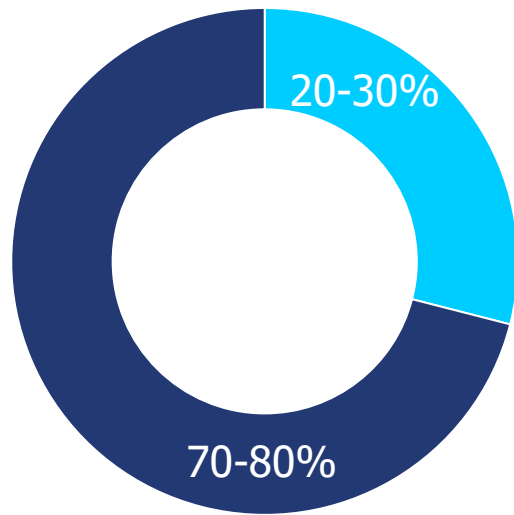
> 1.5 GW portfolio of development projects and prospects in South Korea (Ulsan), the US (California), Norway and the UK (Scotland)

An Effective Renewable Energy Source

Virtually unlimited potential

(100% = 10,000 GW₂)

- <60m depth₁
- >60m depth₁



Superior wind conditions

Wind capacity factors₃

30-40%
Onshore wind

45-50%
Offshore Bottom-fixed

50-60%
Offshore Floating

Smaller footprint



Increased flexibility and adaptability to ensure



sustainable co-existence with



fisheries, marine life, shipping routes and more

Source: Wood Mackenzie Power & Renewables: The Momentum of Floating Wind and its Outlook Implications (Dec 19); Fortune Business Insights

1) Europe, US, Japan and Taiwan included based on Carbon Trust and Industrial Technology Research Institute

2) 5x total installed low-carbon capacity in 2017 (solar, onshore wind, offshore wind and hydropower)

3) Capacity factor may vary from project to project

Scaling Up to Drive Down Cost



Ambition to reduce LCOE to ~€50/MWh by 2030
through targeted industrialization and
technology development initiatives

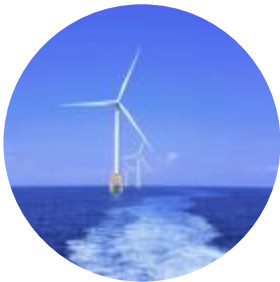
Offshore Benefits of Scale: Superior Energy Capacity

Superior Wind Conditions

Wind capacity factors_{1, 2}



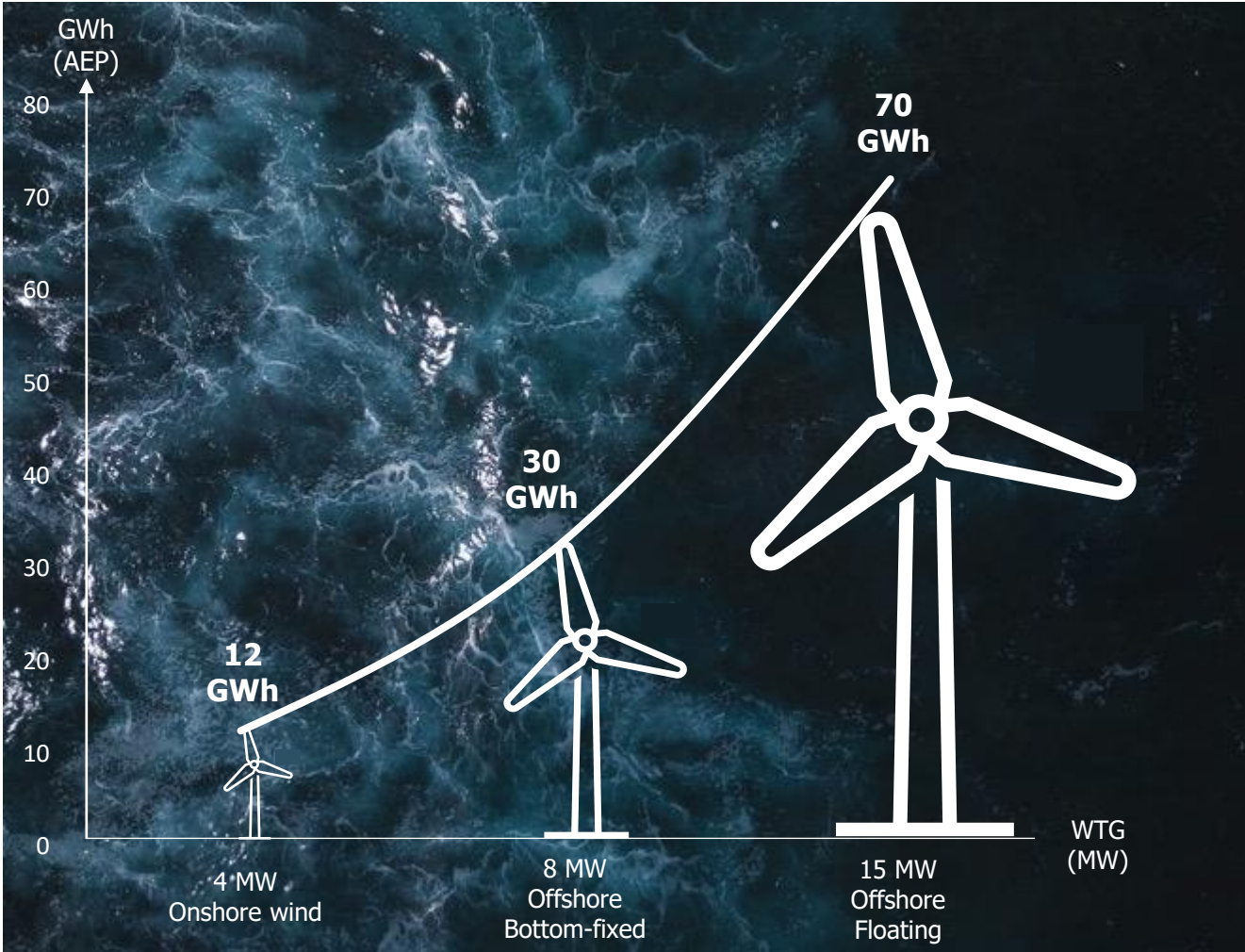
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Onshore
Wind



