TADEK
Ocean Engineering

Complex Offshore Engineering.

Advisory. Analysis. Delivery.

"Our reputation continues to be built on something of an obsession with finding the engineering truth and delivering excellence for our clients.

We take time to ask questions, to challenge and explore solutions, and make detailed recommendations backed by academic principles, scientific rigour, and empirical evidence."

Rupert Raymond, Managing Director

About Us

Tadek are a UK engineering consultancy delivering front-end advisory and through-project delivery solutions for offshore projects.

Since 2010, our team has grown to 30 professional engineers and delivered over 300 projects, combining engineering and academic excellence with on-site delivery. Our extensive offshore T&I delivery experiences are complemented by expertise in moorings and cable systems, naval architecture, structural design, and Subsea Umbilicals, Risers, and Flowlines (SURF).

Our main clients in the UK and Globally are:

Site & Technology Developers

- FEED studies
- Owner's engineering

For moorings, cables, SURF, floating systems, field layout, T&I optioneering, vessel operability

Legal, Insurance & Investors

- Expert Witness and Investors engineering
- Incident analysis

Installation Contractors & Vessel Owners

- Project Management, Project & Field Engineering
- Installation analysis - Cable, Pipelay, SURF
- Structural and Seafastening
- As Orcaflex experts we provide training

Engineering companies

- Hydrodynamic loading
- Complex analysis
- Design for offshore operations

Cable & CPS Suppliers, Fabricators & Other Manufacturers

- Inplace and installation design
- Global, ULS, FLS, VIV hydrodynamic analysis
- Offshore engineering solutions

As an agile, privately owned company, our approach is bespoke, enabling us to tailor services to suit project and internal capabilities / capacity of our clients.

Fixed Wind Advisory

Our team have a range of experiences in fixed offshore wind, particularly in cable engineering.

Owner's Engineering

Our experience in owner's engineering projects includes:

- Long-term project work with Ocean Winds reviewing:
  - Cable contractor analysis and procedures
  - Cable and CPS design reports
  - Vessel suitability and engineering operability
- Collaboration with Marubeni for Akita, delivering the first offshore wind farm in Japan

Technical Due Diligence

To date we have reviewed and advised on more than 20 fixed and floating offshore wind projects across the following disciplines:

- Design Basis
- Fixed & Floating Foundations
- Detailed Design
- Fabrication & Assembly
- Transport & Installation
- Cabling

Expert Witness

We provide expert advice and opinion for arbitration and court proceedings.

Cable is a complex structure, which we model using UFLEX & DNV Helica as part of our expert reporting.

For instance, we recently supported a client against a claim of failed Export CPS, during which we reviewed cause, explored preventive measures against further failure and assessed and advised corrective measures.

Case Study

Moray East/West

Tadek supported Ocean Winds for all cable installation deliverables, checking technical content for sub-contractors, providing a central point of contact for internal and external parties. Deliverables from Tadek included comment sheets, models, independent analyses (e.g. RAO check), technical notes, and reports.

"Tadek acted as owners engineer on the cables work package and various niche installation engineering scopes for Moray East and West.

A combination of diligence to codes and complex engineering judgement were required to develop arguments to reduce risk and protect our commercial and operational interests."

Peter Geddes, Project Director
Oceanwinds Moray West

moray west OFFSHORE WIND FARM

OW OCEAN WINDS

Static & Dynamic Cable Engineering

We provide expert analysis, modelling and engineering solutions in fixed wind, FOW and O&G projects.

Track Record

Our analytical methodologies have been robustly developed through extensive experience within umbilical design for oil and gas projects over a decade. This expertise has been adapted to deliver a range of solutions for fixed and floating wind.

Dynamic Cable & Umbilical Design

Tadek provide global dynamic analysis of subsea umbilical systems under extreme metocean conditions:

- Initial cable sizing (inhouse software PreCab)
- Fatigue
- Freespan
- Cable VIV / Coupled Floater Cable VIM
- On-bottom stability analysis
- Cable interface load studies

Local structural analysis

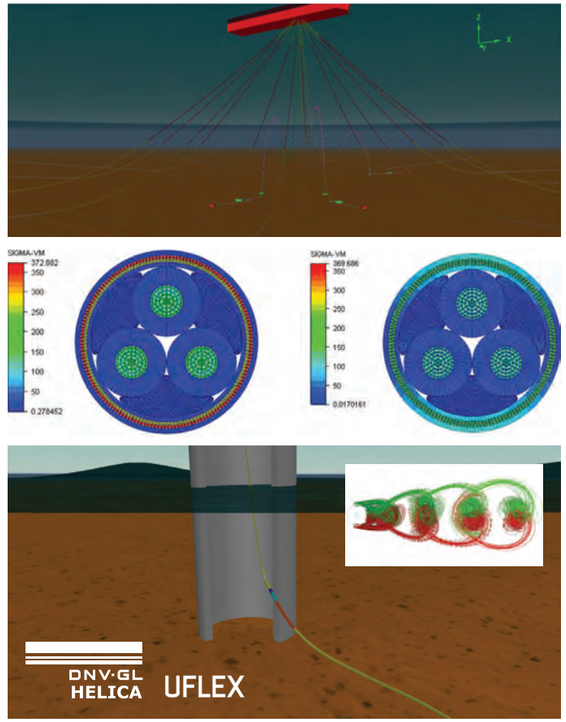
Our services also include local structural analysis, utilising UFLEX, a special purpose FE program for non-linear stress analysis of complex umbilical cross-sections.

CPS Design & Assessments

Tadek are trusted by CPS and cable manufacturers to develop and validate designs and as advisors to de-risk projects via comparative assessments and advice. Tadek's advanced VIV methodology process which has been accepted by Class bodies.

Procurement & Project Management

We have assisted contractors and developers with procurement solutions, reaching out to the supply chain to develop the optimal techo-economic solution for the project.



Mooring Systems

We design permanent and temporary mooring systems for challenging environments and operational conditions.

