DORIS WE ENABLE CHANGE



Excellence and innovation

27.09.2022



1 - DORIS group

2 - Our Markers

3 - Our Activities

1.0

DORIS group



Leader in Engineering

DORIS is a leader in Engineering,
Advisory and Project Management for Energy.

> We make conventional energies cleaner.
> We make renewables
and new energies possible.



QUALITY

HSSE

ETHICS

CLIENTS SATISFACTION



A Global Company

1,000
PEOPLE

HQ
IN PARIS

16
COUNTRIES

17
OFFICES

1
TANK TEST

HIGH VALUE
CENTER IN KL



Confidential



DORIS Platform

Vision

Make conventional energies cleaner and new energies possible

Mission

Designing and managing developments of producing energy within the highest respect of environment and life, through the integration of the most efficient technologies.

Ambition

Become a leader in consultancy, engineering, project management & operations, providing the most efficient and sustainable solutions to the energy challenges of today and tomorrow.

Positioning

We make things happen in the energy industry

Confidential

Our Values



Reliability

A project awarded to DORIS is a project that will be executed and completed on time, on budget, to the highest standard of quality.

We are reliable, we want to deliver the best value for our clients, for our people, for the society, for the planet.



Environmental Integrity

We are driven every project a more sustainable project. We constantly challenge ourselves to improve our own sustainability and that of our clients.
We commit to working as low-carbon as possible. We make every ton invested, by our clients in their development, as productive as possible.



Think out of the box

Innovation is integral for change. We place innovation at the core of our thinking and culture and we are committed to challenging convention.
Innovation is essential to reduce carbon emissions and maximise the sustainability of projects.
We encourage our engineers to innovate and to enable change.

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An Independant group

10,15%
Treasury shares

9,85%
FSCP Doris Shareholders

15,4%
Crédit Mutuel Equity Scr



20%
Vinci Construction

20%
Graaven Holding

24,6%
Crédit Mutuel Equity Scr

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DORIS' Projects



Oil & Gas

Baldpate

Lianzi well spacing and terrain features created technical challenges for flow assurance and operability.
Traditional hydrate mitigation methods such as blowdown and dead oil circulation were not feasible given the offset distance, large uphill slope, and host type.



Offshore wind

Ormonde

Lianzi well spacing and terrain features created technical challenges for flow assurance and operability.
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GhG Reduction

Orbost

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2.0

Our Markets

Our Markets

Conventional Energies



- Subsea (SURF, SPS)
- FPSO's & Platforms
- FLNG
- Onshore
- Asset Life Extension
- Asset Management
- Brownfield Modification
- Decommissioning

Renewable Energies



- Fixed Offshore Wind
- Floating Wind
- Articulated Wind Column
- Sea Water Air Conditioning
- OTEC

New Energies



- GHG reduction for Industries
- Hydrogen & Ammonia
- Carbon Capture Utilization & Storage
- Biogas

Other markets



- Coastal Developments
- Aerospatiale

Our Activities







Engineering

- Greenfield and Brownfield
- Conceptual and Pre-FEED
- FEED
- Detailed Design
- Owner's Engineering
- Consulting
- Consenting, Permitting
- Commercial Engineering
- Field Architecture
- Proprietary Technologies:
  - NereWind
  - AWC

Advisory

- Energy Transition Strategy
- Energy Projects Dev. Plan
- Net Zero Strategy
- Dev. and commercialization of new technologies
- Supply Chain & Local Content Assessment
- Pre-feasibility studies
- Public consultations
- Environmental permitting, ESIA, PM

Project Management

- Project management
- Interface management
- Technical Authority
- HSE
- Quality
- Cost control
- Planning
- Tender evaluation Procurement
- Construction
- Operations support

Technical Assistance

- Deep Offshore Developments
- Conventional Offshore Developments
- Marine Renewable Energy Projects
- Offshore Terminal Projects
- Field Operations
- Project Management Organization

Asset Management

- Asset Operator (Duty Holder)
- Operations & Maintenance
- Asset Integrity Management
- Shutdown Campaigns
- Emergency Response
- Brownfield Engineering / Minor Modifications

Engineering O&G | Decades of experience in mega projects

Perenco Sanaga Gas Plant



Perenco Peru Block 67



TotalEnergies Moho Bilondo Terminal



Shtokman LNG Terminal



Sonatrach Timimoun Gas Plant



Laggan Tormore subsea dev. & terminal



Confidential

Engineering O&G | Decades of experience in mega projects













DORIS Experience in LNG / FLNG Developments

Key References | Concept to Detail & Advisory



2004-2007

SHELL Bonny NLNG

Detail Engineering
LNG Storage
LPG and Condensate Treatment and Storage



2009-2010

TOTAL Generic FLNG

Conceptual Studies
NG pre-Treatment (AGRU, dehydration), Liquefaction (N2), Storage, Mooring & Offloading



2010-2011

SDAG Shtokman LNG

FEED Optimisation
Gas, LNG and Condensate Plant Optimisation and Modularisation



2011-2012

ENGIE Bonaparte FLNG

Pre-FEED
NG pre-Treatment (AGRU, dehydration), Liquefaction (N2), Storage, Mooring & Offloading



2020

Major Independent Small Scale FLNG

Pre-FEED, FEED & Early Detail Engineering
Rich gas receiving facilities, compression, NG pre-Treatment (AGRU, dehydration), Liquefaction, LPG & Condensate stabilization, Storage, Mooring & Offloading

