



# NAUTILUS DYNAMICS

Offshore Engineering Solutions

COMPANY PRESENTATION  
(WEB EDITION – APR 26)

SCROLL DOWN



# The Company.



# About the Company.



## *NAUTILUS DYNAMICS brand creation*

Established in 2017 in France, NAUTILUS DYNAMICS brand initially focused its activities on the Dutch and European market

## *NAUTILUS DYNAMICS HK Ltd incorporation*

In 2019, Registration of NAUTILUS DYNAMICS headquarter in Hong Kong to meet growing Asian business



# About the Company.



*Partnerships and network expansion*

Since 2020, multiplication of partnerships to provide more and more services to our clients



*NAUTILUS DYNAMICS FRANCE SAS incorporation*

In 2022, opening of NAUTILUS DYNAMICS FRANCE SAS in Nice



*NAUTILUS DYNAMICS UK LTD incorporation*

Feb. 2024, opening of NAUTILUS DYNAMICS UK LTD in England



# Core Values.

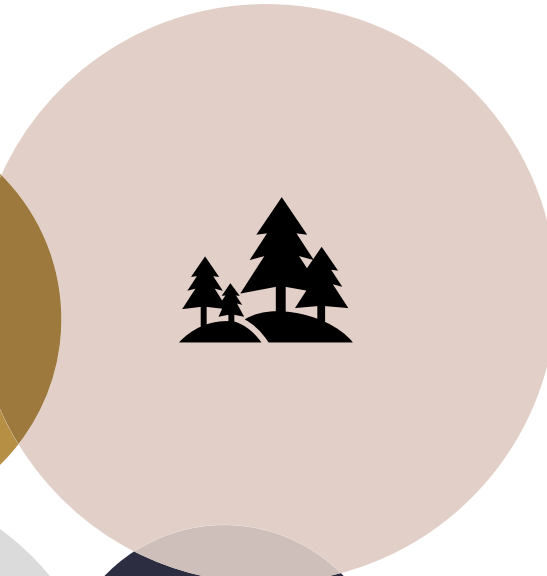
## People

Engineering and technologies at human scale for clients and employees.



## Environment

Respect and fight for the only planet we have.



## Innovation

The strength of a start-up, born and remain at the cutting edge.



## Accountability

Decisions through experience, committing to our engagements.





Gemini

# In Figures

## 150+

OFFSHORE PROJECTS COMPLETED

## 20+

HAPPY CLIENTS

## >100

DOCUMENTATION PROJECT CAPABILITY



A SCALABLE TEAM OF EXPERTS



HIGH PERFORMANCE COMPUTING CREATOR

### THEY TRUST IN US:



# Sectors and Services.

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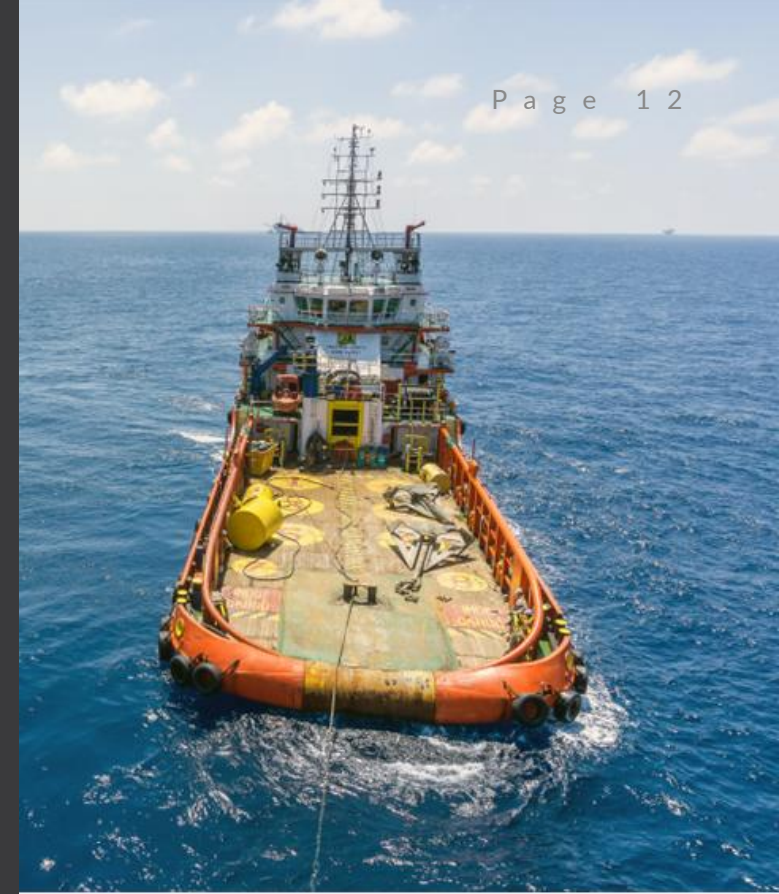


# OFFSHORE RENEWABLE

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# OIL & GAS

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# NAVAL & OPERATIONS

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# Services.