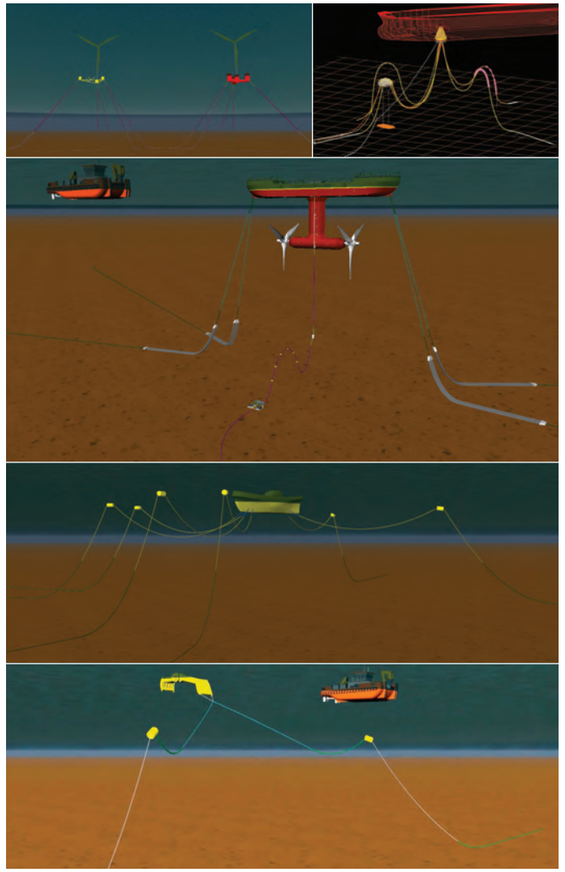
Our skills as hydrodynamicists combine with practical project experiences installing moorings and hooking up floating systems to enable our position as leaders in the design & installation of mooring systems:

- FPSO systems
- MRE devices
- FOW steel, concrete & TLP systems
- Temporary Moorings

Our contributions are variable:

- Design / Consult / Advise
- Procure / Plan / Install

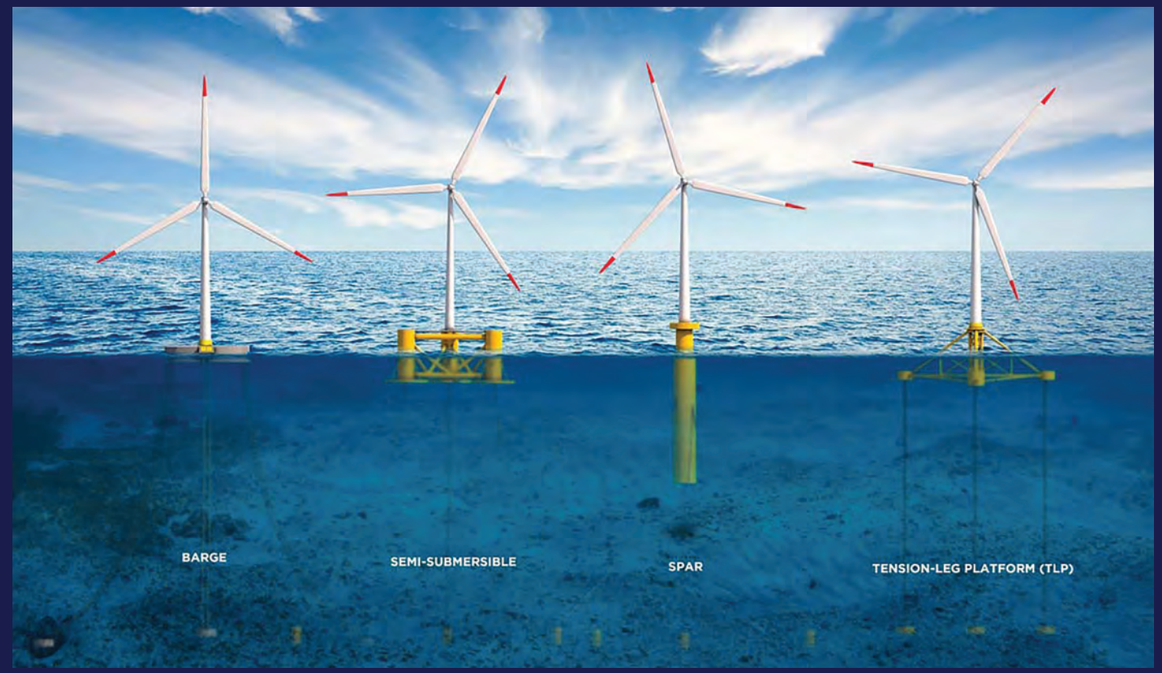
Tadek have varied project experiences in traditional and innovative mooring system projects amongst them EFGL FOW, Saitec DemoSath FOW, Shell Penguins FPSO, Magallanes 2MW tidal, Wello Penguin WEC, Mocean WEC, Jotun FPSO, Aje FPSO, and Ghana OCTP.



> "Tadek clearly demonstrates a breadth of highly academic, niche, and complex engineering expertise. This capability has proven invaluable for several of our projects, especially when client demands exceed standard code compliance and require a more rigorous due diligence approach."
>
> Craig Sharp, Head of Engineering
> Balmoral Comtec

Case Study

Mooring Systems in Challenging Environments



The Offshore Wind industry is looking for new opportunities to increase the market via floating offshore wind. One of the benefits of floating offshore wind is the possibility of installation in deeper water, but this is not yet a cost-effective solution. The main constraints in deeper water are the challenging environment and the mooring system for the position keeping.

Tadek were appointed by the Carbon Trust's Floating Wind Joint Industry Project to identify and evaluate actual and innovative mooring and anchoring solutions, such as shared anchors and Load Reduction Devices (LRD).

CARBON TRUST

Client:	Carbon Trust
Year:	2020
Service:	Renewables
Project Type:	FOW
Scope:	Mooring Development

Installation Engineering

The Tadek team perform industry leading installation analysis of any marine operation, however simple or complex.

Track Record

Consultancy work demands a dynamic mindset to react to novel and complex problems and to produce practical, robust and concise solutions.