On-going



2018-2021

BP Greater Tortue FLNG

Advisory for the Government of Senegal
NG pre-Treatment, Liquefaction (SMR), Storage, Mooring & Offloading (Converted LNGCV)



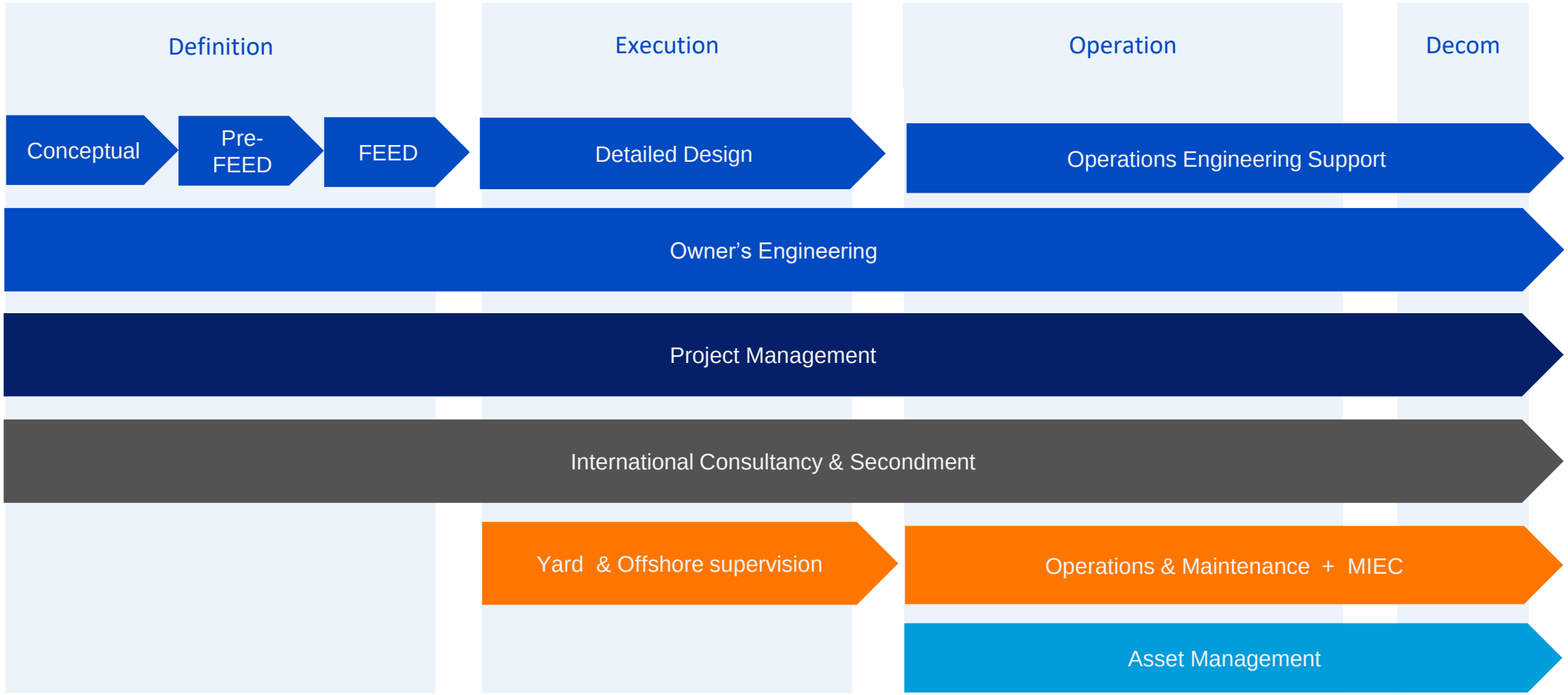
2021

Sublime Energie BioGas Treatment & Liquefaction Pilot Unit

Pre-FEED, FEED, Detail Design and PMS for Procurement, Construction & Start-up of the Treatment Pilot Unit

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The whole asset lifecycle



Projects



Oil & Gas

We are committed to increasing the sustainability of every oil and gas project by drawing on our experience in conventional energies and utilizing our innovative spirit.



Offshore Wind

DORIS draws on its 20 years of experience in offshore wind to deliver robust, innovative solutions to clients across the globe.



Hydrogen

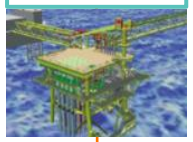
DORIS draws on its expertise across conventional and renewable energies to support the development of blue and green hydrogen strategies and associated projects.

