

Offshore Wind Project Development and Engineering Training Course

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Overview

Offshore Wind Project Development and Engineering Training Course is a one-week advanced course for developers, engineers, marine specialists, grid professionals and investment decision-makers. Participants connect wind resource, metocean and seabed evidence to turbine selection, fixed and floating support structures, array layout, electrical export, installation, economics, risk and lifecycle strategy. They leave with an Offshore Wind Concept and Delivery Basis. Agile Leaders Training Center presents this practical offshore wind development course.

Who Should Attend

- Renewable-energy developers and project managers screening offshore opportunities
- Offshore, structural, geotechnical and marine engineers
- Electrical, grid, cable and substation professionals
- Installation, logistics, ports and vessel-planning specialists
- Commercial, finance, risk and investment professionals
- Operations, maintenance and asset-management teams

Participants should understand energy projects, offshore engineering or project economics. The course does not replace detailed turbine certification, structural calculations or electrical-system design.

Departments and Industries

- Offshore wind developers, utilities and independent power producers
- Engineering, procurement, construction and installation contractors
- Turbine, foundation, cable and offshore-substation suppliers
- Ports, marine contractors, vessel operators and logistics teams
- Grid operators, lenders, insurers and technical advisers
- Oil and gas organisations transferring offshore capabilities into wind

Learning Objectives

By the end of this course, participants will be able to:

- Screen offshore wind sites using resource, metocean, seabed, access and grid evidence
- Compare fixed-bottom and floating support concepts
- Configure turbine layout, array cables, substations and export systems
- Evaluate installation, ports, vessels, weather windows and commissioning strategy
- Test cost, energy yield, schedule and risk drivers
- Build an Offshore Wind Concept and Delivery Basis

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Course Agenda

Day 1: Screen the Site and Resource

- Offshore Wind Development Lifecycle and Gate Map
- Wind Measurement, LiDAR and Long-Term Resource Assessment
- Metocean, Bathymetry and Seabed Data Register
- Environmental, Marine-Use and Grid Constraints
- Site Screening and Development Assumption Matrix

Day 2: Select Turbines and Support Structures

- Turbine Rating, Rotor and Energy-Capture Trade-Offs
- IEC 61400-3-1 Fixed Offshore Design Context
- Monopile, Jacket and Gravity-Base Screening
- Spar, Semi-Submersible and Tension-Leg Platform Screening
- Foundation and Mooring Concept Decision Matrix

Day 3: Define the Farm and Electrical Architecture

- Array Layout, Wake Loss and Turbine-Spacing Decisions
- Array Cable Topology and Cable-Routing Basis
- Offshore Substation and Voltage-Level Selection
- HVAC, HVDC and Export-System Screening
- Grid Connection, Availability and Energy-Loss Register

Day 4: Plan Delivery and Economics

- Fabrication, Ports, Vessels and Installation Sequence
- Weather Windows, Marine Coordination and Interface Control
- Commissioning and Grid-Energisation Readiness
- Capital Cost, Operating Cost, Energy Yield and LCOE Drivers
- Contracting, Schedule, Risk and Financeability Review

Day 5: Assure the Lifecycle

- Suggested Exercise: Rank Candidate Offshore Wind Sites
- Suggested Exercise: Select Fixed or Floating Support Structures
- Suggested Exercise: Configure Array and Export Systems
- Suggested Exercise: Challenge Installation and LCOE Assumptions
- Capstone Exercise: Present the Offshore Wind Concept and Delivery Basis

Practical Exercises

- Build a site-screening matrix from wind, metocean, seabed, access and grid evidence.
- Compare fixed and floating concepts against water depth, loads, supply chain and lifecycle needs.
- Trace power from turbines through array cables and substations to the grid connection.
- Defend a delivery basis using installation, schedule, energy and cost assumptions.

FAQs

What is covered in offshore wind project development?

The course covers site and resource screening, technology selection, farm and electrical architecture, installation, economics, risk, operations and lifecycle decisions.

How are fixed and floating offshore wind concepts compared?

They are compared using water depth, seabed conditions, metocean loads, turbine size, fabrication, installation, mooring, cable dynamics, port capacity, cost and maintenance access.

Does the course teach IEC 61400-3-1?

It uses IEC 61400-3-1:2019 as the design context for fixed offshore turbines. It explains where the standard affects development decisions without providing clause-by-clause certification training.

How is the electrical export concept selected?

Selection considers project capacity, distance to shore, voltage, losses, reliability, cable routes, substations, reactive compensation, grid requirements and HVAC versus HVDC trade-offs.

What drives offshore wind project economics?

Major drivers include wind resource, turbine rating, losses, availability, foundation type, cables, vessels, ports, weather delay, financing, operating strategy and energy yield.

What will participants produce?

Participants build an Offshore Wind Concept and Delivery Basis containing the site case, selected technologies, farm architecture, installation strategy, cost and energy assumptions, risks and lifecycle plan.

Conclusion

Participants leave with a structured method for connecting offshore evidence to technical and investment decisions. The final basis can be updated as surveys, engineering, supply-chain information, grid studies and commercial assumptions mature.

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