

Subsea Collector

Enabling simple, robust and cost-effective renewable offshore power generation

EERA DeepWind Conference 2024

Trondheim, 18 January 2024

Ane Løvteit | Power System Engineer | Aker Solutions



Aker Solutions | Complete Technology Portfolio in Offshore Wind

Renewables and Low Carbon to Become our Biggest Business in 2030

Converters & substations

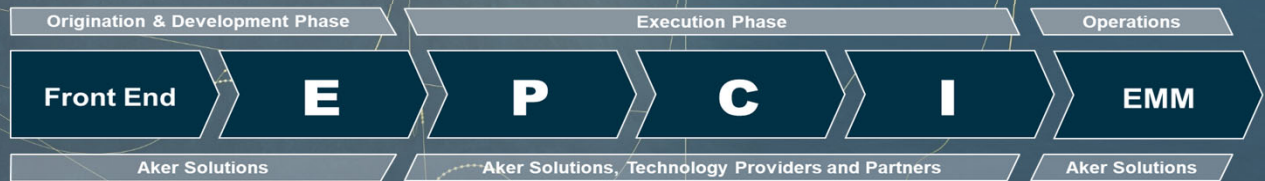
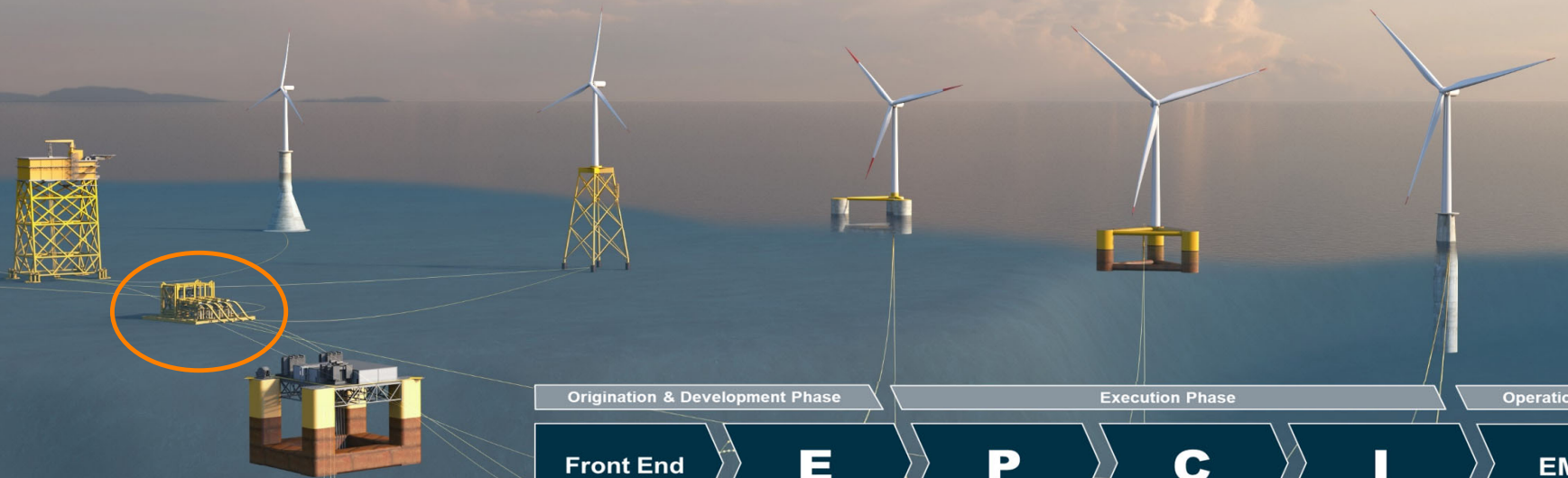
Gravity-Based Structures