2.1

Conventional Energies

DORIS Detailed Design Experience | Oil & Gas

Soroosh (**Detail**) 2000-2001



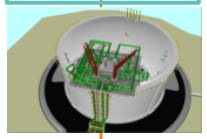
South Pars 2&3 (**Detail**) 2000-2001

South Pars 4/5 (**Detail**) 2002-2003



South Pars 6/7/8 (**Detail**) 2002-2004

NLNG 6 (**Detail**) 2004-2006





Moho Bilondo - Djeno (**Concept, Detail**) 2006-2009

Usan FPSO (**Detail**) 2008-2010



CLOV FPSO Mooring (**Detail**) 2008-2010

Moho N. TLP (**FEED, Detail**) 2012-2013



Moho Nord FPU (**Detail**) 2012-2013

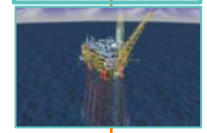
Yadana (**Detail**) 2014-2015

WestHub (**Detail**) 2016-2017



Aquarius Pipeline (**Detail**) 2018

Shwe ph3 (**Detail**) 2020-2021



Haldia PiP (**Detail**) 2020

2000

2005

2010

2015

2020

Farwah FPSO Turret (**EPCI**) 2001-2003



De Ruyter GBS (**Detail**) 2003-2005



Moho Bilondo FPU (**Detail**) 2005-2007



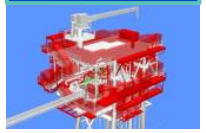
South Pars 1 (**Detail**) 2007-2008



SHWE ph1 (**Detail**) 2009-2010



Ofon 2 (**Detail**) 2011-2014



Yucal Placer (**FEED,Detail**) 2012-2014

Egina FPSO Mooring (**Detail**) 2013-2014

Ichthys M8&M6 (**Detail**) 2015

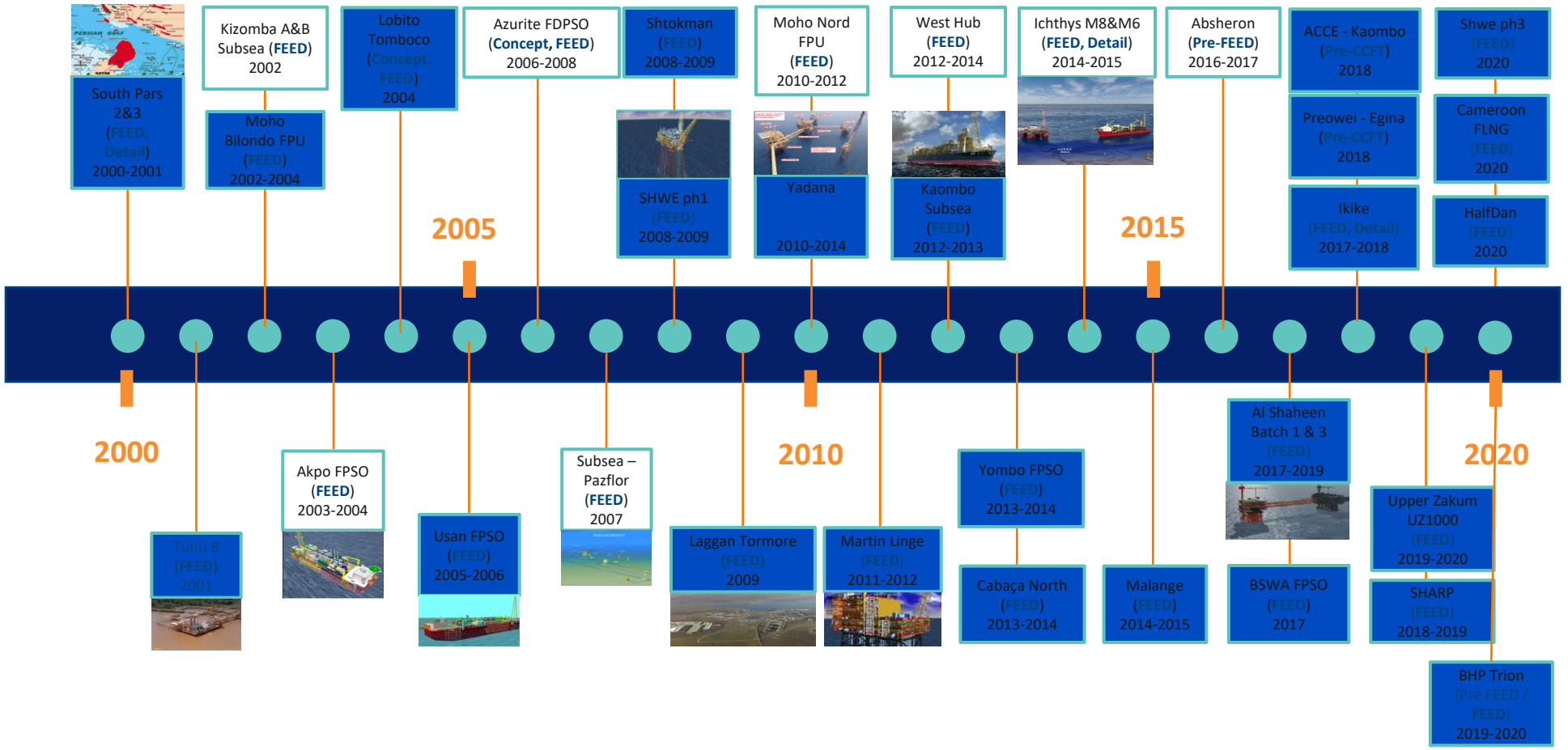