The team support immediate/24hour operational demands for a vessel working offshore. They also collaborate with a client over many months to design, analyse, optimise and de-risk the installation process of a project.

Heavy Lift

Static and dynamic analysis, recovery, installation and complex analysis.

Cable Installation

Optimal operational analysis, pre-call-off and post-call-off work, bespoke analysis scopes.

Pipelay Installation

Supporting large-scale O&G projects with analysis, procedures and support operations.

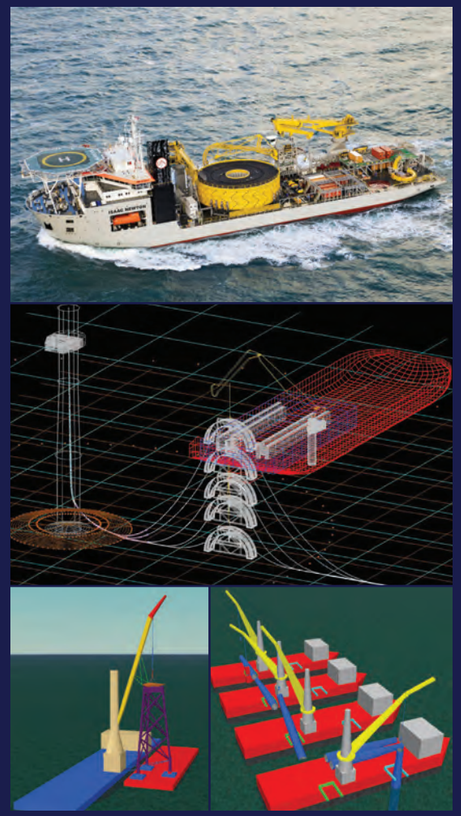
Operability

Via condensed results from thousands of simulations, we optimise downtime, ensure asset integrity, and provide clear and concise guidance to operators.

Case Study

Arcadis OWF

Tadek supported Jan De Nul with loadout, mooring, transit and installation cable analysis for 27 inter-array cables for the Arcadis Offshore Wind Farm project.



JAN DE NUL

Project Engineering

Marine projects are at the core of our expertise. We develop robust and economic solutions, informed by in-depth engineering and analysis.

Project Delivery

We support clients with a range of scopes including heavy lift, mooring installation and hookups, cable lay and repair, and subsea installations. We provide:

- Project management and tender support
- Project documentation
- Field engineers

Structural Design

Our in-house structural engineering team support the following:

- Sea fastening and grillage design
- Design and fabrication – sea fastening, installation aids

> "The Tadek team brought valuable expertise in complex analysis and offshore project engineering, handling a demanding scope under tight deadlines and challenging weather limitations. Their adaptability and dedication played a key role in delivering the project successfully."
>
> Johan Sele, Project Technical Manager
> Ocean Installer

Case Study

Viking Link

Viking Link is the world's longest onshore and subsea HVDC interconnector, stretching 475 miles from the UK to Denmark. Our Project Engineering Team provided:

- Procedures and QHSE deliverables
  - Engineering design support
  - Cable pull-in analysis
  - Field Engineering Site Management
  - Daily and weekly stakeholder engagement

Prysmian Group

VikingLink

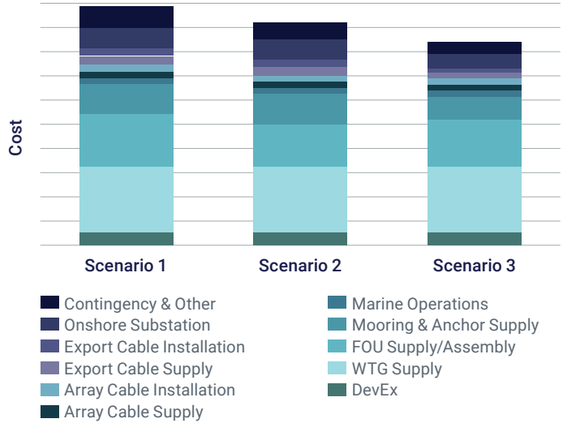
Floating Offshore Wind

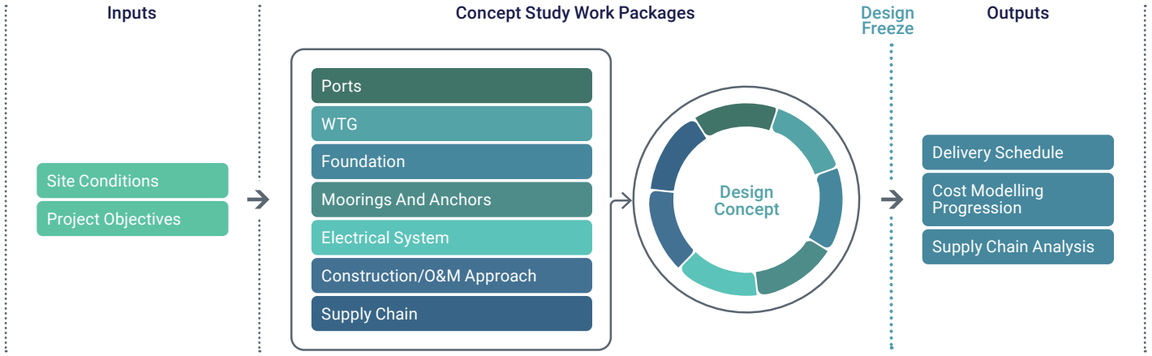
Tadek support floating offshore wind developers with advice on early-stage project decisions, supported by front line experiences on live demonstrator projects.

Technology Due Diligence and Holistic Benchmarking Studies

Tadek advise a range of developers and investors, offering a holistic approach:

- Platform sizing and selection
- Platform fabrication constraints
- Wet storage
- Mooring Design
- Dynamic Cabling Design
- Installation and O&M
- Operational and Yield Analysis





"Tadek's naval architects, mooring systems engineers, and project engineers have provided invaluable support to the technical development of our deep-water offshore wind solutions. Their support has spanned a broad range of challenges, and we've come to trust them not merely for their expertise but for their integrity in delivering the right solution. They consistently prioritise project needs over commercial aims, even when it means involving experts beyond their core team. This commitment to delivering excellence has been really noticeable."