Cables and Accessories

Steel Jacket Substructures

Marine Operations and Maintenance Services

Floating Foundations



Aker Solutions' Energy Transition Targets

Renewables and Low Carbon

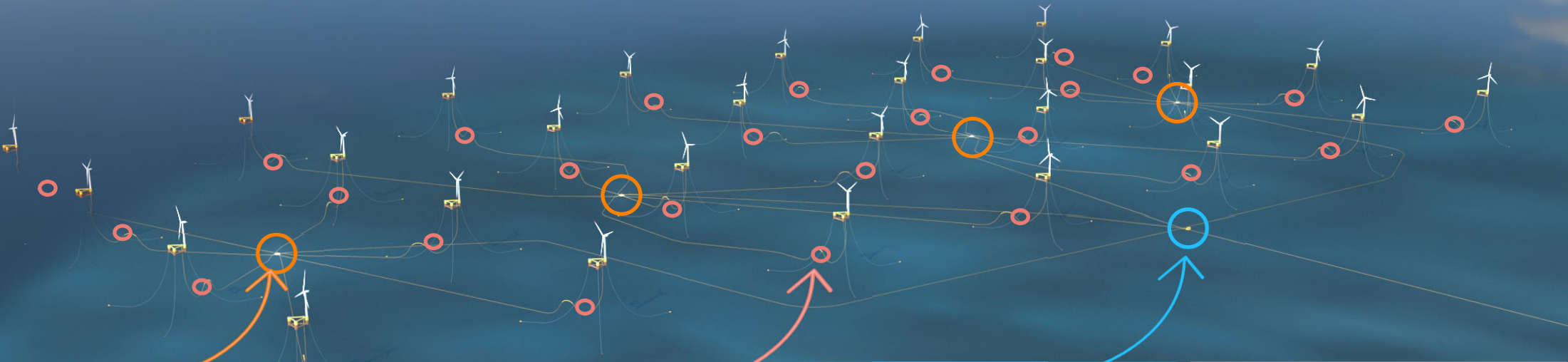
1/3 of revenues by 2025
2/3 of revenues by 2030

Reducing Emissions

50% by 2030
Net zero by 2050

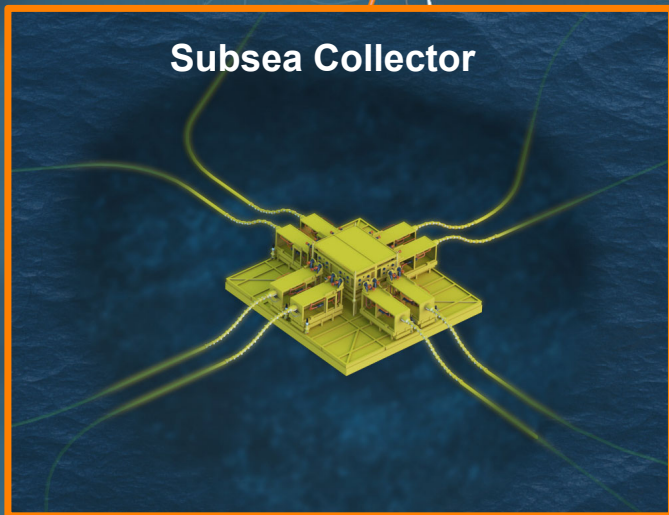
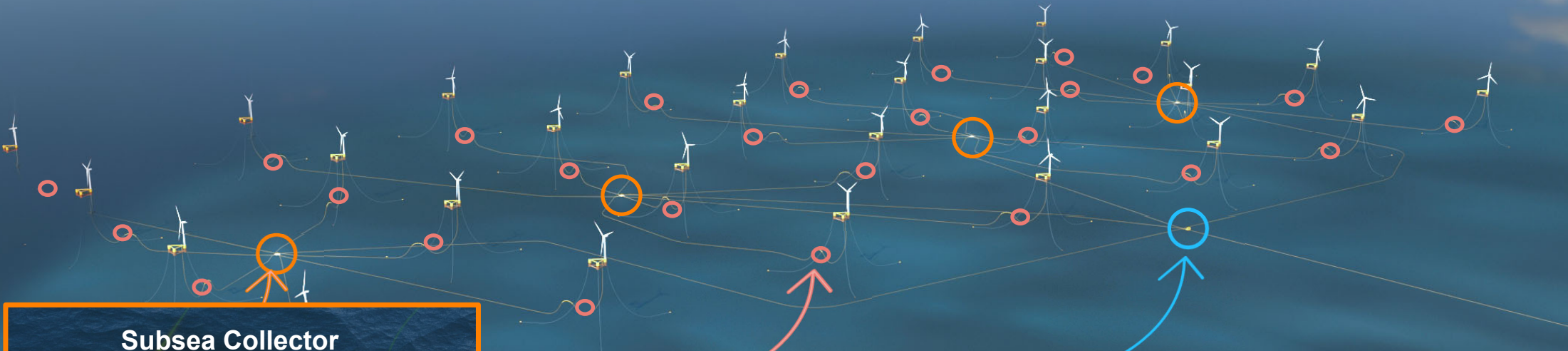
Subsea Power Distribution | Significant cost savings w/ Subsea Technology