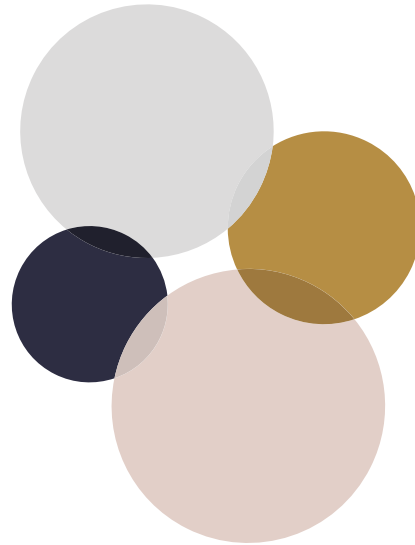
*Services at all stages of your offshore asset's life*

## Engineering

- › Conceptual to Detail Design
- › Package Engineering
- › CLOUD High Performance Calculations

## Installation Supervision

- › Installation Engineering
- › Offshore / Site supervision
- › On-site decision making



## Client Advisory Services

- › ITT
- › Specifications
- › Bid-evaluation
- › Design Review

## O&M

- › Specification
- › Interpretation
- › Inspection

## Project Management

- › Engineering Project Management
- › Package Management
- › Vendors / Sub-contractors Management



# HYDRODYNAMIC & MOORING.

Float. Wind, F(P)SO, CALM buoy, Float. PV, Vessels, ...

## Stability, Sea-keeping

Hydrodynamic assessment of offshore floating structures to evaluate global behaviour under metocean conditions, including motions, accelerations and stability performance.

*Stability • RAO/QTF generation • Motions & accelerations • Seakeeping analysis*

## Berthing & Quay work

Engineering for safe berthing operations: sizing & selection of berthing lines, fenders, verification of quay-side arrangements and on-site inspection to ensure compliance with design requirements.

*Berthing line sizing • Fender loads • Quay interface • Operational safety*

## Mooring System, Design, Life Extension

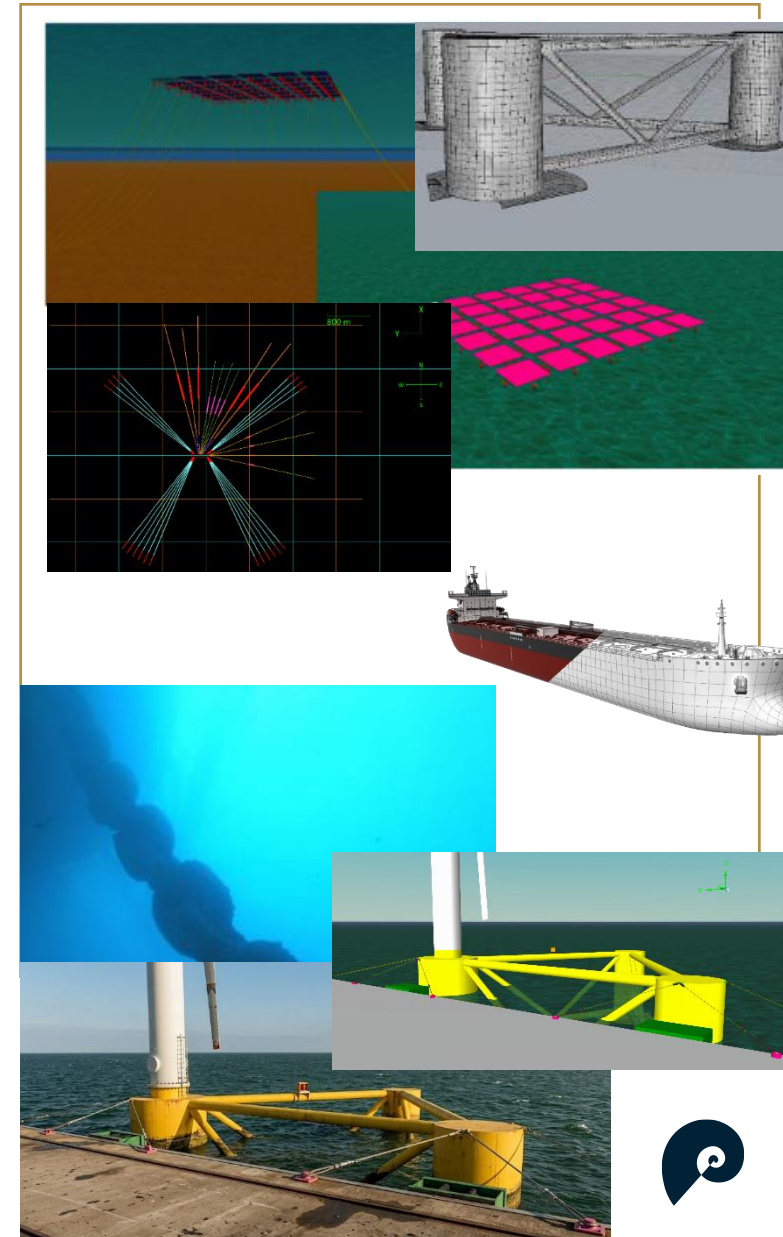
Design and verification of permanent or temporary mooring systems through static and fully coupled dynamic analyses, ensuring safe station-keeping.