Graham Foster, CTO and Chairman
Marine Power Systems

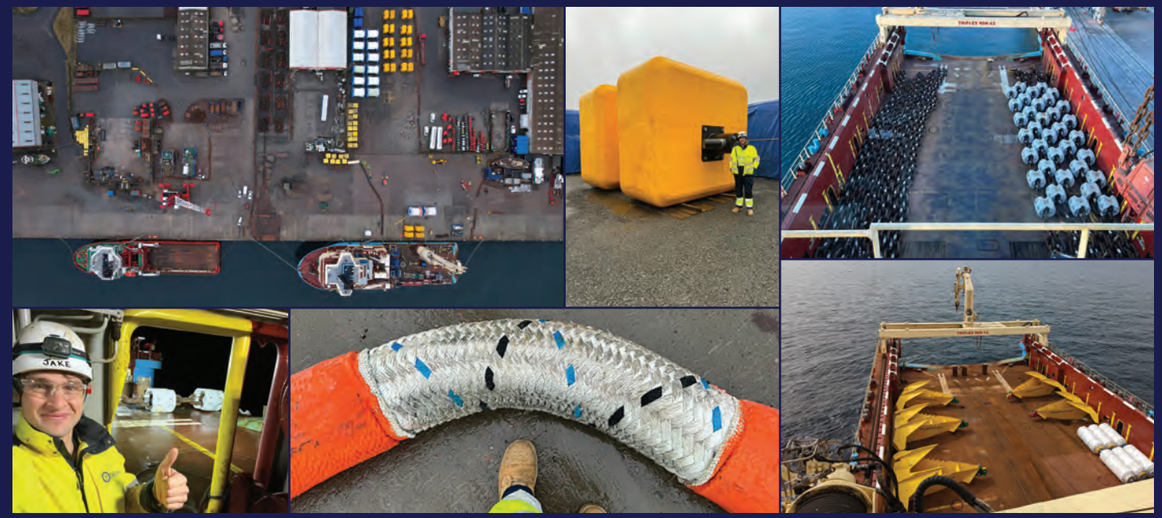
Rendering of FOW developer Marine Power Systems deepwater technology innovation, the *MPS PélaFlex GS Deepwater Wind Platform*

"Tadek project engineers Jake, Al and others were invaluable support during the hook-up planning phase and the critical offshore execution period of the Saitec DemoSath installation. Rarely do you come across project engineers with such intense commitment to see the job done, delivering with passion and communicating with calm and enthusiasm. It was great to work with them on this fantastic scope."

Robert Shaw, Shift Supervisor
Maersk Supply Services

Case Study

Mooring Pre-Lay and Hook-up - Project Engineering



Tadek deliver a complete Project Management, Procurement, Engineering & Delivery service for mooring & hookup scopes.

Installing mooring systems and hooking up devices is in our DNA. Tadek director Nigel Terry led the Pelamis WEC installations pre 2010, encompassing innovative quick connect technology and methods. Since then Tadek have contributed to many traditional and innovative projects, amongst them the Saitec DemoSath, Shell Penguins FPSO, Magallanes 2MW tidal device, Wello Penguin WEC and the Jotun FPSO. Scopes have included drag anchor installation, large diameter (>170mm) chain handling, synthetics installation (up to 265mm rope) and proof loading up to 350t.

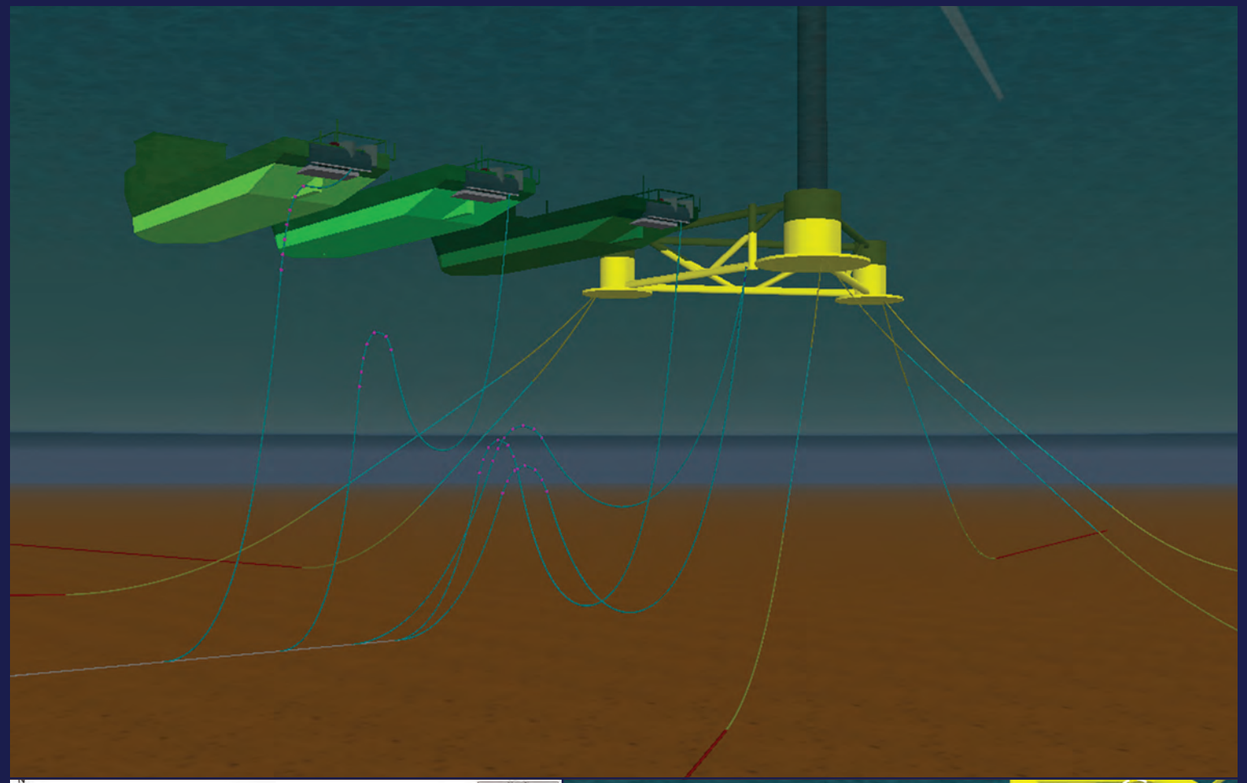
This summer 2025, Tadek project engineers are busy with full delivery of the mooring and hookup of the BPT Demonstrator off Falmouth, UK, as well as project engineering support to a three-unit FOW installation in the Mediterranean. This is the end of a three-year project encompassing anchor installation, mooring line prelay, float-off and transport, tow-out and installation.