Ready for market in 2024 – Doing more with less



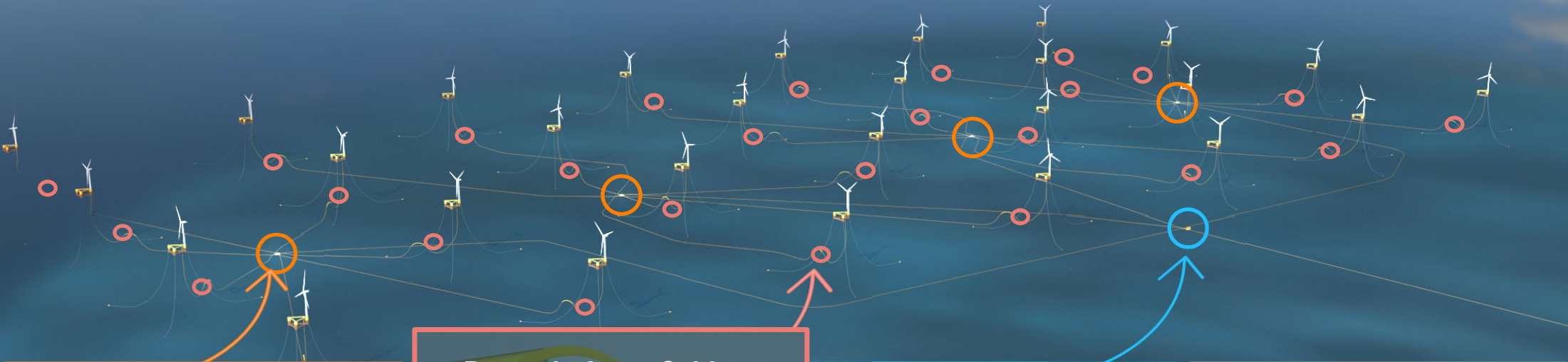
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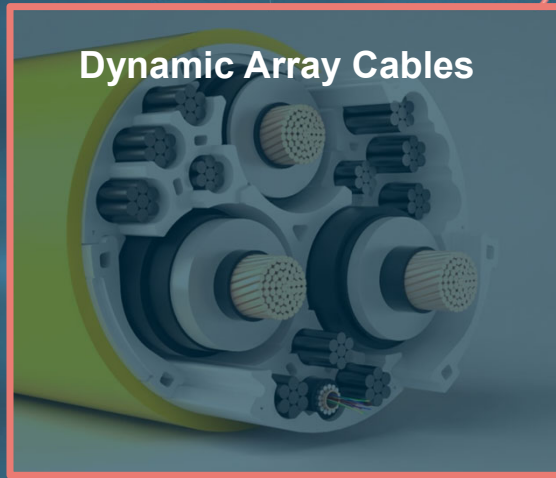
Ready for market in 2024 – Doing more with less