*Design Load Report • Turret & spread mooring • Coupled analysis • Fatigue • OPB/IPB*

## Specification & Package Follow-up

Preparation of technical specifications and engineering follow-up for fabrication and delivery of mooring, berthing components from design through FAT and commissioning.

*Technical specifications • Procurement support • Fabrication follow-up • FAT/SAT*



# SURF & SUBSEA.

IAC, Risers, Hoses, Umbilicals, Cables, Pipelines, Arches...

## SURF & Cable Analysis & Design

Engineering design and analysis of subsea systems including risers, hoses, cables and pipelines for offshore renewable and oil & gas developments.

*Subsea configuration • Static & dynamic analysis • Lazy wave / steep wave • Subsea Arches*

## OCIMF/GMPHOM/API 17k Expertise

Extreme and Fatigue engineering assessment and compliance verification of offshore loading systems and hoses in accordance with OCIMF, GMPHOM and API 17K requirements.

*OCIMF & GMPHOM compliance • API 17K hose design • Marine terminals (SPM/CALM) • Global performance & fatigue*

## On-bottom stability

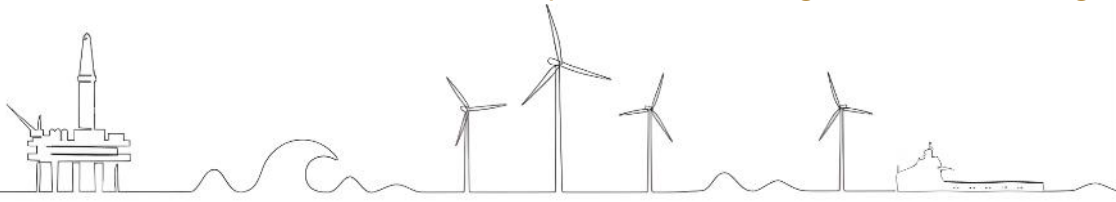
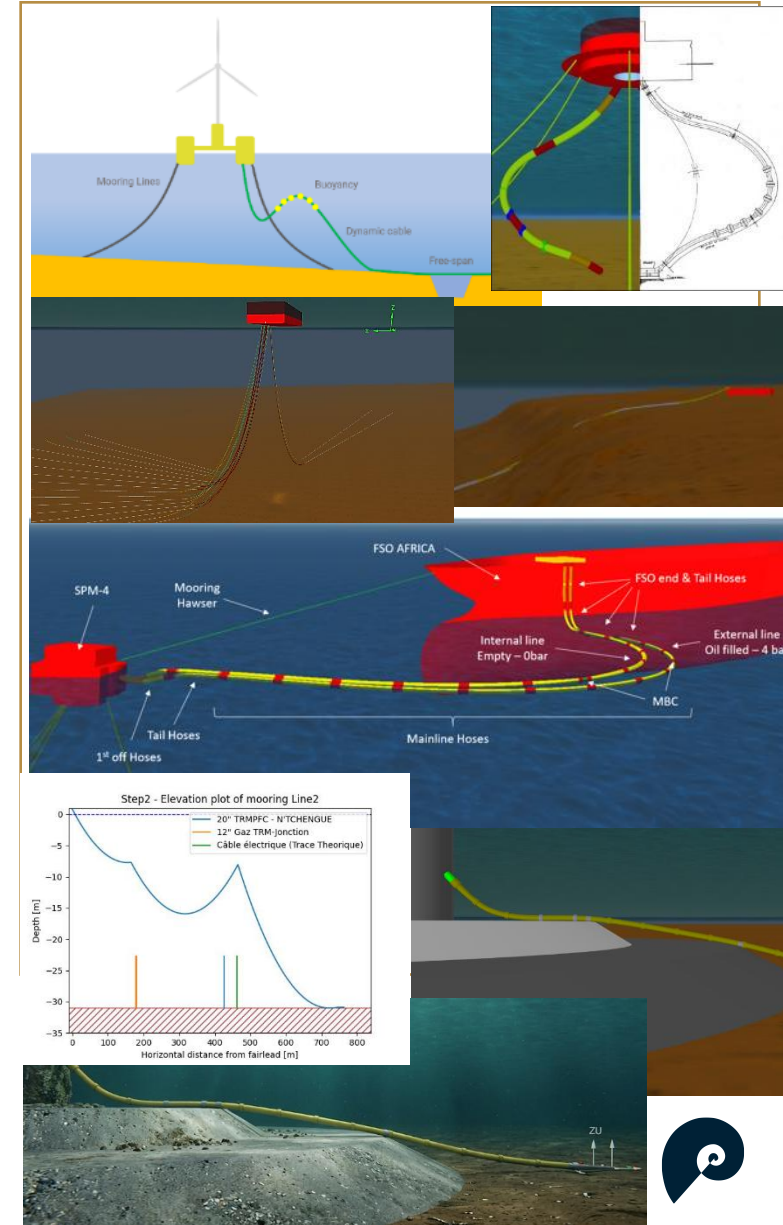
Assessment and design solution of seabed stability for cables, pipelines and subsea components under hydrodynamic loads and soil interaction.