Ikike (**FEED, Detail**) 2017-2018



Zinia Phase2 (**Detail**) 2018-2019

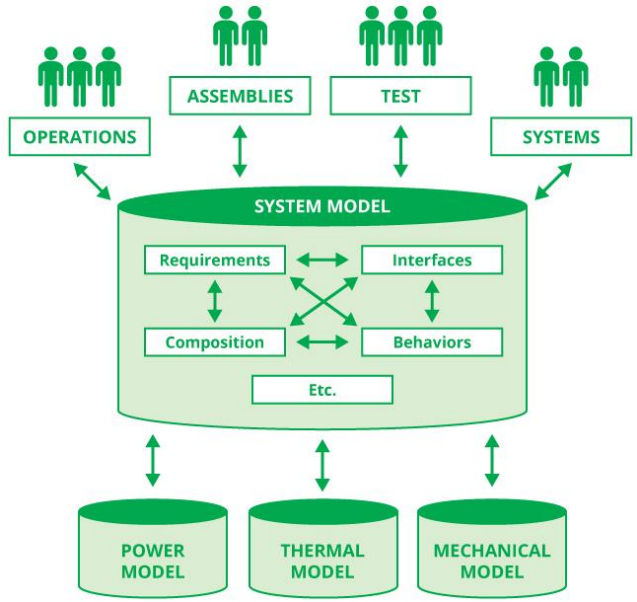
DORIS Concept to FEED Experience | Oil & Gas

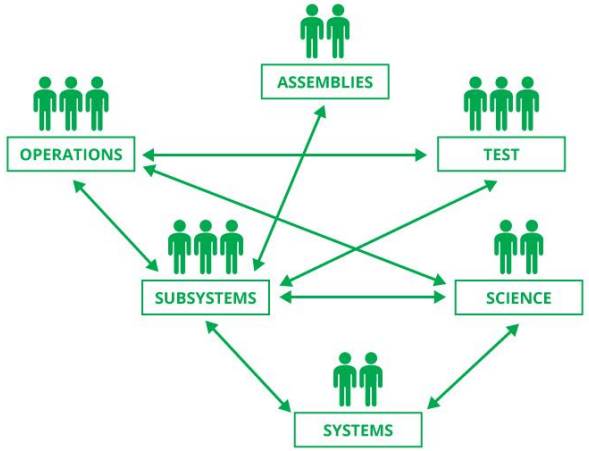


DORIS, Inc. Subsea Capability

Subsea Systems Engineering

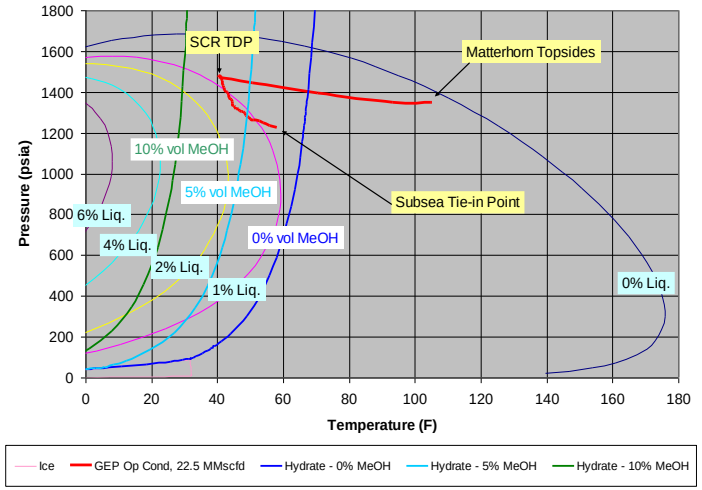
- Based on API 17A requirements
- Doris approach:
  - Fully Integrated System
  - Model-Centric Based Systems Engineering
    - Supports system requirements
    - Analysis
    - Interfaces
    - Standardization
- Avoids the traditional document-based SE
  - Loss of detail
  - Incorrect information flow
  - Miscommunication

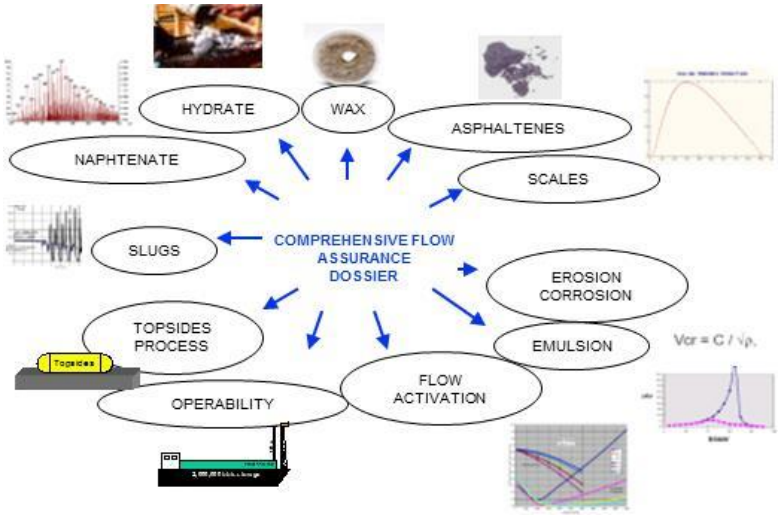




Flow Assurance Capabilities

- System approach to Flow Assurance Analysis
- Transient & steady state analysis
- Start-up / shut-down modeling
- Slugging prediction
- Development of hydrate/wax mitigation strategy
- Development of chemical injection program
- Development of operating procedures
- Software
  - OLGA
  - PIPEsim
  - PVTsim



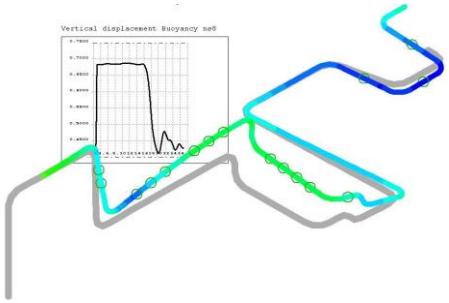


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Subsea Hardware / Controls Capabilities