Subsea Collector



Dynamic Array Cables



Subsea HVAC Substation

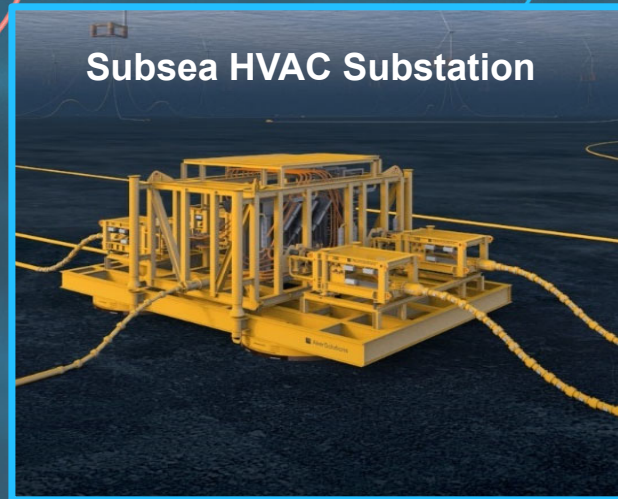
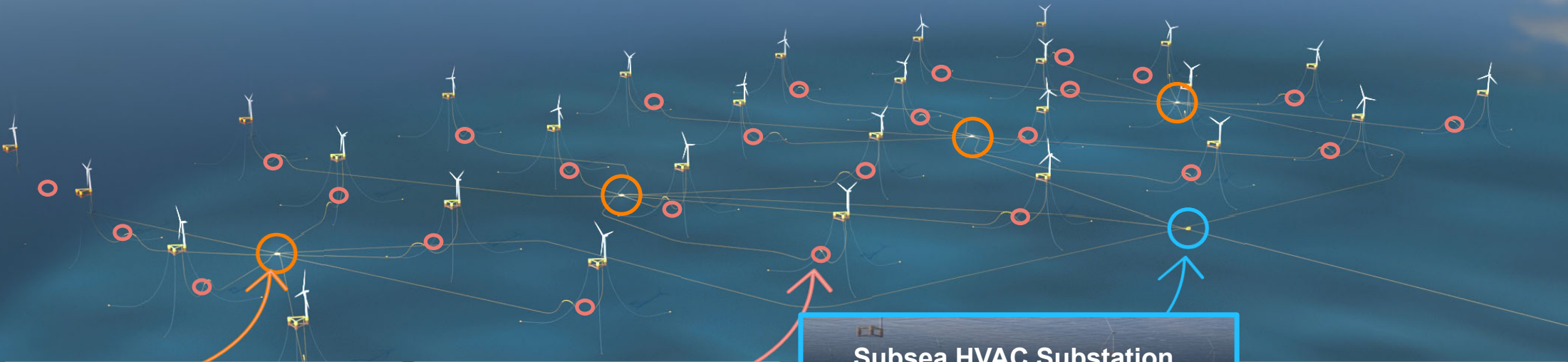


72,5kV Connection System



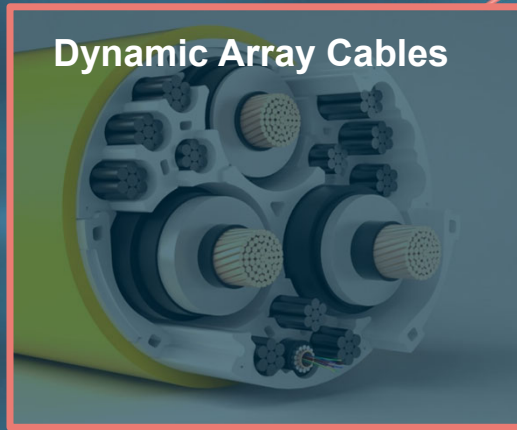
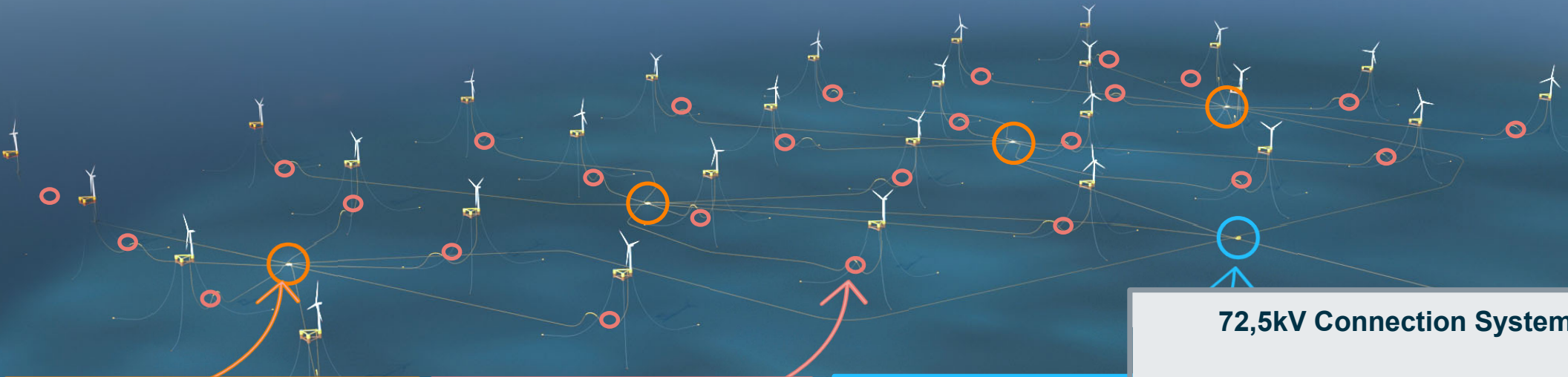
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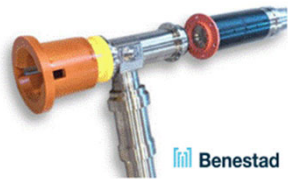
Ready for market in 2024 – Doing more with less



