Accelerating Deployment of Full-scale Floating Offshore Wind Farm – A Class Society’s Perspective

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ABS Engagement in Floating Offshore Wind Projects

WindFloat 1 Prototype
(one 2.3 MW turbine)

WindFloat Atlantic
(3 x 8.4 MW turbines)

Kincardine Offshore Windfarm
(5 x 9.5 MW turbines)
US Offshore Wind Farm Sites

- US East Coast plays a leading role in offshore wind development using mature fixed offshore wind turbine technologies
- US West Coast and Hawaii call for floating solutions given the water depth limitation
Floating Wind Farm Market Potential

- Globally, floating offshore wind capacity is expected to grow from 79 MW in operation to 3.7 GW in the next five years and over 26 GW in the longer term

- For certain areas, floating wind turbine is the only viable solution for offshore wind

- Current Levelized Cost of Energy (LCOE) for floating wind turbines is approximately 1.5 ~ 2 times of that for fixed offshore wind turbines

Floating Offshore Wind Project CAPEX and OPEX

- Turbine
- Floating Support Structure
- Electrical Infrastructure
- Mooring
- Installation
- O&M
- Other
Accelerating Deployment of Floating Wind Farm

Key enabling technologies

- Innovative floating wind turbine technology
- Efficient energy transport technology
- Standards
Floating Wind Turbine - System Design

Optimal Levelized Cost of Energy (LCOE)

- Safety
- Manufacturability
- Installability
- Operability
- Maintainability

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Floating Wind Turbine - Mooring and Anchor

- Material
- Configuration
- Shared anchor
- Shared mooring line
- Redundancy
- Disconnectable solutions
- Monitoring

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Digitalization for Operation and Maintenance

Data acquisition, processing & management

Modeling and Simulation

Condition-based & risk-informed operation and maintenance

Floating Wind Solutions

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Energy Transport Technology

• Electric Power
  • Floating substations
  • High voltage dynamic cables

• Gas or Liquified Products
  • Hydrogen
  • Ammonia

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Floating Wind Solutions
Standards – Evolving with the Industry

As floating wind advancing toward large-scale deployment, standards and classification/certification processes must evolve along with the industry.

- IEC and National Standards
- Classification/Certification Guidelines

https://webstore.iec.ch/publication/29244
Concluding Remarks

- Offshore wind continues evolving toward a competitive renewable energy source
- Floating offshore wind market is expecting a significant expansion
- ABS has been supporting floating offshore wind development since its nascent days by leveraging ABS’s 160 years of marine and offshore experience

OFFSHORE LEADERSHIP
- Experience from Classing close to 80 MW of Floating Offshore Wind

INDUSTRY COLLABORATION
- Convener roles in committees to develop global and US standards
Thank You

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