Floating Offshore Wind Technologies Training Course

Professional Development Training Course Outline

Category	Renewable Energy	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Floating Offshore Wind Technologies Training Course provides a comprehensive, industry-focused understanding of floating offshore wind (FOW), an emerging pillar of the global energy transition and net-zero strategy. The course explores the complete floating wind value chain, from site assessment, metocean analysis, wind resource assessment, floating foundations, mooring systems, dynamic cables, turbines, and offshore construction to installation, operations, maintenance, decommissioning, and Levelized Cost of Energy (LCOE) optimization. Participants gain practical knowledge of advanced floating concepts such as spar-buoy, semi-submersible, tension-leg platform (TLP), and hybrid floating foundations, together with digital twins, AI-enabled predictive maintenance, remote monitoring, autonomous inspection, subsea technologies, and offshore wind supply-chain development.

Designed for professionals working across renewable energy, offshore engineering, marine operations, oil & gas transition, utilities, EPC, ports, maritime services, and energy investment, the training connects technical principles with commercial and project-development realities. Through case studies, scenario-based exercises, technology comparisons, risk assessments, project economics, and real-world floating wind project examples, participants develop the capability to evaluate and support floating offshore wind projects from concept to commercial operation. The course emphasizes bankability, scalability, energy security, grid integration, environmental sustainability, offshore electrification, green hydrogen potential, cost reduction, industrial localization, and resilient supply chains, enabling organizations to identify opportunities in the rapidly expanding floating offshore wind market.

Programme Curriculum

Floating Offshore Wind Technologies Training Course

Introduction

Floating Offshore Wind Technologies Training Course provides a comprehensive, industry-focused understanding of floating offshore wind (FOW), an emerging pillar of the global energy transition and net-zero strategy. The course explores the complete floating wind value chain, from site assessment, metocean analysis, wind resource assessment, floating foundations, mooring systems, dynamic cables, turbines, and offshore construction to installation, operations, maintenance, decommissioning, and Levelized Cost of Energy (LCOE) optimization. Participants gain practical knowledge of advanced floating concepts such as spar-buoy, semi-submersible, tension-leg platform (TLP), and hybrid floating foundations, together with digital twins, AI-enabled predictive maintenance, remote monitoring, autonomous inspection, subsea technologies, and offshore wind supply-chain development.

Designed for professionals working across renewable energy, offshore engineering, marine operations, oil & gas transition, utilities, EPC, ports, maritime services, and energy investment, the training connects technical principles with commercial and project-development realities. Through case studies, scenario-based exercises, technology comparisons, risk assessments, project economics, and real-world floating wind project examples, participants develop the capability to evaluate and support floating offshore wind projects from concept to commercial operation. The course emphasizes bankability, scalability, energy security, grid integration, environmental sustainability, offshore electrification, green hydrogen potential, cost reduction, industrial localization, and resilient supply chains, enabling organizations to identify opportunities in the rapidly expanding floating offshore wind market.

Course Duration

5 days

Course Objectives

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

1. Understand the fundamentals, market drivers, technology trends, and strategic role of floating offshore wind in the global energy transition.
2. Evaluate wind resources, metocean conditions, seabed characteristics, water depth, and site suitability for floating wind developments.
3. Compare spar, semi-submersible, tension-leg platform (TLP), and emerging hybrid floating foundation technologies.
4. Analyze floating wind turbine dynamics, stability, hydrodynamic loads, aerodynamics, and structural responses.
5. Understand the design and application of mooring systems, anchors, dynamic cables, and subsea infrastructure.
6. Examine floating wind installation, towing, heavy-lift, port logistics, marine operations, and construction strategies.
7. Apply digitalization, digital twins, AI, predictive analytics, condition monitoring, and remote operations to floating wind assets.
8. Assess operations and maintenance (O&M), reliability engineering, inspection, repair, and asset-life optimization.
9. Evaluate CAPEX, OPEX, LCOE, financing, bankability, commercial risk, and project economics.
10. Identify HSE, marine safety, environmental, regulatory, consenting, and stakeholder-management requirements.
11. Explore grid integration, offshore transmission, energy storage, offshore electrification, and green hydrogen opportunities.

12. Assess supply-chain localization, port infrastructure, industrial strategy, manufacturing, and workforce requirements.
13. Develop strategic approaches for scalable, cost-competitive, sustainable, and commercially viable floating offshore wind projects.