- Specification/procedure development
- Controls electrical/hydraulic/communication analysis
- Detail design
  - Tooling
  - PLEM/PLET
  - Rigid jumper
  - Foundations
- Construction/project management
- Seafastening design
- Hookup/installation/commissioning
- Software
  - CSI - CableNet
  - AutoCAD / AutoDESK Inventor / Civil 3D









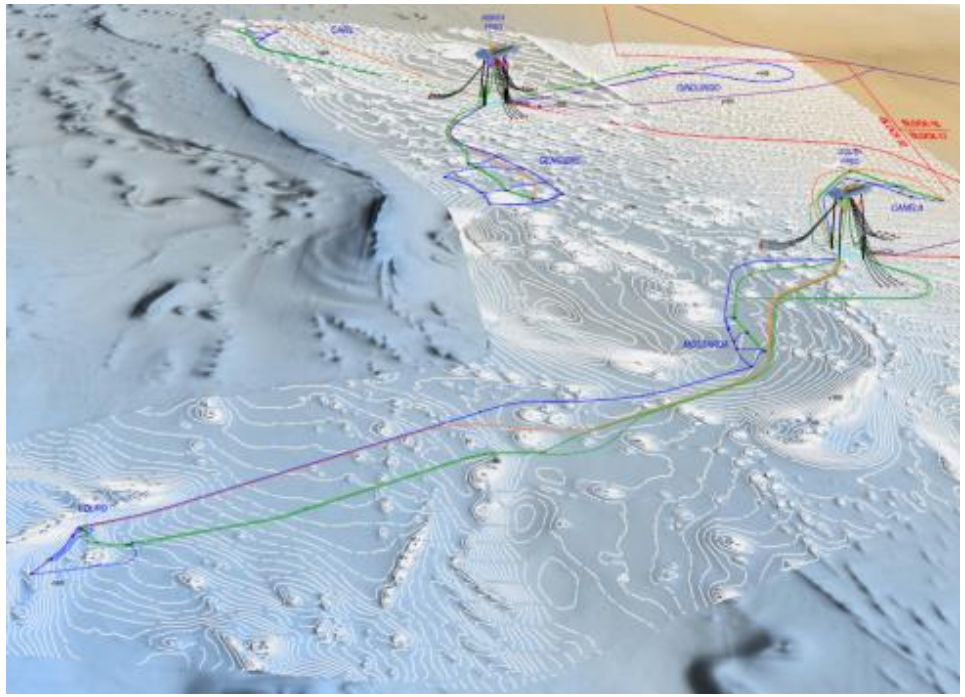
Spool and Jumper Detail Design

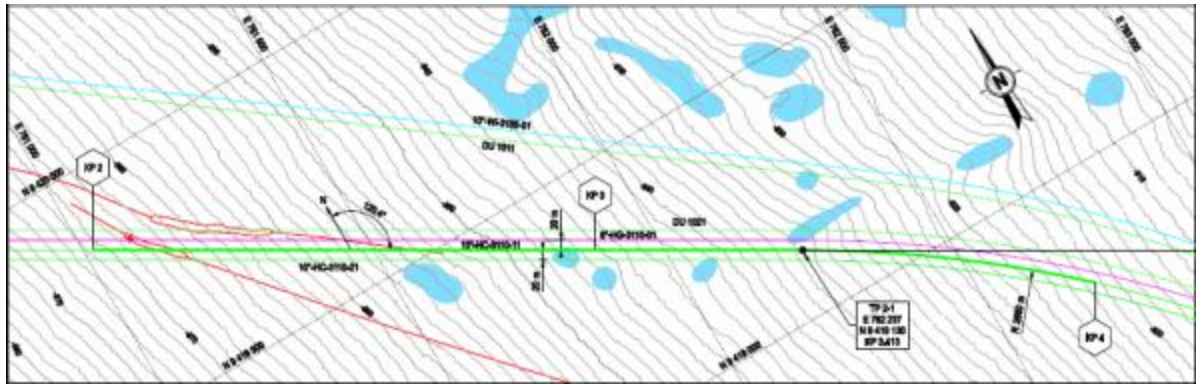
- Concept screening & selection
- Detailed design of Jumpers
  - In-place analysis
  - Installation analysis
  - Slug fatigue loading
  - Current Induced Vibrations
  - Dropped object/ROV impact/ Snag load
  - M / U / Z / L shapes
- Fabrication and installation support
- Software
  - ABAQUS (in-house toolbox)
  - ORCAFLEX
  - AUTOPIPE
  - DEEPLINES