*On-bottom stability • Hydrodynamic loads • Soil interaction • Free-span assessment • DNV-RP-F109*

## Specification & Package Follow-up

Preparation of technical specifications and engineering follow-up for fabrication and delivery of subsea and offshore loading components from design through FAT and commissioning.

*Technical specification • Vendor evaluation • FAT/SAT • Manufacturing follow-up • Interface management*



# STRUCTURE AND DESIGN.

Installation Aids, Modules, Buoy, PLEM, Anchors, Hull, ...

## Primary and Secondary Steel Design

Structural design of offshore components including installation aids, FPSO modules, buoys and subsea structures, considering operational, transportation and installation load cases.

*Primary steel • Secondary structures • Installation loads • Transport & lifting checks*

## Fatigue and Life extension

Fatigue assessment of offshore structures and welded connections to evaluate accumulated damage, remaining life and possible reinforcement or mitigation measures.

*Fatigue assessment • SN curves • Hot-spot stress • Life extension studies • OPB/IPB*

## Global and Local FEA analysis

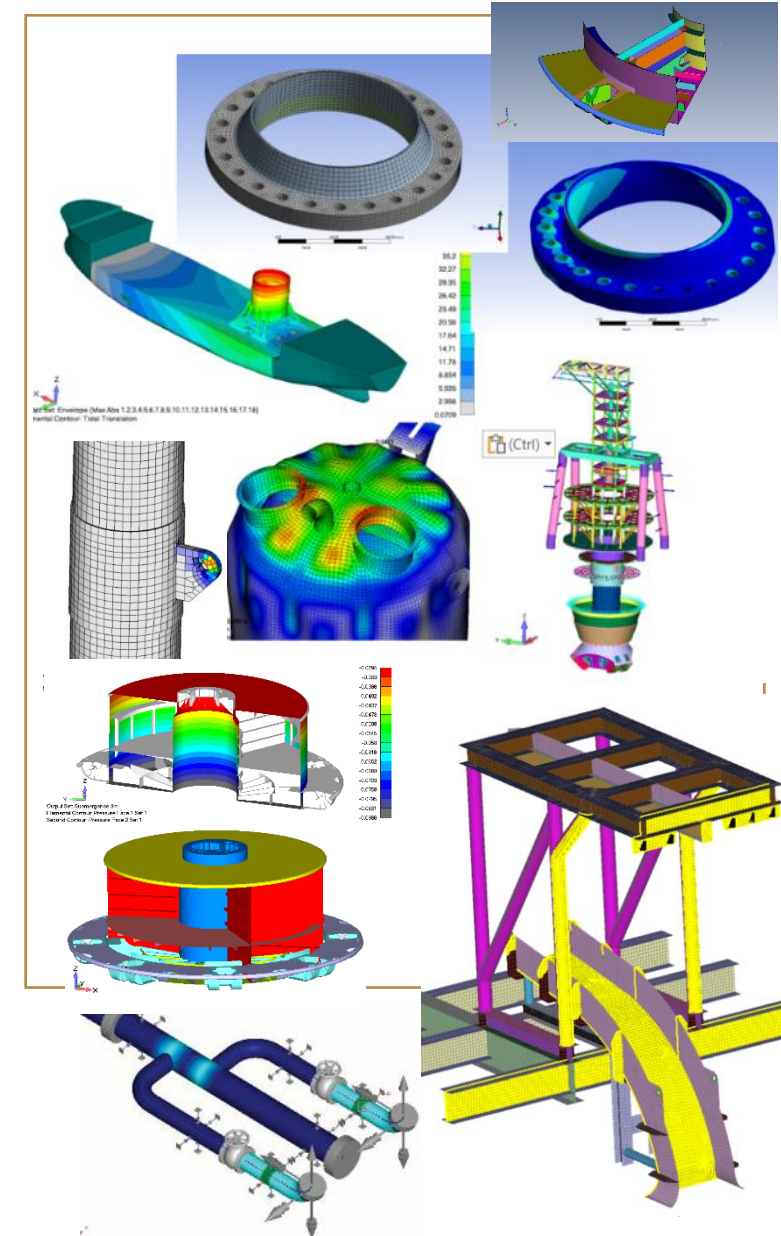
Finite element analyses to assess structural integrity under operational and extreme loads, including local stress verification and global structural behaviour.