Subsea collector

- Collects power from 8 wind turbines
- Star configuration
 - Cable cross section standardization
 - Simplified installation
- Key components:

Wet mate connection system



Benestad

Under qualification in Ocean Grid for 72.5kV

Subsea switchgear + control

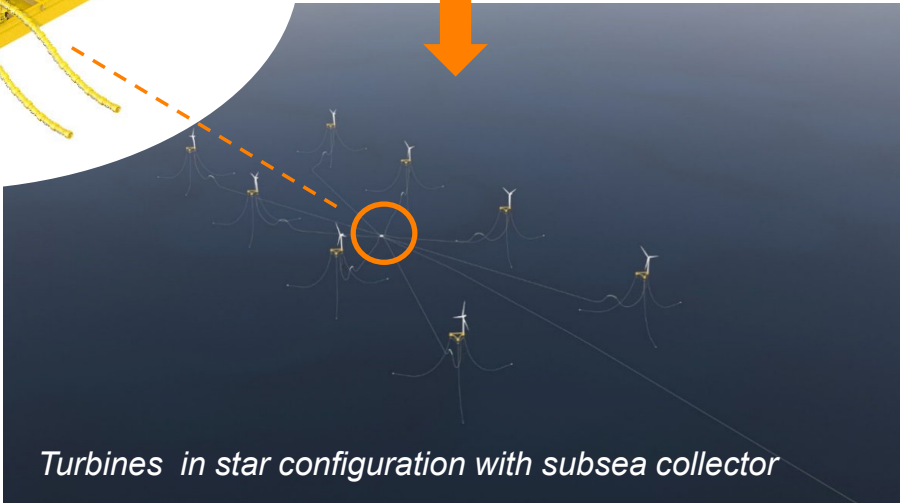
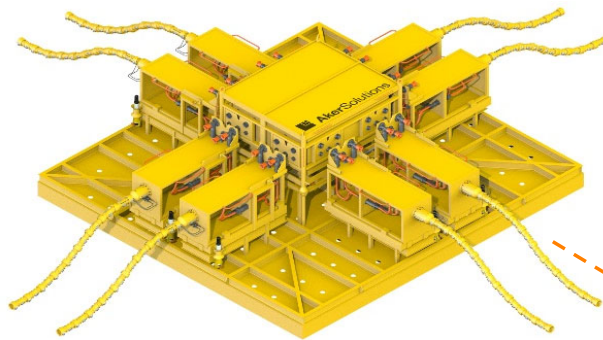
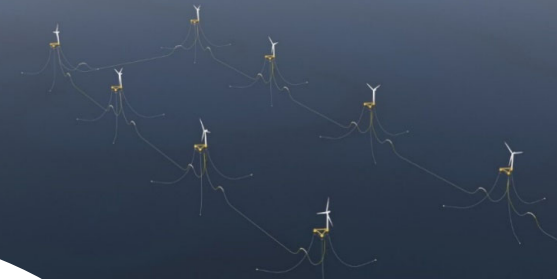


