







Training Programme Brochure

2026 

-  Science mediation and popularization
-  Detailed characterisation of wind, waves, currents, and seabeds
-  Innovative protocols and trophic modelling for ecosystem monitoring
-  Modelling of floating wind turbines, critical components and farm architecture
-  Operation, maintenance, and in-service monitoring of wind turbines and substations
-  Tools and implementation

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-  Brest, Le Havre, Nantes, Marseille, Pau



Also available
in french

About France Energies Marines

France Energies Marines is a private research institute dedicated to offshore wind.

Supported by a multidisciplinary team of more than 90 employees, a network of international experts, and unique infrastructures, its activities are structured around four complementary departments: Wind & Ocean Dynamics, Systems & Performance, Wildlife & Interactions, and Ecosystems & Society.



More than 90 scientists and technology experts



A public-private partnership supported by the France 2030 investment plan



5 locations close to offshore wind farms



More than 100 research projects since 2012



10 M€ R&D annual budget



More than 200 international partners

Our training offer

Our training programme brochure brings together a wide range of multidisciplinary learning modules, purpose-built to address the key challenges of offshore wind energy.

Building on over a decade of research project outcomes, it offers state-of-the-art knowledge and best practices from across the sector. The programme supports your teams in developing and strengthening their skills through bespoke in-company courses, delivered either on-site or remotely.

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Our training formats

Below you will find the terms and conditions associated with each of our training formats, ensuring clear organisation tailored to your needs.

TAILOR-MADE LEARNING JOURNEY

Fully customised training courses, designed around your needs and our expertise. Available online or in person, these courses are developed with you: objectives, duration, content and delivery terms.

MASTERCLASS

A short, dynamic format ideal for rapidly developing skills. Delivered online, our inter-company sessions run for 1.5 to 3 hours, and are available year-round across a range of topics.

PRACTICAL TRAINING ON FEM SOFTWARE

Practical training courses dedicated to software developed by France Energies Marines. Tailor-made and delivered in person at our premises, they enable participants to get to become fully proficient with our tools in an optimal working environment.



Training objectives and prerequisites

The objectives and prerequisites of each session are set following an assessment of your needs, allowing us to co-design with you a customised training programme that spans from general awareness to advanced technical expertise. The programme can be enhanced with practical tools that facilitate the effective application of what has been learned.



Learning approach

The session begins with a collective reflection aimed at clarifying the issue to be addressed. The trainer then introduces the key theoretical concepts, supported by course materials provided to participants. Interactive exercises, real-world case studies, and engaging educational games are integrated throughout the session to ensure a rich and valuable learning experience.

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Training structure

- To ensure an effective training experience and to meet participants' needs, an assessment questionnaire (oral and/or written) is conducted beforehand.
- Attendance sheets will be signed for each half-day of training.
- At the end of the course, participants will complete a satisfaction survey (immediate and follow-up evaluations).
- A certificate of completion will be issued to participants who attend the entire training programme.



Assessment methods

- Participant progress is continuously assessed throughout the program to evaluate the effectiveness of the training.



Trainer profiles

- Our trainers are recognised experts in the field of offshore wind energy, with solid experience, in-depth knowledge of their areas of expertise combined with pedagogical skills.



Registration, dates & fees

- Our team is at your disposal to provide you with a personalised quote. We will also assist you with all the administrative procedures related to your training programme.
- Please visit our website, where you will find all the information you need about our various offers.

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Theme


Science mediation and popularization

We offer acculturation training courses for secondary school and high-school students. To achieve this, we use educational games designed specifically to familiarize people with the challenges of offshore wind energy while maintaining scientific rigor.

Learning content

- ➔ **Acculturation for the general public (MSV1)**
- ➔ **Acculturation for secondary school and high-school students (MSV2)**
- ➔ **Serious game Ocean Under Pressure OUPS® to introduce the creation of a food web (MSV3)**
- ➔ **Serious game "Reef Effect" to introduce the ecological concept of the reef effect as applied to wind farm (MSV4)**

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Theme

Detailed characterisation of wind, waves, currents, and seabeds


Enhance your skills in modelling the physical environment, including waves, wind, currents and seabeds.


These training courses will introduce you to cutting-edge modelling tools and methods, enabling you to obtain more detailed data to refine your production estimates or optimise the design of offshore wind farm components.

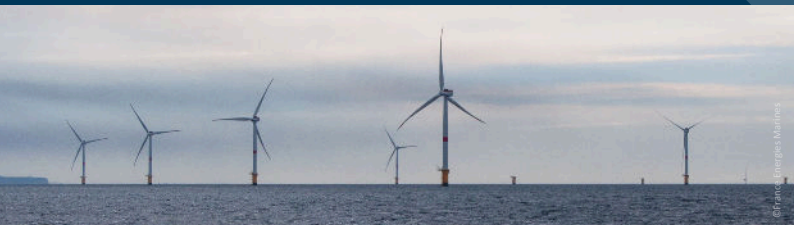
Learning content

-  **Scour processes** in a submarine dune environment (VFM1)
-  **Limitations and opportunities** of calculating turbulence intensity from floating lidar measurements (theory) (VFM2)
-  **Characterisation of extreme winds and waves** in cyclonic conditions using Monte Carlo simulations (VFM3)
-  **Characterisation of wave breaking and quantification** of the impact of breaking waves on offshore structures (VFM4)
-  **Control strategies for wind turbines and wind farms** (theory and practice) (VFM5)

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Theme


Modelling of floating wind turbines, critical components and farm architecture

Explore the design and analysis principles of the key components of a wind turbine and a floating wind farm, taking into account material behaviour, the influence of environmental conditions on the durability of subsea components, and the technical and economic levers available to optimise farm architecture to ensure performance, reliability and cost control for your projects.