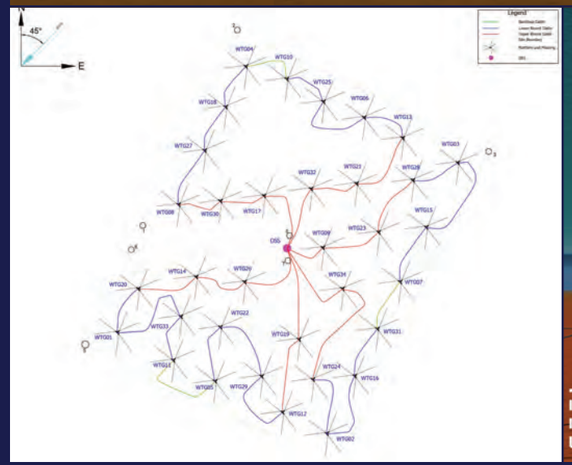
Tadek's problem solving attitude and exceptional deliverables enable efficient, cost- effective and safe delivery of all the pre-lay and hook-up scopes, supporting all technical aspects from tender, kick-off, detailed engineering and execution.

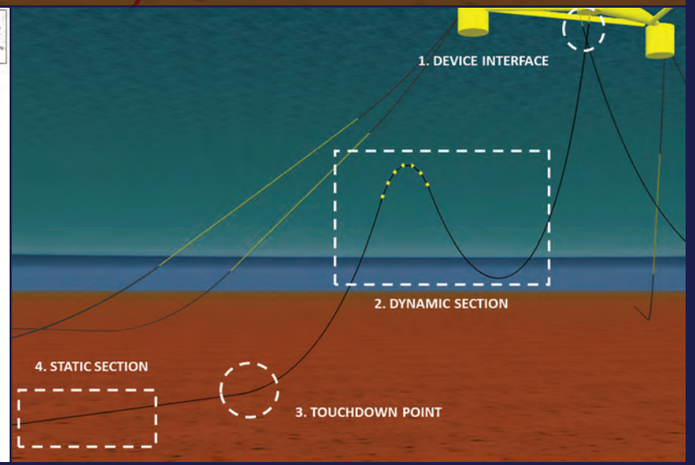
Client:	Various
Year:	2022-2024
Service:	Renewables and O&G
Project Type:	Mooring Pre-lay & Hook-up
Scope:	Project & Field Engineering

Principle Power

magallanes saitec offshore technologies







Case Study

IAC Pre-FEED System

Within a Pre-FEED study for a 500MW FOW farm we executed a coupled engineering design assessment of a dynamic IAC system, encompassing a coupled analysis with the mooring system. Through a holistic view of project requirements combined with specific work packages focused on detailed assessment and development system components, we delivered detailed engineering analysis, concept optioneering and project engineering.

Work included design and specification of different cable cross sections, buoyancy requirements, TDP tether clamps and bend stiffeners, subsea configuration of the array, and installation considerations and costing.

Scope of Work

Hydrodynamic, Mooring & IAC System development included:

- Cable cross-sectional design
- Preliminary IAC system design analysis
- Detailed analysis and optimisation
- Installation analysis and array layout optimisation considering cable routing
- Procurement and costing

Project Details

This hydrodynamic modelling and mooring system design project encompassed cross-section design, array layout optimisation, ULS and FLS analysis, procurement liaison installation considerations and preliminary costing. 66kV cable cross-section sizing was performed using Tadek-developed software, PreCAB, in accordance with IEC standards. The design was validated against supplier quotations and updated to reflect off-the-shelf designs.

IAC design considered the installation process and array layout. Each iteration of the design included key steps and installation feasibility against risk. Procurement and costing comprised an estimate of installation durations and costs, liaising with suppliers to achieve overall project cost model.

Key Outcomes

A dynamic cable design was chosen based on the OrcaFlex analysis as well as installation considerations, verified by analysing the survival response of the IAC in extreme environments for a range of configurations.

All components of the system were optimised and specified to enable accurate RFQs. The optimised array layout is based on the mooring design, IAC installation sequence, and IAC design footprint and clearances.

> "The project was a perfect synergy between the Tadek project engineers, familiar with developing installation procedures for a range of FOW and floating system hook-ups and cable lay works, and the naval architects and marine analysis engineers."
>
> Gloria Vittadini, PM, Floating Wind, Maersk Supply Service