Qualified for 36kV

Needs to be qualified for 72.5kV

- Modular + flexible
- Enhanced busbar functionality
 - String disconnection → Minimal system downtime

Turbines in daisy chain configuration

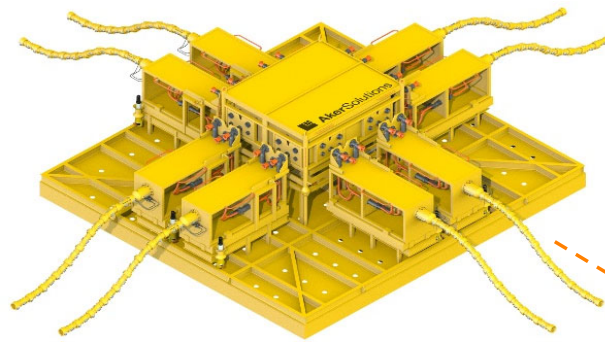


Subsea collector

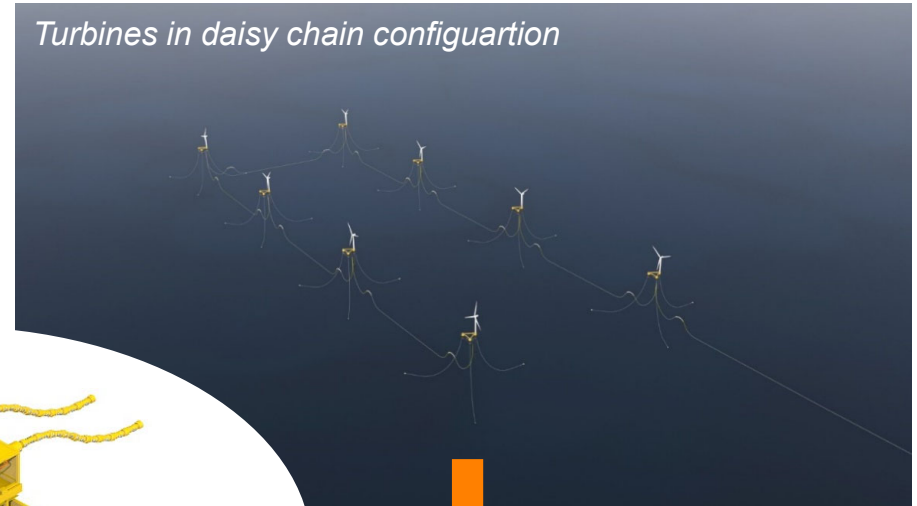
- Standardization of:
 - Floaters
 - Turbines
 - Turbine towers
 - Mooring
 - Cable cross-sections
- Supply chain de-bottlenecking
- Simple installation and handling