Pipeline / Flowline Engineering Capabilities

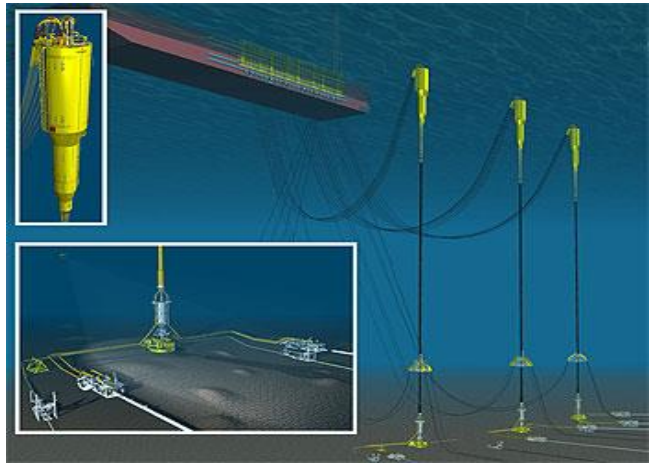
- Pipeline and Flowline Design
  - Wall Thickness
  - Free Span
  - Expansion
  - Lateral Buckling
  - Pipe Walking
  - Trawl Interference
  - Fatigue Assessment
  - Installation analysis
- Route survey and selection
- Software
  - In-House Toolbox
  - ABAQUS/ANSYS
  - OFFPIPE / ORCLAY
  - AUTOPIPE / CAESAR





Riser Engineering Capabilities

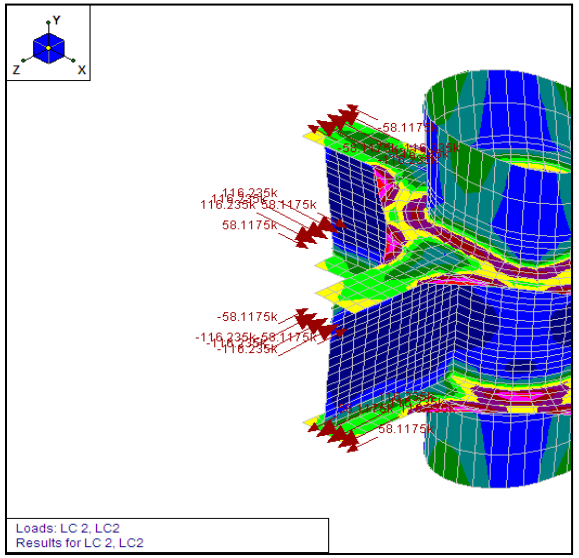
- Riser concept screening & selection
- Riser verification analysis including CVA
- Riser installation analysis and support
- Detailed design of SCRs & hang-off systems incl. pull tubes & TSJs
- VIV, VIM and interference analysis
- SCR / Soil Interaction analysis
  - In-house capability to model nonlinear (degraded) soil / SCR interaction so as to accurately predict “trenching” & its effect at riser touchdown
- Riser hardware support and delivery
- Software
  - In-House Toolbox
  - ABAQUS
  - FLEXCOM
  - ORCAFLEX



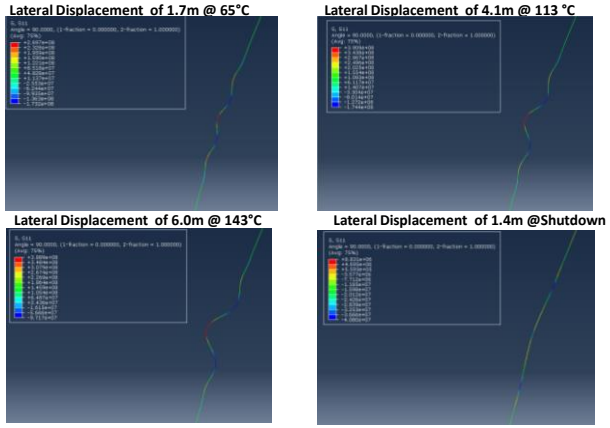
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Engineering Capabilities

- Subsea Hardware Design Experience
  - FMC
  - GE (Vetco)
  - DrilQuip
  - Cameron
  - Unitech International
- Material Science
  - Welding
  - Corrosion
  - Material fatigue
  - Material selection (including cladding)
  - Inspection Acceptance Criterion



Zoom-in view of buckle site No. 6



*Deformation scale of 5 applied
*Temperature referred at Inlet
*Longitudinal stress of outer pipe shown in legend

Technical Safety & Risk Management

Hazard Identification

- HAZID / HAZOP
- FMEA / FMECA

ALARP Demonstration

- ALARP Analysis
- Cost-Benefit Analysis

Quantitative Risk Assessment & Modeling

- Fire and Explosion / Blast
- Flammable / toxic gas dispersion
- Fault Tree Analysis (FTA) / Event Tree Analysis (ETA)
- QRA

Identification & Assessment of Control Measures

- Safety Integrity Level(SIL) Assessment / Verification
- Layer of protection analysis (LOPA)
- Bow-tie analysis
- Critical element identification
- Performance standards

Qualitative Risk Assessment

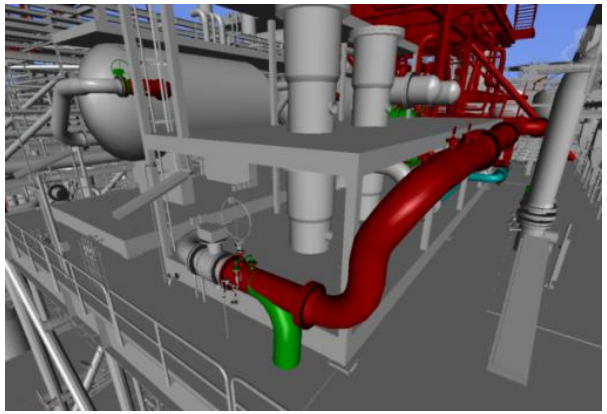
- Dropped objects
- Transportation (Air, Marine)

Safety in Design & Loss Prevention

- API 520 / API 521 / API 14C / API 17V / NORSOK S-001

Emergency Preparedness

SIMOPS





2.2

Renewable Energies

We utilize decades of expertise in the energy industry to develop innovative, industry-leading renewable projects.