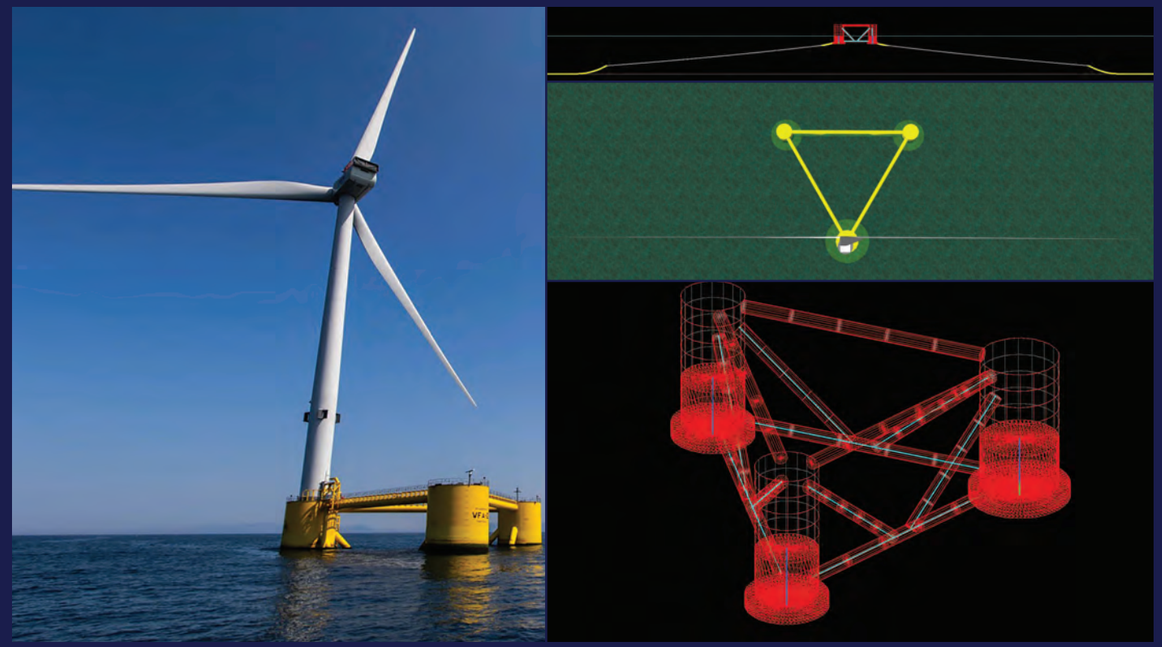
Client:	COP & MSS
Year:	2023
Service:	Renewables
Project Type:	FOW
Scope:	IAC Design and Optimisation

COP COPENHAGEN OFFSHORE PARTNERS

MAERSK SUPPLY SERVICE

Case Study

FOW Water-Depth and Hybrid Mooring - Design and Costing Study



Vattenfall approached Tadek to conduct an assessment on the impact of different water depths (70m-300m) on moorings of FOWTs. This work followed a JIP conducted by us for the Carbon Trust and its partners (including Vattenfall) on mooring systems for harsh environments (70-1000m).

Following the water-depth study, Vattenfall sought a follow up study to assess the impact of different fibre ropes including Nylon and LRDs within FOWT moorings.

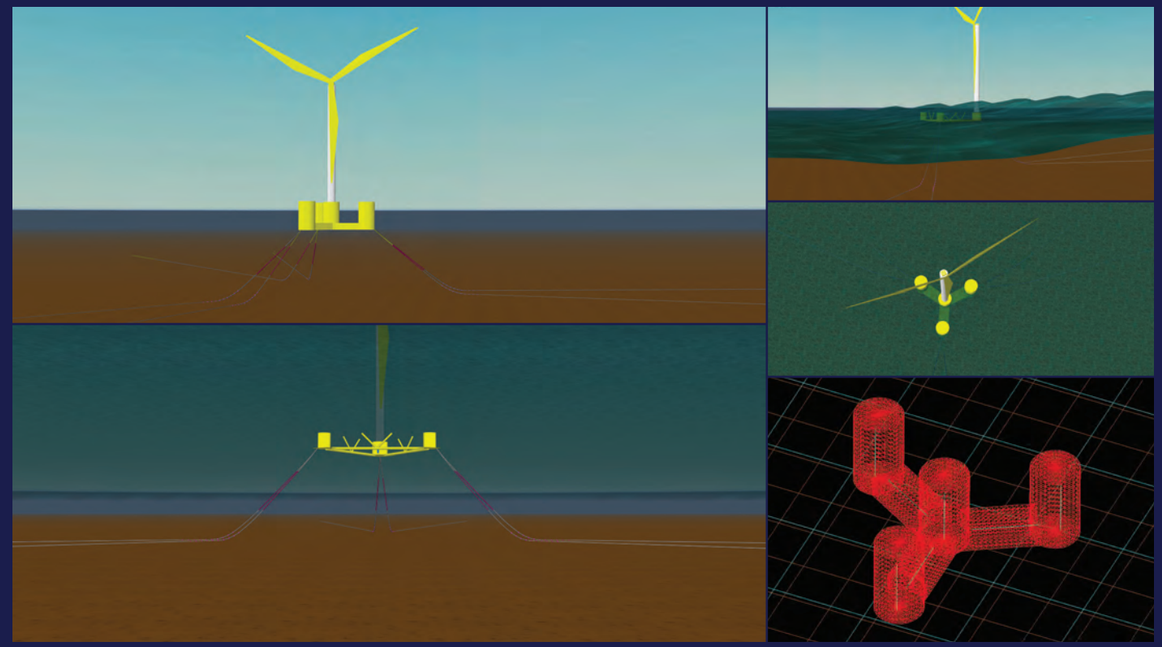
Challenges, components and costs associated with mooring in shallow water were identified, due to high snatch loads and line dynamics. The study quantified the cost associated with the hybrid mooring as a function of water depth.

Client:	Vattenfall
Year:	2021
Service:	Renewables
Project Type:	FOW
Scope:	Hybrid Mooring Design & Costing

VATTENFALL

Case Study

FOW Mooring and Sizing - Technical and Economic Assessment



Tadek were asked to contribute to a techno-economic study for a 1GW floating offshore wind development at a North Sea site. The study encompassed technical suitability, performance efficiency and cost effectiveness, for turbine sizes of 18MW to 22MW, the over-arching study including through life costing, local content, risks and mitigations.