- Reduced material use
- Significant cost savings
 - OPEX and CAPEX

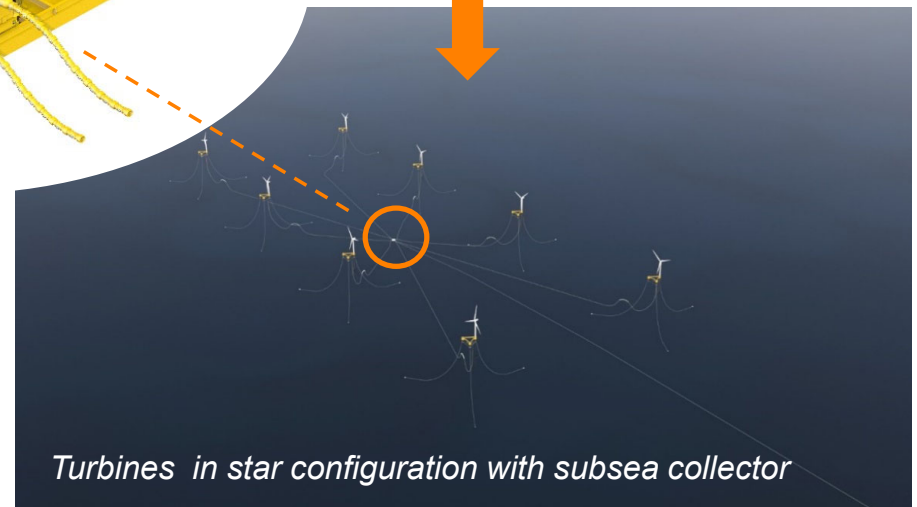
- First delivery feasible in 2026



Turbines in daisy chain configuration

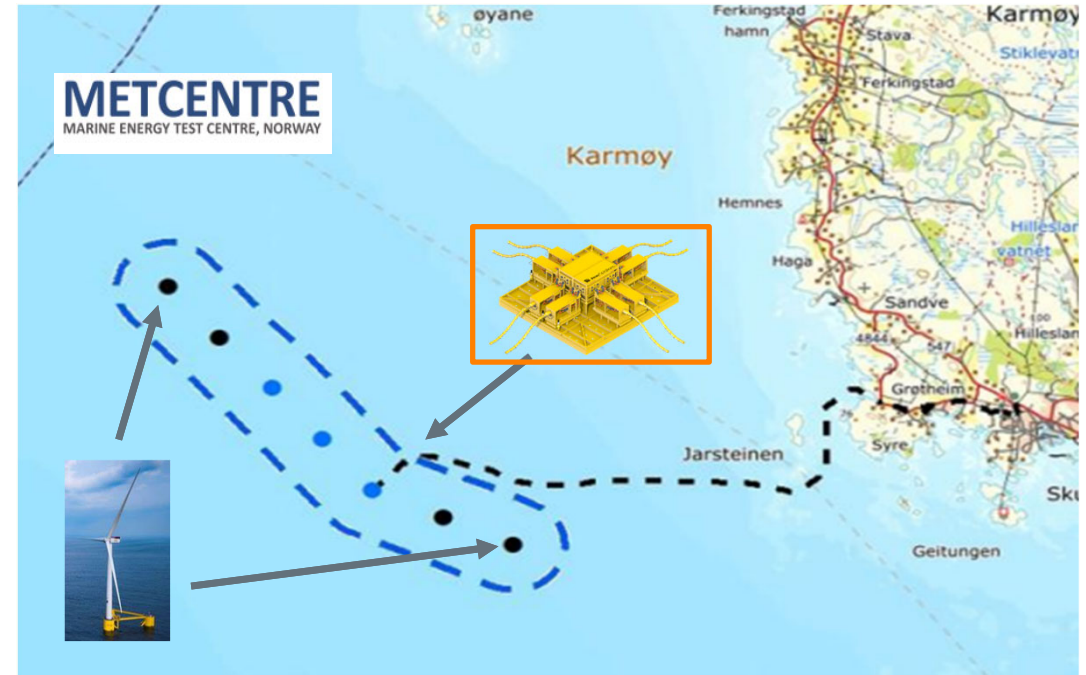
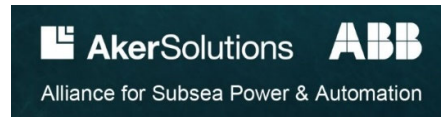


Turbines in star configuration with subsea collector



FEED Study | METCentre

- Extended license: 3 → 7 slots
- 66 kV subsea collector as preferred solution
- Operation in 2026 → First subsea collector in water
- Suited for this application
 - Interchangeable design
 - Simple disconnection
 - Testing of one turbine will not affect others
- Industry collaboration
 - Build competence
 - METCentre, Aker Solutions, ABB, Benestad, Windstaller Alliance (Aker Solutions, DeepOcean, Solstad Offshore)