*Global FEA • Local stress checks • Non-linear analysis • Structural verification*

## Construction Drawings & Yard follow-up

Preparation of fabrication drawings and engineering support during manufacturing to ensure compliance with design intent, codes and project specifications.

*Fabrication drawings • Yard support • Quality verification • As-built follow-up • Dossier Ready4Fabrication*



# NAVAL & OFFSHORE OPERATION.

Transport, Towage, Installation & Marine Operations

## Sea-keeping, Towing, Ship control

Assessment of vessel motions, stability and controllability during towing and offshore operations under metocean conditions. Definition and specification of towing gears.

*Seakeeping analysis • Tow configuration • Accessories  
Motion assessment • Operational limits*

## Stability Calculation, Verification

Verification of vessel and floating structure stability during transport, installation and offshore operations.

*Intact stability • Damage stability • Ballasting checks •  
Marine assurance*

## Mooring hook-up, cable & flowline

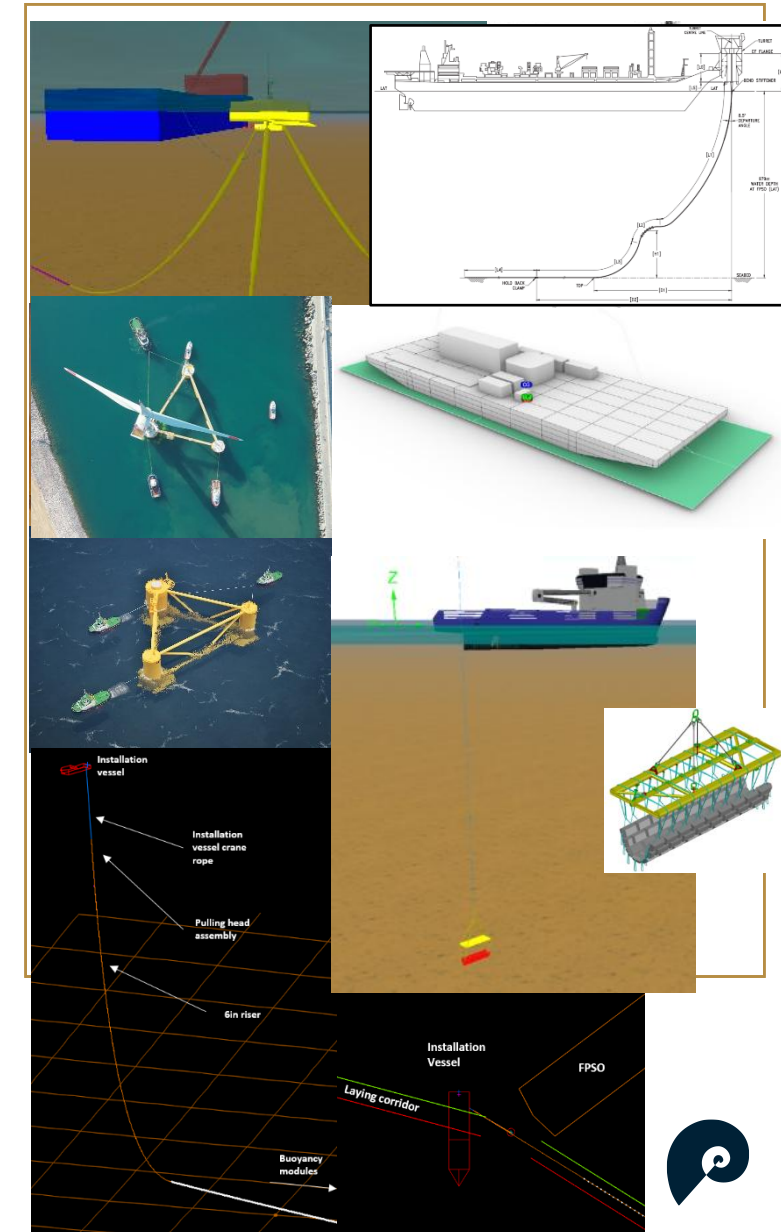
Engineering analysis of installation and hook-up operations for moorings, cables and flowlines, including configuration checks and operational constraints.