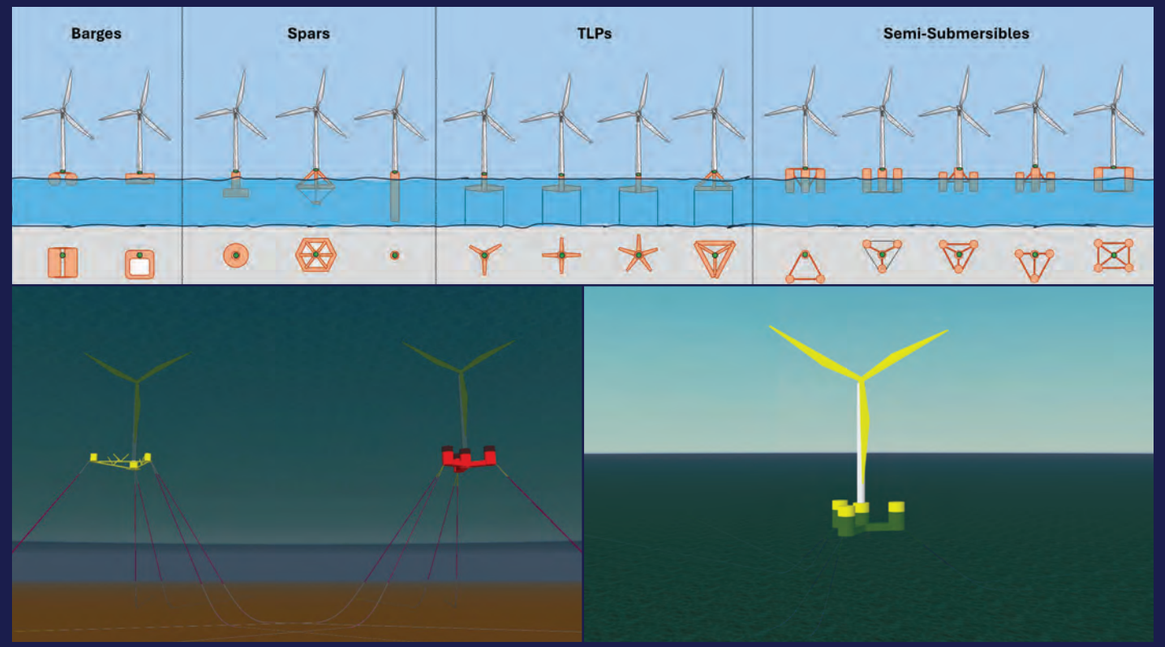
To support this larger work we carried out a comparative assessment of three alternative floating solutions; the work principally focused on platform sizing, and mooring systems, and loosely on T&I, and IAC. The objective was to develop and model sufficient system complexity to enable the project to achieve a valid comparison of options for floating technology for this specific site.

Client:	Ocean Winds
Year:	2023
Service:	Renewables
Project Type:	FOW
Scope:	Technical Assessment & Costing

OW OCEAN WINDS

Case Study

FOW Archetype, Water Depth and Location - Mooring Design and Costing Study



The objective of this project was to produce a database where cost comparisons based on a range of variables can be made. Variables of interest include the platform archetype, considering both catenary and taut mooring configurations, water depth and maximum wave height.

Anchor type also represents an important consideration, and its impact and cost is included within the scope of this project. The database produced from this work aims to inform future decisions regarding the platform archetype and mooring selection for a variety of potential future wind sites.

Client:	RWE
Year:	2023
Service:	Renewables
Project Type:	FOW
Scope:	Mooring Design & Costing

RWE

"Tadek was a great place to work before joining SSE. The team are always an interesting bunch to talk to. They have a fresh approach to tackling challenges, clearly an academic depth, a striving for excellence, and an enthusiasm for their craft which is palpable. In discussing installation engineering and floating wind scopes they have a proactive and results-focussed attitude, the right mix of technical excellence and pragmatism."

Pierpaolo Ricci, Floating Wind Technical Authority SSE

Team / Capabilities

We work collaboratively to provide specialist consultancy, complex analysis, engineering solutions and practical project delivery that reduces technical and economic risk.

Our expertise has been gained on over 300 projects worldwide, from high-value corporate projects to prototype works, delivering robust, innovative and cost-conscious solutions.

Rupert Raymond
Managing Director | Naval Architect

Rupert is a Chartered Naval Architect and Fellow of the Royal Institute of Naval Architects with 20+ years' experience in marine renewables, oil & gas, and marine industries. He has led offshore projects globally, working on heavy lift, cable and pipelay projects the North Sea, Brazil, Nigeria, and the Caspian Sea.

Nigel Terry
Engineering Discipline Lead | Senior Engineer

Nigel is a Chartered (IMECHE) Mechanical Engineer with 25 years' offshore experience in oil & gas, wave, and wind industries. He excels at designing practical structures and planning operations in complex projects. A natural problem solver, Nigel fosters innovative thinking and approaches challenges holistically.

Bijesh Chenna Kandathil
Senior Marine Analysis Engineer

Bijesh is a Mechanical Engineer with 15 years' experience and a post-graduate degree in Ocean Engineering from IIT Madras. He has worked with Keppel and Oceaneering, specialising in umbilical design. Proactive and skilled in marine hydrodynamics, station keeping, and subsea systems, Bijesh provides technical solutions and builds client relationships.

James Tate
Senior Engineer | Naval Architect

James Tate, former head of projects at Tekmar's subsidiary Agiletek, is a Naval Architect with 15 years' experience in offshore wind farm cable and CPS design. He excels in project management, offshore construction, and engineering analysis, leading teams from tendering to completion, ensuring timely execution, budget control, and client communication.

Alastair Berry
Projects Discipline Lead | Senior Project Engineer

Alastair is an experienced Project Manager and Engineer with over 15 years in offshore construction and decommissioning across oil & gas, coastal, civil, and renewable sectors. He specialises in design, problem-solving, and lifecycle management, contributing effectively to all project stages.

Dr Daniela Benites
Engineering Discipline Lead | Senior Engineer

Daniela is a Naval Architect and consultant with over 10 years' experience, including in oil & gas and shipyards in Ecuador. She holds a PhD in Computational Wave-Structure Interaction from UCL and an MSc in Offshore Engineering from Newcastle. Her research on oscillating wave surge converters used OpenFOAM.

Andrew Byrne
Project & Design Engineer

Andrew is a Project and Mechanical Design Engineer with 12+ years' experience in offshore oil & gas, marine, and renewables. He leads Tadek's design capability, supporting SURF installation, decommissioning, and platform upgrades. His expertise includes structural design, sea fastening, lifting equipment, subsea systems, and complex CAD design.