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Offshore
Floating



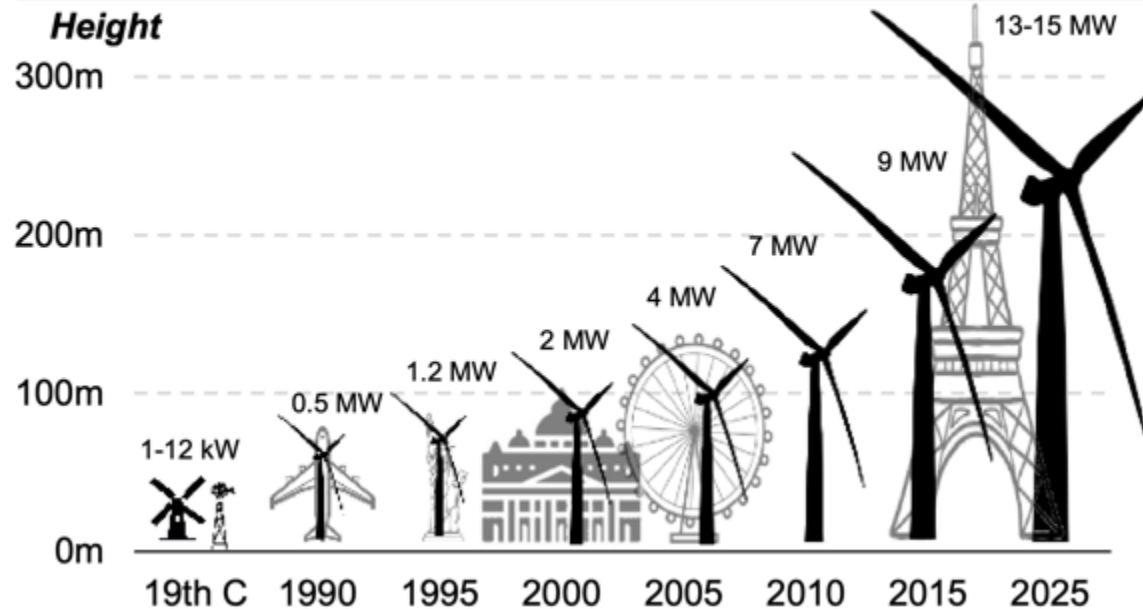
1) Source: Wood Mackenzie Power & Renewables: The Momentum of Floating Wind and its Outlook Implications (Dec 19); Fortune Business Insights
Capacity factor may vary from project to project
2) Source Hywind capacity factor data source: <https://energynumbers.info/uk-offshore-wind-capacity-factors>