Offshore Wind

SWAC & OTEC



33

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Renewables

We utilize decades of expertise in the energy industry to develop innovative, industry-leading renewable projects.



Offshore wind

DORIS draws on its 20 years of experience in offshore wind to deliver robust, innovative solutions to clients across the globe.



Swac & OTEC

DORIS is exploring the promising potential of Sea Water Air Conditioning and wider ocean energies.

Renewables



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Renewables Markets



Offshore wind

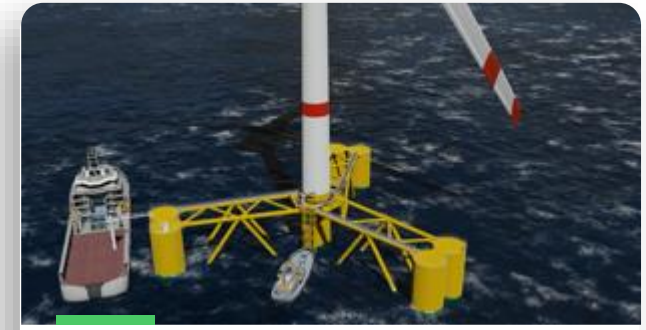
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SWAC & OTEC

DORIS is exploring the promising potential of Sea Water Air Conditioning and wider ocean energies.

Renewable Products



Nerewind[tm]

60 years of DORIS expertise in offshore energy engineering brings us the opportunity to develop a floating wind platform: NereWind ™



AWC

AWC Technology Ltd is dedicated to the development and deployment of the Articulated Wind Column (AWC), a deep-water floating foundation. The AWC is a specialised, single-anchor foundation suitable for water depths between 80 and 250m.

Renewable Projects



Offshore wind

Belfast

Lianzi well spacing and terrain features created technical challenges for flow assurance and operability.
Traditional hydrate mitigation methods such as blowdown and dead oil circulation were not feasible given the offset distance, large uphill slope, and host type.



Offshore wind

Ormond

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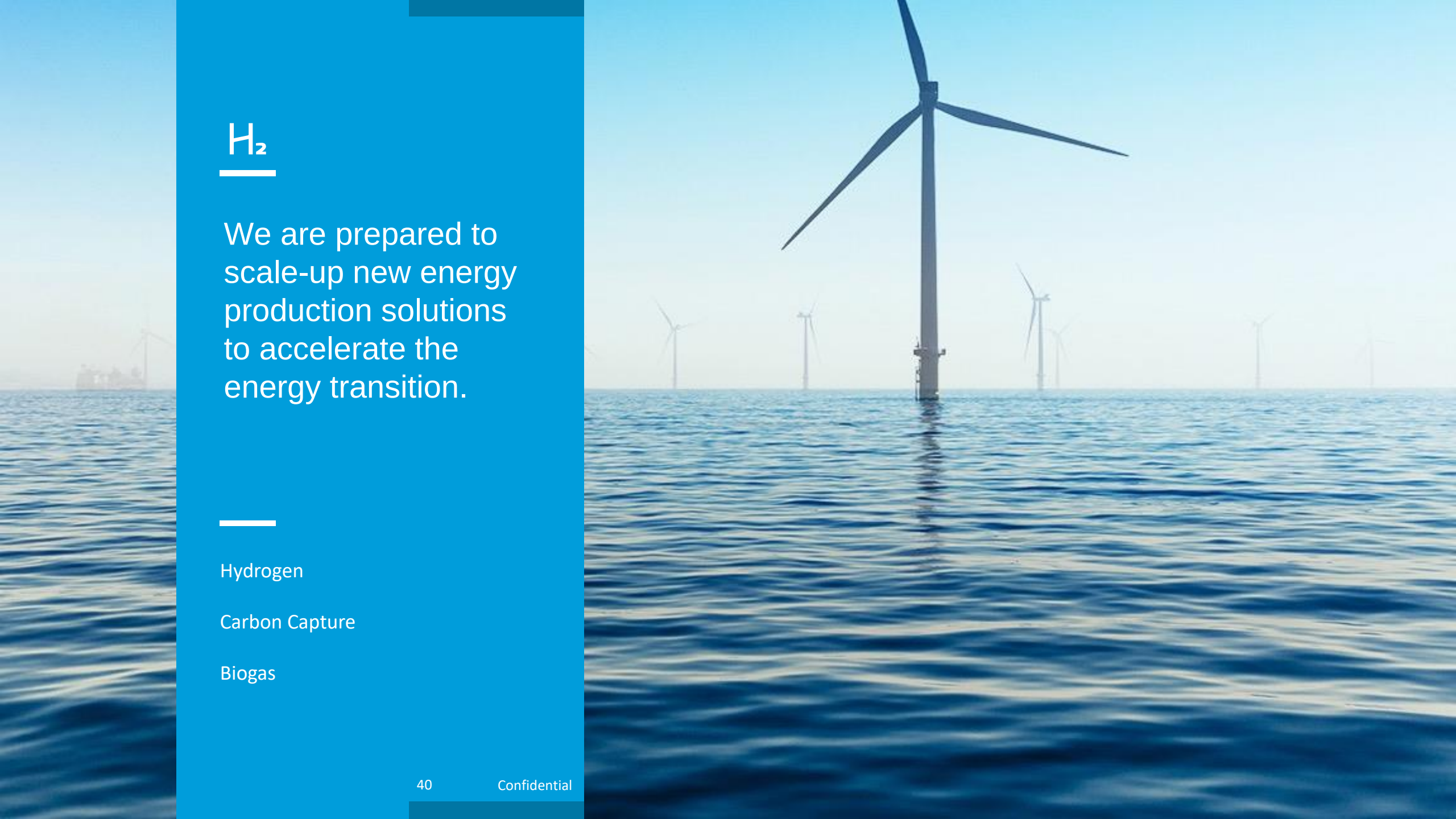
Offshore wind

