Felipe J. Moreno

OFFSHORE SYSTEMS ARCHITECT
FOUNDER - MORIE ANALYTICS

DELFT UNIVERSITY OF TECHNOLOGY (The Netherlands)
MSc. Offshore Wind Structures
UNIVERSIDAD POLITECNICA DE MADRID (Spain)
MSc. Civil Engineering

Percebe 14
El Puerto de Santa Maria (Cadiz)
fmo@morie.com
+34 722 54 89 54

Founder and offshore systems engineer with 12+ years of experience in offshore wind engineering, specializing in floating structures and water energy convertors, with focus on mooring systems and anchor optimization. Integrates physics-based modelling, probabilistic frameworks and machine learning to enable scalable floating wind deployment in deep and ultradeep waters. Experience spans offshore installation, national laboratory research and commercial project delivery.

WORK EXPERIENCE

Ongoing / Feb 2026

FOUNDER

Morie Analytics (El Puerto de Santa Maria, Cadiz. Spain) *www.morie.com*

Founder of a specialized offshore analytics firm focused on mooring system and anchor optimization for floating wind farms and water energy convertors. Developing integrated physics-based and machine learning tools to enable scalable and cost-efficient deployment in deep and ultradeep waters.

- Leading development of an integrated offshore optimization framework combining anchor capacity, mooring dynamics, seabed uncertainty, and cable routing.
- Leading development of an integrated offshore optimization platform combining anchor capacity, mooring dynamics, seabed uncertainty, and cable routing into lease-area–scale probabilistic decision tools
- Commercializing and scaling ML-driven anchor optimization workflows into deployable tools for developers and EPCs.
- Transforming anchor capacity and installation models into lease-area–scale probabilistic decision platforms integrating bathymetry, soil variability, and mooring load envelopes.
- Awarded funding in the Equinox opportunity, recognizing the contribution to the advancement of mooring and anchoring solutions tools coupled with offshore cable design.

Feb 2026 / Mar 2024

FLOATING WIND RESEARCHER

National Renewable Energy Laboratory (Flatiron Campus, Boulder, CO. USA) *www.nrel.gov*

Offshore floating wind researcher bridging the gap between naval architects and geotechnical experts. Focus on floater typologies, mooring systems, anchor points and dynamic power cables.

- Led standardization of mooring systems and anchor configurations (suction and drilled & grouted) for floating wind farms on the U.S. West Coast (Morro Bay and Humboldt). Implemented models in Python and OpenFAST, with Monte Carlo–based sensitivity analyses to evaluate probabilistic mooring performance and installation feasibility.
- Developed shared mooring and anchor strategies for large-scale floating wind farm layouts to reduce CAPEX/OPEX and environmental footprint, with emphasis on resilience to mooring failure using novel optimization techniques.
- Designed and maintained anchor modules within NREL's FAModel library (OOP in Python), covering drag-embedded, dynamically/suction-assisted plate, suction, torpedo, driven and drilled & grouted piles. Modules include cyclic and extreme load behavior, installation models, soil-structure interaction with layered soils, and GIS-based seabed mapping; fully coupled with MoorPy, RAFT, and FLORIS for early-stage farm evaluation.
- Created a Python-based installation sequencing tool for floating wind farm mooring systems and waterpower devices, modeling hierarchical operation steps, interdependencies, vessel/equipment involvement, and weather window constraints.
- Contributed to the flagship ultradeep floating wind report (1,300–3,000 m), delivering probabilistic frameworks for anchor capacity, seabed uncertainty modeling and installation planning under frontier conditions.
- Selected for InnovateNREL, the lab's internal innovation program, to develop and advance novel offshore anchoring and mooring solutions with cross-disciplinary support and funding.
- Co-authored peer-reviewed publications, including *"Floating Offshore Wind Farm Array Optimization Considering Mooring Lines, Anchors and Array Cables"* (OTC-35814-MS, 2025) and *"Standardizing Mooring Components in Floating Wind Farms to Reduce Manufacturing Cost and Supply Chain Lead Time"* (IOWTC2025-167826).

Mar 2024 / Aug 2020

FLOATING & FIXED STRUCTURES ENGINEER

Morie Offshore Wind/Cathie Group (Cadiz, Spain/Newcastle, UK) *www.cathiegroup.com*

Offshore wind engineer focused on geotechnical aspects for floating structures in the renewable and the Oil & Gas sectors. Responsible for the floating strategy in the company with constant Business Development involvement.

- Led offshore wind engineering projects with focus on **floating structures, mooring systems, dynamic power cables and** geotechnical foundations, supporting both renewables and Oil & Gas.
- Authored white papers and methodologies on:
  - Technology selection for floating wind platforms, mooring lines, cables and anchor points.
  - Mooring optimization and anchor sharing strategies, including novel materials and Python-based automation (OrcaFlex API).
  - Integrated seabed site characterization for floating wind development.
- Delivered floating concept selection & tender engineering for Eiffage's Atlantic offshore wind farm, coordinating with clients and subconsultants to assess in-place performance and optimize for manufacturability and serial production.