*Hook-up analysis • Installation configuration •  
Clearance checks • Operational procedures*

## Offshore/Subsea Lifting, Laying

Engineering for offshore lifting and subsea installation operations including lift planning, rigging design and installation verification such as Surface crossing, landing, laying phases.

*Lift analysis • Rigging design • Installation checks •  
Method • Storyboards • 3d rendering*



# DUE DILIGENCE AND ADVISORY.

*In details,*

## **Floating Wind technology**

Analysis of floating wind technologies for M&A operations (seller or buyer). Floating Wind concepts screening and evaluation for Project developments.

*Product Technical Due Diligence, Risk Assessment*

## **Owner Engineering / Advisory**

Support to project developers for elaboration of execution plan, scope preparation, engineering management & supply chain management.

*Floater & Turbine Packages management activities*

## **Industrialization & Port suitability**

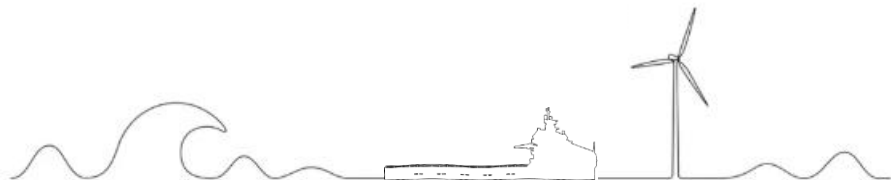
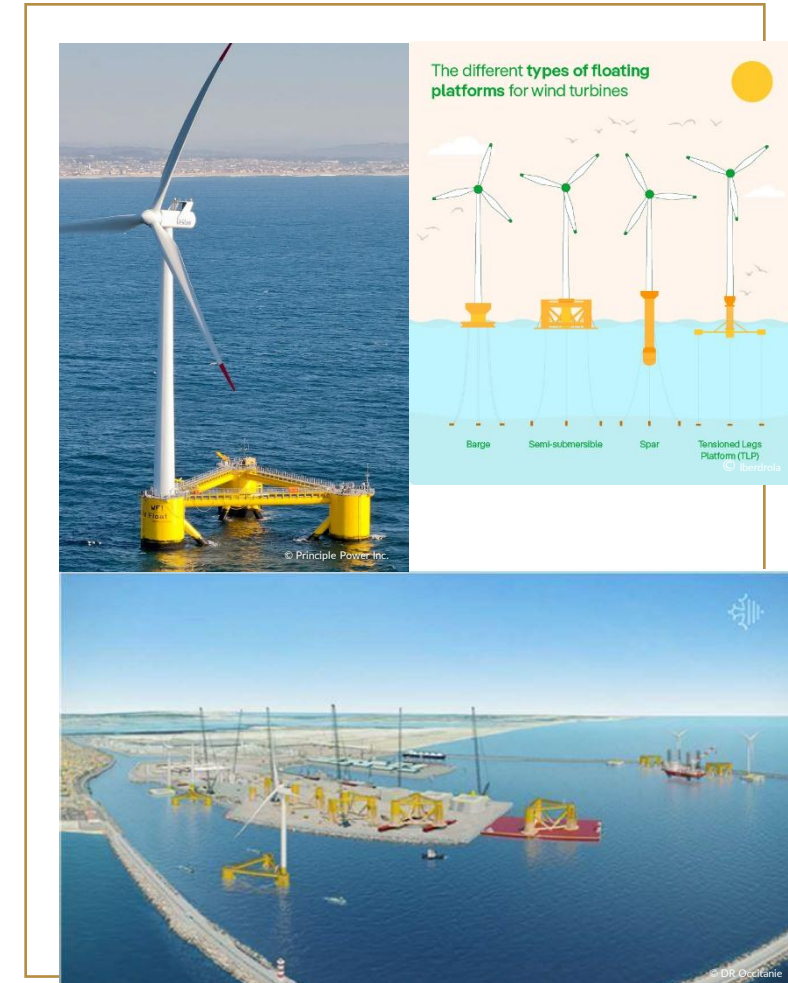
Screening and evaluation of ports capabilities. Review of Construction/Installation execution plans for Floating wind projects.