Target Audience

1. Renewable Energy & Offshore Wind Professionals
2. Wind Farm Developers & Project Managers
3. Offshore, Marine & Structural Engineers
4. Oil & Gas Professionals Transitioning to Clean Energy
5. Utilities, Grid & Transmission Specialists
6. EPC Contractors, Ports & Supply-Chain Professionals
7. Energy Investors, Banks, Insurers & Commercial Advisors
8. Government, Regulators, Sustainability & Energy-Policy Professionals

Course Modules

Module 1: Floating Offshore Wind Fundamentals & Market Landscape

- Evolution from fixed-bottom to floating offshore wind and the role of deep-water resources.
- Global FOW market trends, technology maturity, project pipeline, and commercialization pathways.
- Key floating concepts: spar, semi-submersible, TLP, barge, and hybrid platforms.
- Floating wind value chain covering development, engineering, manufacturing, installation, O&M, and decommissioning.
- Case Study: Review of the Hywind floating wind concept and lessons from early commercial-scale floating wind deployment.

Module 2: Site Selection, Wind Resource & Metocean Assessment

- Wind resource assessment, LiDAR, metocean measurements, and long-term data analysis.
- Evaluation of water depth, seabed conditions, wave climate, currents, extreme weather, and geohazards.
- Site constraints involving shipping, fisheries, marine ecology, aviation, defense, and existing offshore infrastructure.
- Introduction to wake effects, turbulence, environmental loads, and energy-yield assessment.
- Case Study: Site-selection considerations for a deep-water floating offshore wind development and their impact on project design.

Module 3: Floating Foundations, Turbines & Structural Dynamics

- Detailed comparison of spar-buoy, semi-submersible, TLP, and innovative floating foundation technologies.
- Integration of large-scale wind turbines with floating platforms.
- Fundamentals of hydrodynamics, aerodynamics, stability, motion response, fatigue, and structural integrity.
- Design trade-offs involving steel, concrete, composite materials, fabrication, draft, stability, and manufacturability.
- Case Study: Technology comparison of floating foundation concepts used in leading demonstration and commercial projects.

Module 4: Mooring, Anchoring, Dynamic Cables & Subsea Systems

- Principles of mooring-system design, station keeping, anchors, chains, synthetic ropes, and tension management.
- Dynamic export and inter-array cable design, hang-off systems, bend stiffeners, and fatigue considerations.
- Cable protection, seabed interaction, installation, inspection, and failure prevention.
- Subsea monitoring, robotics, ROVs, autonomous inspection, and digital condition assessment.
- Case Study: Analysis of mooring and dynamic-cable challenges in a deep-water floating wind farm.

Module 5: Installation, Port Infrastructure & Offshore Construction

- Port readiness, fabrication yards, marshalling, assembly, towing, hook-up, and offshore installation.
- Towing strategies and vessel requirements for floating wind deployment and maintenance.
- Heavy-lift operations, weather windows, marine coordination, logistics optimization, and HSE.
- Supply-chain development covering local manufacturing, port upgrades, vessels, workforce, and industrial clusters.
- Case Study: Development of a floating wind port and logistics strategy for large-scale commercial deployment.

Module 6: Operations, Maintenance, Digital Twins & AI

- Floating wind O&M strategies, accessibility, reliability, inspection, repair, and component replacement.
- Application of SCADA, IoT sensors, digital twins, AI, machine learning, predictive maintenance, and remote monitoring.
- Weather forecasting, vessel optimization, autonomous inspection, and data-driven asset management.
- Reliability-centered maintenance and strategies for reducing downtime, OPEX, and lifecycle risk.
- Case Study: Application of predictive analytics and digital monitoring to optimize floating wind turbine availability.

Module 7: Project Economics, Risk, HSE & Environmental Sustainability

- Understanding CAPEX, OPEX, LCOE, energy yield, financing structures, revenue models, and bankability.
- Identification and mitigation of technical, commercial, supply-chain, construction, weather, and operational risks.
- HSE management, emergency response, marine safety, offshore lifting, towing, and personnel transfer.
- Environmental assessment covering marine biodiversity, fisheries, seabed impacts, noise, carbon footprint, and coexistence.
- Case Study: Risk and economic assessment of a hypothetical utility-scale floating offshore wind project.

Module 8: Grid Integration, Green Hydrogen & Future FOW Strategies

- Offshore transmission, grid connection, power quality, stability, energy storage, and hybrid energy systems.
- Integration of floating wind with green hydrogen, offshore electrification, Power-to-X, and renewable energy hubs.
- Strategies for commercial scale-up, cost reduction, standardization, industrialization, and supply-chain resilience.
- Future technologies including larger turbines, advanced floating platforms, autonomous operations, AI optimization, and multi-use offshore infrastructure.

- Case Study: Concept development for a future floating offshore wind + green hydrogen + offshore energy hub.

Training Methodology

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com