- Performed dynamic cable analyses for Petronas' floating TLP concept (OrcaFlex), evaluating ancillary elements (buoyant modules, bend stiffeners, anchors, clamps) and on-bottom stability.
- Resolved fatigue and abrasion issues in Cable Protection Systems for Ørsted across 10 operational offshore wind farms (Europe & US), developing spring models to simulate CPS–rock interactions under metocean loads.
- Executed foundation geotechnical design for subsea equipment in West Africa, covering in-place and installation design of suction piles and shallow foundations.
- Applied load case reduction (Lumping Strategy) in Python to streamline environmental condition analyses.
- Contributed to critical engineering assessments for offshore substations (Kriegers Flak & Hohe See), applying fracture mechanics (BS 7910:2013) to ensure design life integrity.
- Co-authored *"An Introduction to Shared Anchors in Weak Rock for Floating Systems"* (Cathie, 2025), presenting early-stage design and capacity methodologies for drilled & grouted shared anchors with OrcaFlex and Python workflows**.**

Aug 2020 / Nov 2014

S T R U C T U R A L E N G I N E E R

SLPE (Southwark, London. UK) *www.slpe.com*

Structural design of bottom founded structures for production facilities and other supplementary structures for the renewable (WTG supports and substations) and Oil & Gas sectors.

- Designed bottom-founded and floating support structures for offshore wind and Oil & Gas, with emphasis on foundations, fatigue and seabed interaction.
- Contributed to floating wind pre-FEED studies (Blyth Phase 2, Eiffage), including floating concept evaluation, mooring strategies and suction anchor pile design.
- Delivered WTG support structure designs for multiple European wind farms (Saint-Nazaire, Neart na Gaoithe, Kriegers Flak, Hohe See), covering clustering strategies, fatigue assessment, and soil–pile interaction modeling.
- Performed structural and geotechnical verification of substations (Merkur, Saint Brieuc, Hollandse Kust Noord, Dudgeon, Mermaid, Seastar), including fatigue, offshore lifting, transportation, ship impact and grouted pile sleeve design.
- Engineered suction bucket interfaces and crane strengthening schemes for offshore substation foundations, including FEA analysis and reinforcement design.
- Developed the ONE Standardised Modular Jacket concept for Oranje-Nassau Energie, optimizing for multi-water depth applications and fabrication efficiency.
- Designed Mid Water Arch (MWA) for the Vette field, assessing buoyancy configurations and foundation options (gravity base, pile steel frame, clump weight).

Nov 2014 / Mar 2013

S T R U C T U R A L E N G I N E E R

SPT Offshore (Woerden, Utrecht. The Netherlands) *www.sptoffshore.com*

Structural and geotechnical aspects of compression caissons for foundations of bottom founded structures for offshore wind support structures and suction anchors as start-up piles for oil & gas pipelines in the Gulf of Mexico and North Sea.

- Designed and reported on suction pile foundations for offshore wind projects, covering primary and secondary steel design using SACS and MathCAD, in compliance with DNV and API standards.
- Contributed to the Carbon Trust Suction Installed Wind Turbine concept, performing advanced structural modeling and simulation in FEMAP and SACS.
- Led the procurement and offshore installation of suction start-up piles for oil & gas pipelines in the Gulf of Mexico (Ciudad del Carmen). Coordinated with vessel crews, supervised lifting and pump-down operations, and ensured compliance with design and procedure during a three-month offshore campaign.

L A N G U A G E S

Spanish Native speaker
English Full professional competence
Russian Intermediate level

S O F T W A R E P R O G R A M S

- **Engineering & Design**: OrcaFlex, OpenFAST, SESAM Suite, USFOS, Rhino 3D, AutoCAD
- **Programming & Analysis**: Python (OOP, ML/AI pipelines, optimization, Monte Carlo), Matlab, MathCAD,
- **Simulation & Verification**: FEA (SolidWorks, FEMAP), hydrodynamic & fatigue modeling, structural reliability methods
- **Offshore Analytics**: GIS seabed mapping, MoorPy, RAFT, FAModel, FADesign (NREL tools integration)

S K I L L S

- **Project Lifecycle:** Design, verification, installation and commissioning of offshore systems
- **Field Experience:** Offshore campaigns (suction pile installation in Gulf of Mexico, Europe, Asia), site characterization and installation supervision of CPS systems
- **Innovation & Research:** Selected for InnovateNREL; awarded Equinox funding for novel mooring/anchoring solutions; co-author of international publications (OTC, IOWTC, Cathie papers)
- **Leadership & Collaboration:** Technical mentorship, cross-functional teamwork, business development involvement, international stakeholder engagement
- **International Exposure:** Work experience across Europe, Asia and the Americas