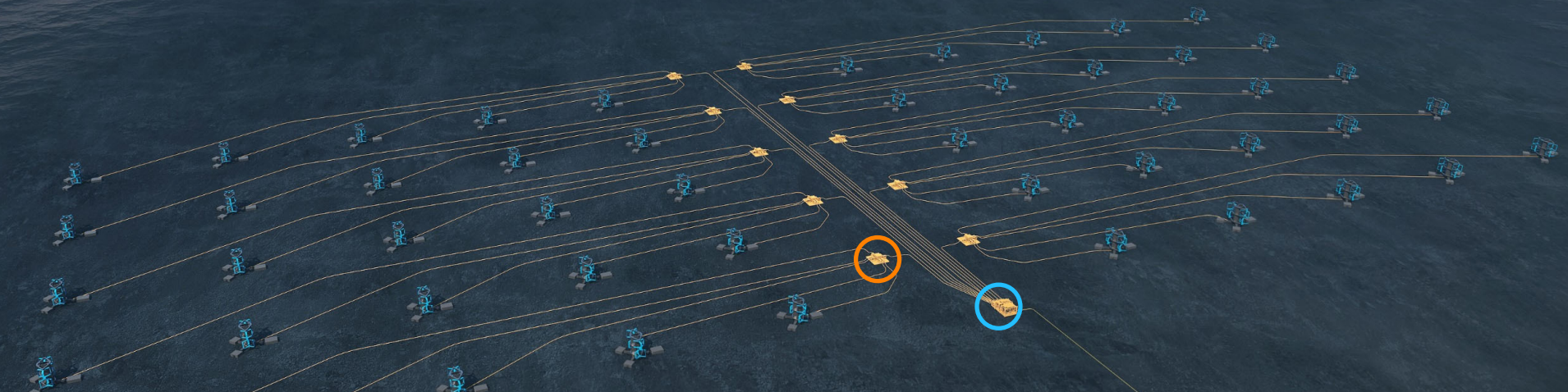


What is the METCentre?

- Marine Test Energy Centre
- Offshore Wind Test Center outside Karmøy
- Provides concessions, infrastructure and services for testing in deep waters (200+ meters)
- World's first floating wind turbine, Hywind Demo was tested here by Equinor in 2009

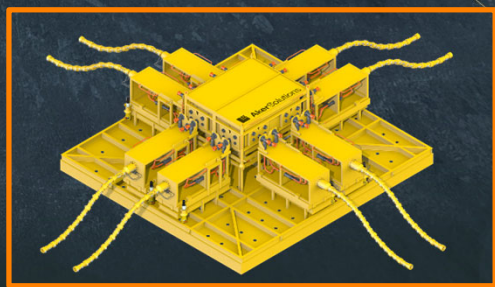
FLOWATT Pilot | Subsea Power System for Tidal

250 MW tidal park example including Subsea Substation and Subsea Collector



72.5 kV Collector

Subsea Substation



FEED study finalized in Q4 2023 for HydroQuest covering power system with cables, connectors and subsea hub for the FLOWATT Pilot to be installed in Raz Blanchard, France 2026

Slide 11

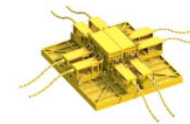
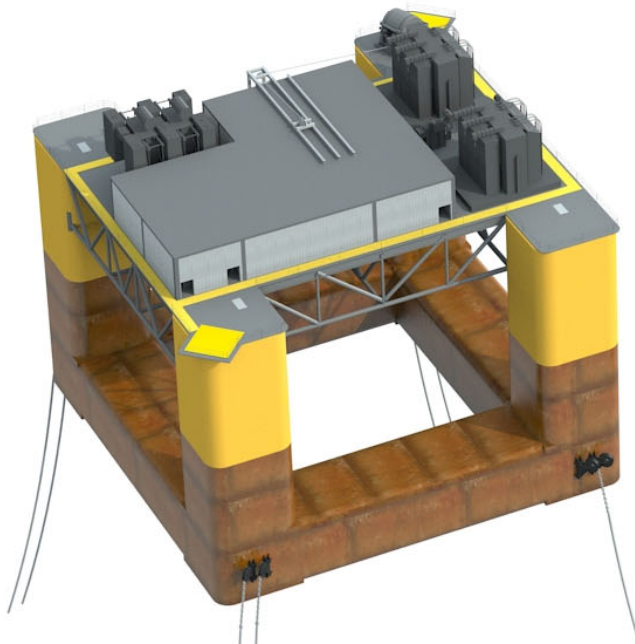
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More information that could be included for the FloWatt FEED?

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Wrap-up

- Exciting things ahead in the subsea industry related to renewables
- Subsea collector and subsea substation both qualified by first half 2025
- Subsea solution benefits:
 - Simple installation, modularity, standardization, flexibility, maintenance free
 - Cost savings
 - Compact solutions, reduced material use, reduced CO₂ footprint



We solve global
energy challenges
for **future** generations

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