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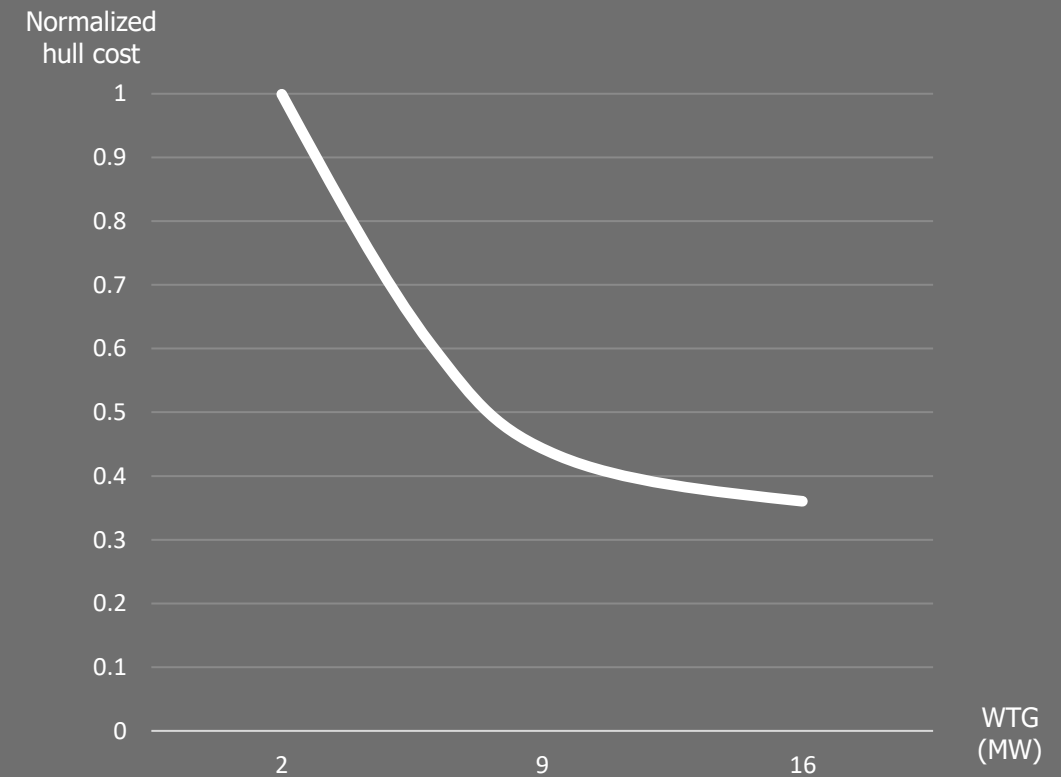
Offshore Benefits of Scale: Driving Down Cost per MW

As size and capacity goes up, cost goes down₁

Industrialized solutions



Increased turbine size reduces hull cost per MW₂



1) Source: IEA (2019) Offshore Wind Outlook 2019

2) Source: Aker Offshore Wind

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Drivers to Reduce Levelized Cost of Energy (LCOE)



Scaling Up

- Turbine size
- Number of turbines
- Sizable project pipeline



Industrialization

- Supply chain for mass production
- Robust system
- Fabrication friendly
- Leveraging Aker Group legacy



Innovation

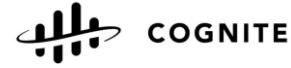
- Subsea power systems
- Mooring
- Digitalization

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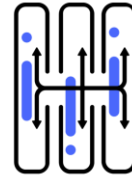
ABOUT THE PROJECT

A project run by a consortium led by Aker Offshore Wind supported by the California Energy Commission's Electric Program Investment Charge (EPIC), with the goal of studying next generation wind technologies that enable monitoring the condition of an offshore floating wind farm, and its impact on the environment via live data streaming.

The project will develop a digital twin simulation of a planned floating offshore wind production facility off the coast of California. The team will deploy Cognite's Data Fusion solution to incorporate relevant data feeds that allow the team to study the increased competitiveness, performance, and reliability of offshore wind generation, and the mitigation of environmental impacts.



NextWind Project Goals



Offshore Floating Wind Park Twin through **Data Liberation** and **Contextualization**

Foster Ecosystem across industry & academia



Increased production using remote monitoring and advanced data modeling

Reduce cost with smarter maintenance and predictive analytics



Data-driven **environmental impact mitigation** with computer vision for wildlife detection

NEXTWIND
Real-time
monitoring system



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**AKER
OFFSHORE
WIND**