Dan Kyle Spearman
Senior Consultant

Dan specialises in techno-economic studies for offshore wind developers and financiers. With 10+ years of experience, he focuses on technology challenges and cost implications, particularly in floating offshore wind, helping reduce costs and risks for commercialsation while managing complex projects with multiple stakeholders.

James Hunt
Senior Consultant

James specialises in cable systems, techno-economic studies and risk advisory, including expert witness work. He has extensive experience in offshore renewables and power interconnector projects worldwide, focusing on managing risk, cost, and resources to add value through collaborative client partnerships.

Testimonials

"Tadek supported Allseas on a unique pipeline pull-in scope. They integrated quickly, regularly interfacing with various teams, including the Pioneering Spirit operational team, the engineering department, and client. Their analysis work was complex, pragmatic and thorough. Their project engineering agile and responsive. They were an easy-going team to collaborate with."

Marco Nigro, Project Manager
Allseas

"Tadek surprised us with their agility, as well as breadth and depth of engineering. Structural, naval architecture and Orcaflex design engineers from Tadek supported the project engineers for a complete solution to a number of our projects. The flexibility of the team was very noticeable as well as a work ethic and commitment right through the team."

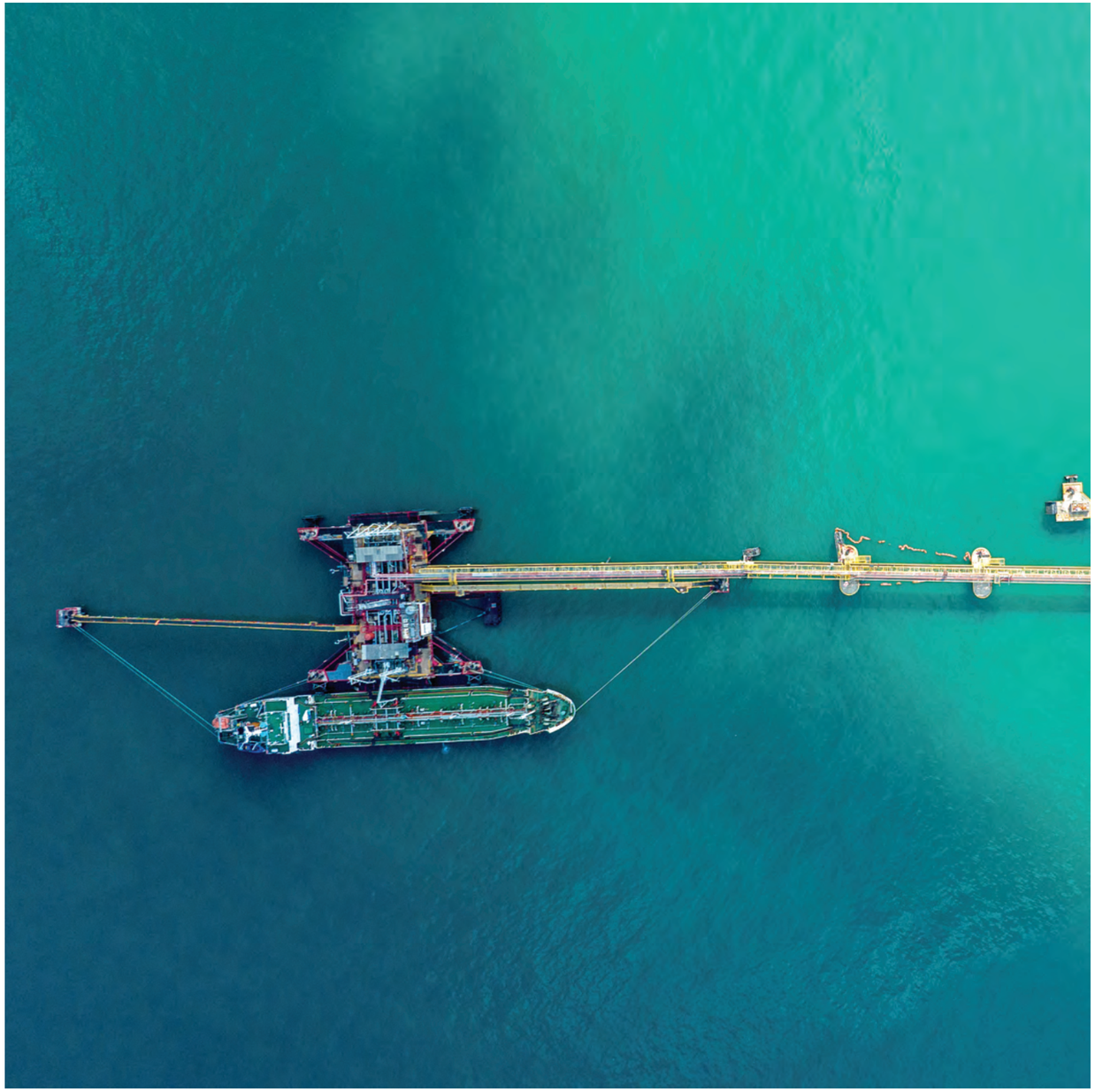
John McGill, Construction Director
De Romein Nearshore

"Tadek are a valuable engineering support partner to N-Sea to meet specialist and sudden demands. In one particular scope, new challenges arose late in the project. The Tadek Orcaflex analysts supported the Tadek project engineers and field engineers to meet the new objectives fast and deliver for the scope. The team always impress with their professionalism and ability to respond. We appreciate the support of Tadek and our supply chain in adding value to our projects."

Dale MacDonald, Operations Manager Subsea Cables
N-Sea Group

"Tadek designed our mooring system for our demonstrator 1.5MW tidal device in 7knots of current and Hs8m conditions. The design remit was challenging, an innovative project of challenging engineering, with little time and limited budget. Their design met these conditions by challenging class criteria to achieve acceptable levels of risk and redundancy whilst keeping costs manageable. Their inventive collaborative approach was exactly what we needed and resulted in a long collaboration over many years."

Mario Iglesias Casal, Chief Operating Officer
Magallanes Renovables



Complex Offshore Engineering. Delivered.

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Services

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