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COURSE BROCHURE

# Marine Renewable Energy Technologies Training Course

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Registered in the United Kingdom and Saudi Arabia

# Marine Renewable Energy Technologies Training Course

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Marine Renewable Energy Technologies is a 1-week training course for energy engineers, project developers and coastal power planners, who leave with a marine energy site and technology screening note for their next offshore or nearshore opportunity. Offshore wind is maturing fast while tidal, wave and ocean thermal devices move from prototypes towards early arrays, so sound early choices now decide which sites reach the grid. Jupiter Prime Training delivers this course on marine renewable energy technologies.

## Why Marine Renewable Energy Technologies Matter Now

Three forces shape marine renewable energy today. Coastal grids need new low-carbon supply close to demand, and offshore wind turbines are growing taller, moving into deeper water on floating foundations. Lenders want proof that tidal and wave devices survive storms. Coastal communities, fishing fleets and marine conservation bodies expect a voice in where devices go. Reading the resource, seabed and consenting picture early avoids stranded surveys; ignoring it can cost years.

## Who Gains Most from Marine Renewable Energy Technologies

- Engineers responsible for comparing device concepts and foundation or mooring options for a given seabed
- Developers who screen coastal and offshore sites and build the early investment case
- Planners who route export cables and agree grid connection points with network operators
- Environmental specialists who scope seabed, bird, mammal and fisheries surveys
- Asset owners who weigh operation and maintenance access against weather windows

Developer teams gain most when engineering, consenting and grid staff attend together.

## Marine Renewable Energy Technologies Capabilities

Participants move from metocean records to the choices that shape an offshore project.

- Assess wind, tidal, wave and thermal resources from metocean records — site shortlisting
- Weigh fixed foundations, floating platforms and moored devices against water depth and seabed — concept selection
- Specify export cable routes, landfall and onshore connection needs — network operator discussions
- Calculate indicative energy yield and lifetime cost per unit generated — investment committees
- Scope environmental surveys and stakeholder engagement for consenting — marine licensing authorities
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Communicate technology risks and readiness to lenders and partners — financing decisions

## Key Marine Renewable Energy Technologies Terms

- Tidal stream energy — Electricity from underwater turbines driven by fast tidal currents.
- Tidal range energy — Power taken from the height difference between high and low tide using a barrage or lagoon.
- Wave energy converter — A floating or seabed device that turns the motion of ocean waves into electrical power.
- Ocean thermal energy conversion — Generation driven by the temperature gap between warm surface and cold deep water.
- Mooring system — The lines, chains and anchors that hold a floating turbine or device in position on station.
- Capacity factor — The energy a plant actually produces over a year divided by what it would produce at full output.

## Marine Renewable Energy Technologies Day by Day

### Day 1: The Ocean as an Energy Resource

- Metocean Data Sources — Choosing Records for Wind, Wave and Current Resource
- Offshore Wind Speed Profiles — Hub Height and Wake Loss Estimates
- Tidal Current Harmonics — Predictable Output and Channel Selection
- Wave Climate Scatter Diagrams — Device Rating and Survival Conditions
- Sea Temperature Gradients — Where Ocean Thermal Plants Become Viable

### Day 2: Device and Foundation Families

- Monopile, Jacket and Gravity Bases — Fixed Offshore Wind Foundation Choice
- Floating Spar, Semi-Submersible and Tension Leg Platforms — Deep Water Options
- Horizontal and Vertical Axis Tidal Turbines — Seabed or Floating Mounting
- Point Absorbers, Oscillating Water Columns and Attenuators — Wave Device Selection
- Tidal Barrages and Lagoons — Civil Works Scale and Generation Pattern

### Day 3: Moorings, Cables and Grid Connection

- Catenary and Taut Mooring Layouts — Anchor Type and Seabed Footprint
- Dynamic and Static Subsea Cables — Fatigue, Burial and Protection
- Array Cable Layout — Electrical Losses and Redundancy Trade-Offs
- Offshore Substations and Export Voltage — Alternating or Direct Current Transmission
- Landfall and Onshore Connection Studies — Grid Capacity and Reinforcement Needs

### Day 4: Environment, Consenting and Project Economics

- Seabed, Bird and Marine Mammal Surveys — Environmental Impact Scoping
- Fisheries, Shipping and Navigation Coexistence — Marine Spatial Planning Inputs
- Underwater Noise and Collision Risk — Mitigation and Monitoring Commitments
- Capital and Operating Cost Breakdown — Lifetime Cost per Megawatt Hour
- Installation Vessels and Weather Windows — Construction and Maintenance Scheduling

## Day 5: Practising the Site and Technology Screening Note

- Resource Ranking of Candidate Sites — Applying Day 1 Metocean Methods
- Technology and Foundation Matching — Applying Day 2 Device Families
- Cable Route and Grid Connection Option — Applying Day 3 Studies
- Consenting Risk and Cost Screening — Applying Day 4 Survey and Cost Inputs
- Marine Energy Site and Technology Screening Note — Peer Challenge and Final Draft

## Applying Marine Renewable Energy Technologies After the Course

- Run a metocean resource ranking of two or three candidate sites using the scatter diagram and current harmonic methods from the course.
- Lead a cable route and landfall review with grid connection colleagues to test export voltage and reinforcement assumptions for a live project.

## Marine Renewable Energy Technologies Questions FAQ

### What are marine renewable energy technologies and why do they matter now?

Marine renewable energy technologies turn offshore wind, tides, waves and ocean heat into electricity. They matter now because coastal grids need low-carbon supply near demand, floating wind is opening deep water, and tidal and wave devices are moving into early arrays.

### Which roles gain most from marine renewable energy technologies training?

Engineers, project developers and grid planners working on offshore and coastal power gain most. Environmental specialists and asset owners also benefit.

### How does marine renewable energy technologies training differ from an onshore renewables course?

It focuses on the sea: metocean resources, floating and fixed foundations, moorings, subsea export cables and marine consenting. An onshore renewables course covers land-based wind and solar.

### What do you bring back from marine renewable energy technologies training?

You bring back a site and technology screening note that ranks candidate locations, matches device and foundation types, outlines a cable route and grid connection option, and flags consenting and cost risks.

## Marine Renewable Energy Technologies: The Way Forward

The marine energy site and technology screening note first informs which candidate site deserves a full metocean and seabed survey campaign. Developers, engineers and grid planners use it to align on one shortlist. After its first use, the cable route and consenting assumptions are worth revisiting, as survey results often move the landfall.