*Ports & Harbours suitability, Project technical due diligence*

## **Levelized Cost Of Energy (LCOE)**

Technical LCOE modeling (Devex, Capex, Opex). Project Business case analysis and sensitivity analyses to highlight key parameters and drive project scenarii.

*LCOE model, Costs comparisons & analyses*



# OFFSHORE INSPECTIONS.

*In details,*

## ***Topside & Subsea Inspections***

Owned professional compact ROV rated up to 200m WD. Ideal for mooring lines, cables, risers, hull appendages, and structural elements.

*Fast mobilization, independent reporting, and cost-effective execution tailored to offshore needs.*

## ***Inspection & Maintenance Programs***

Development of tailored inspection and preventive maintenance plans for topside, mooring systems, risers, and subsea

*Planning, execution, reporting & follow-up*

## ***Subsea Hardware Assessment***

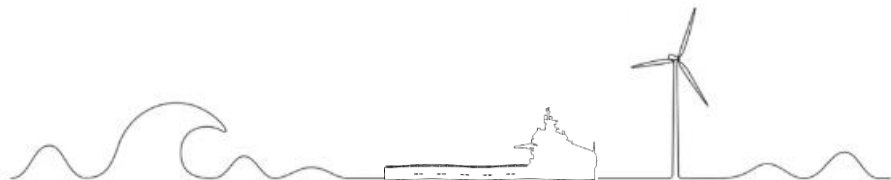
Integrated inspection and engineering review of mooring components, connectors, chains, and subsea structures, combining in-house design expertise with local, independent inspection capabilities.

*Ensures fitness-for-service, supports life extension, and aligns with class requirements.*

## ***Topside Structural Assessment***

Visual and NDT inspections of topside structures, including hull fittings, fairleads, and load-bearing components. (with partners)

*Structural integrity checks, corrosion mapping, and repair recommendations.*



# LAST BUT NOT LEAST.

*In details,*

## Piping

Structural and mechanical assessment of piping systems and supports through finite element analyses and code-based verification.

*Pipe stress analysis • Supports verification • Welds & bolting • FEA (ANSYS/FEMAP)*

## Geotechnical

Engineering support for geotechnical investigations and foundation design for offshore anchors and subsea structures.

*Soil investigation • Foundation design • Piles & drag anchors • Gravity base*

## Cathodic Protection

Design and verification of cathodic protection systems for offshore structures including anode sizing, layout and current distribution assessment.

*CP design • Anode sizing • Current distribution • Corrosion protection*

## 2D and 3D drafting/modelling/rendering

Production of detailed engineering drawings and 3D models supporting design, fabrication and installation activities.

*2D drafting • 3D modelling • Fabrication drawings • Visualisation*

**Table 6.1** Recommended critical and final design current densities (ADC) for measure against bare metal surfaces, as a function of depth and stress region based on surface water temperature

Depth	High Potential				Low Potential				Anode			
	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final	Initial	Final
0-20	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20-50	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50-100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
100+	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Notes	ADC = Anode Design Current Density (ADC) for measure against bare metal surfaces, as a function of depth and stress region based on surface water temperature. See Table 6.1.1 for further details.											

**Table 6.2** Recommended values for anode capacity for calculation of anode coating breakdown factors (L)

Depth (m)	High Potential				Low Potential			
	A	B	C	D	A	B	C	D
0-20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
20-50	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
50-100	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
100+	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0



# Research & Development.



# Innovation & Means.

*stay at the cutting edge and go beyond ...*

## 2048

Number of CPUs

NAUTILUS DYNAMICS, through its sister brand [dynamicscomputing.com](http://dynamicscomputing.com) has invested in extensive computing resources to better serve its clients. All our HPC servers are located in our datacenter in France.

## 2+

Internal Projects

Have constantly at least 2 internal R&D projects on going to develop for instance analysis methodologies or IT tools and become more efficient and qualitative in our future works.

## 8+

Software Licenses

NAUTILUS DYNAMICS invests in software to stay up to date and has licenses for the main software used. This includes : Orcaflex, Rhino 7, Orca 3D, BV Ariane, HydroStar, Shear7, Autocad, Solidworks, Unreal, ...