Learning content

- ➔ **Visco-elasto-plastic behavior of nylon** in floating wind turbine anchoring studies (CCA1)
- ➔ **Characterisation of biofouling and measurement of parameters of interest** (theory and practice) (CCA2)
- ➔ **Link between biofouling characteristics and engineering parameters**, impact of biofouling on the behavior and service life of underwater components (CCA3)
- ➔ **Technical and economic optimisation of floating wind farm architecture** using shared anchors (CCA4)

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Theme

Operation, maintenance, and in-service monitoring of wind turbines and substations

Integrate digital approaches into your operating and maintenance strategies by combining modelling, operational data and in-service monitoring tools to develop a predictive and optimised understanding of system behaviour.

This theme covers the assessment of critical component reliability, the enhancement of maintenance strategies, and the optimisation of performance and availability for fixed or floating wind farms.

Learning content

- ➔ **Presentation of the structure of a digital twin** of a wind turbine combining sensors, reduced-order modelling and global modelling for in-service monitoring of critical components (theory and practice) (EMS1)
- ➔ **State of the art, maturity, and selection of in-service monitoring solutions** for dynamic cables and anchor lines (EMS2)
- ➔ **Structuring environmental and structural sensor data** (EMS3)
- ➔ **Creation and training of virtual sensors** (EMS4)
- ➔ **Transmission and post-processing chain** between simulation models and sensors (EMS5)
- ➔ **Reliability of floating substations** and optimisation of maintenance strategy (EMS6)

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Theme

Innovative protocols and trophic modelling for ecosystem monitoring

Discover innovative proposals, tested in real-world conditions, for assessing and monitoring the effects of offshore wind farms. You will learn about various multimodal biodiversity monitoring solutions that can be implemented immediately in your regulatory monitoring programmes. You will see concrete examples of how data from these regulatory monitoring programmes can be processed using machine learning.

Learning content

- ➔ **Multimodal biodiversity monitoring (PIM1)**
- ➔ **Use of passive acoustic telemetry** for monitoring marine wildlife behavior and connectivity between wind farms (PIM2)
- ➔ **Use of AI for training models** designed to analyse environmental monitoring data on marine mammals (PIM3)
- ➔ **Prediction of migratory flows** based on meteorological data (PIM4)
- ➔ **Raising awareness of the use of ecosystem trophic models (EwE)** to calculate the cumulative impacts of offshore wind farms (PIM5)
- ➔ **Emissions of chemicals** into the environment linked to wind farm activity (PIM6)
- ➔ **The concept of ecosystem services** applied to offshore wind energy (PIM7)

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Theme

Tools and implementation


Enhance your expertise in advanced digital tools developed by France Energies Marines.

These topics provide practical training on specialised software used to assess marine environment dynamics, extreme loading, offshore structural behaviour, and the technical and economic performance of energy scenarios, including those involving hydrogen production.

Learning content

-  **Hydrodynamic and hydro-sedimentary modelling** for underwater dune migration modelling (theory and practice using CROCO) (OMP1)
-  **Study of the dispersion of chemical pollutants** (theory and practice using CROCO) (OMP2)
-  **Coupled modelling** of the ocean, waves, and atmosphere (theory and practice using CROCO-WW3-MESONH) (OMP3)
-  **Using TAIFU Wind-Waves© tool** for the joint estimation of extreme winds and waves induced by tropical cyclones for the design of offshore structures (OMP4)
-  **Using DIMPACT+© tool** for calculating hydrodynamic forces due to slamming and assessing the structural response to slamming loads (OMP5)
-  **Using PyWake for wake modelling** (OMP6)
-  **Using Polyamoor law in Deeplines** (OMP7)
-  **Using OPHARM tool to analyse scenarios for hydrogen production** from offshore wind power and calculate key indicators (electricity, hydrogen and LCOH) in order to quickly compare different configurations. (OMP8)

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“The development of skills to support the deployment of offshore wind energy in France is a critical challenge. France Energies Marines draws on its experience and high-level expertise to deliver training programmes for professionals in the sector. These courses cover a wide range of topics specific to offshore wind energy, from the integration of wind farms into their environment to the specification of floating and fixed wind turbine technologies. They also evolve regularly to keep pace with market requirements and to meet the growing need for acculturation and advanced expertise, including the use of engineering tools developed by France Energies Marines.”

Jean-François FILIPOT

SCIENTIFIC DIRECTOR

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