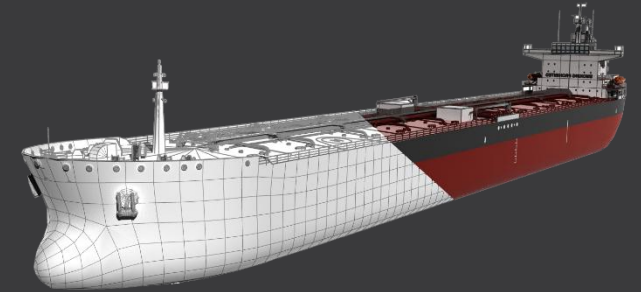
# Nautilus Global Tankers Database

Live R&D Project #1

## Innovation & Means.

### Description

The NAUTILUS GLOBAL TANKERS (NGT) DATABASE offers data on 30,000+ tankers and hydrodynamic models ready-to-use for marine and offshore industries, supporting engineering studies like mooring, berthing, CALM buoy design, and risk analyses. It's user-friendly and reliable.



30 000+

Vessels

Certification  
Ready

DNV, ABS, BV

Made for  
Orcaflex & more

ready-to-use



# Floating Wind Benchmark

Live R&D Project #2

## Innovation & Means.

### Description

Generate and maintain an up-to-date database of the most popular offshore wind floaters for all turbine sizes. Develop a fast, reliable methodology that matches the designers' own models and results. Achieve technology-independent benchmarks with a unified methodology (consistent hydrodynamic approach, same load case matrix, same tools) to inform developer selection in the most reliable way possible.

5 to 20MW

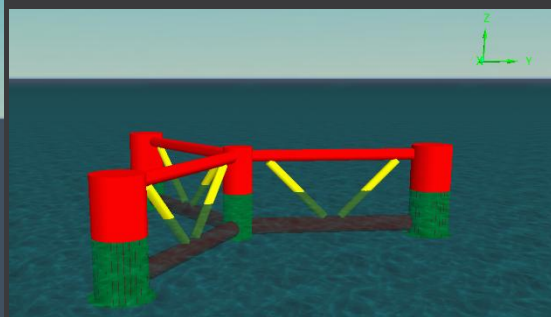
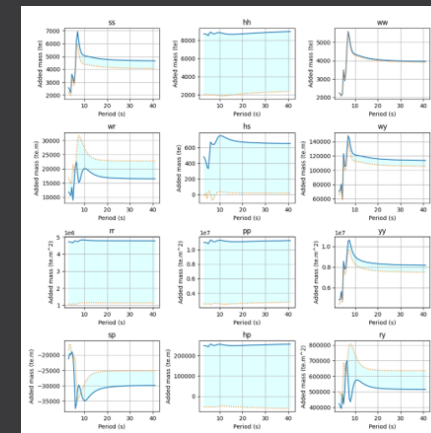
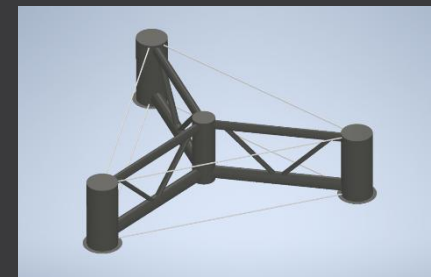
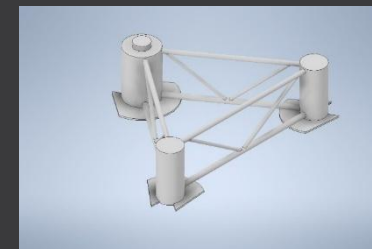
Technology

10+

Floaters

## Pre-FEED & FEED READY

For hydrodynamics, mooring and cables



## And even more

# Innovation & Means.



- HydroPanda : A post-processing program in Python able to manage large amount of data from different software.
- LookingForHmax : A pre-processing program in Python to identified waves max occurrence time in a batch of irregular seastates
- 3D interference plotter: A post-processing program in Python in order to display in 3D interferences between lines, pipes, cables, etc
- FreeSpan Postprocessor: Python program to identify and classify free-spans along a laying route for cable, pipes or umbilicals.
- etc

# Contact.

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# Our addresses

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Information & Quotations on [nautilusdynamics.com](https://nautilusdynamics.com)



*« La mer est tout ! Elle couvre les sept dixièmes du globe terrestre. Son souffle est pur et sain. C'est l'immense désert où l'homme n'est jamais seul, car il sent frémir la vie à ses côtés. »*

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*Vingt mille lieues sous les mers, Jules Verne*