Nerewind[tm]

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2.3

New Energies



H_2

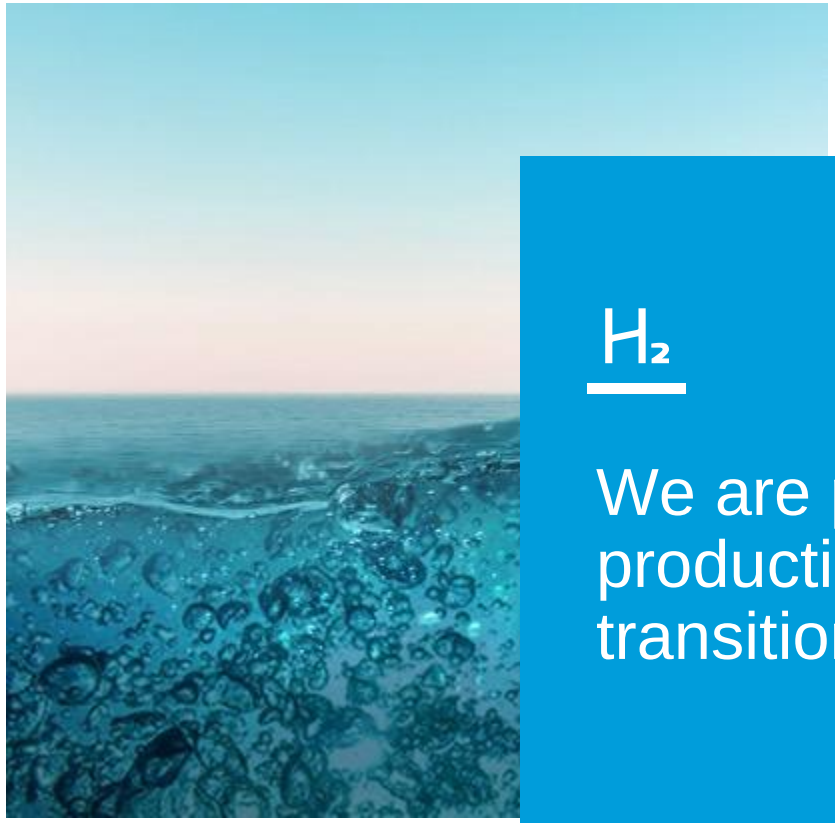
We are prepared to scale-up new energy production solutions to accelerate the energy transition.

Hydrogen

Carbon Capture

Biogas

New Energies

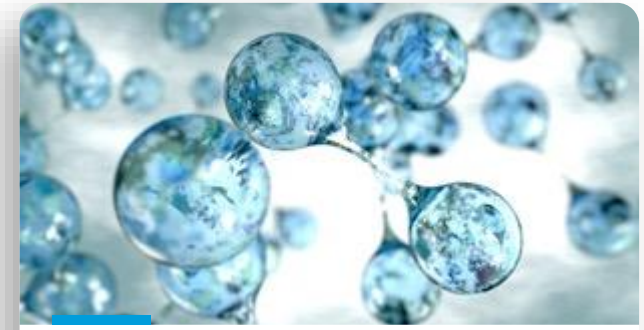


H_2

We are prepared to scale-up new energy production solutions to accelerate the energy transition.

Confidential

New Energies Markets



Hydrogen

DORIS draws on its expertise across conventional and renewable energies to support the development of blue and green hydrogen strategies and associated projects.



Carbon capture

DORIS guides governments, industrial figures, and end users, helping to define the best strategy for their CCUS ambitions and supporting them up to the project implementation phase.

Biogas

We are prepared to meet the growing demand for biogas, enabling increased energy independency and lowered GHG emissions.

New Energies Projects



Capbon Capture

Belfast

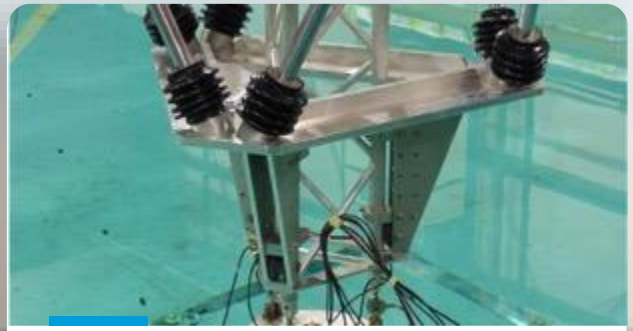
Lianzi well spacing and terrain features created technical challenges for flow assurance and operability.
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Capbon Capture

Ormond

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Hydrogen

Nerehyd^{tm}

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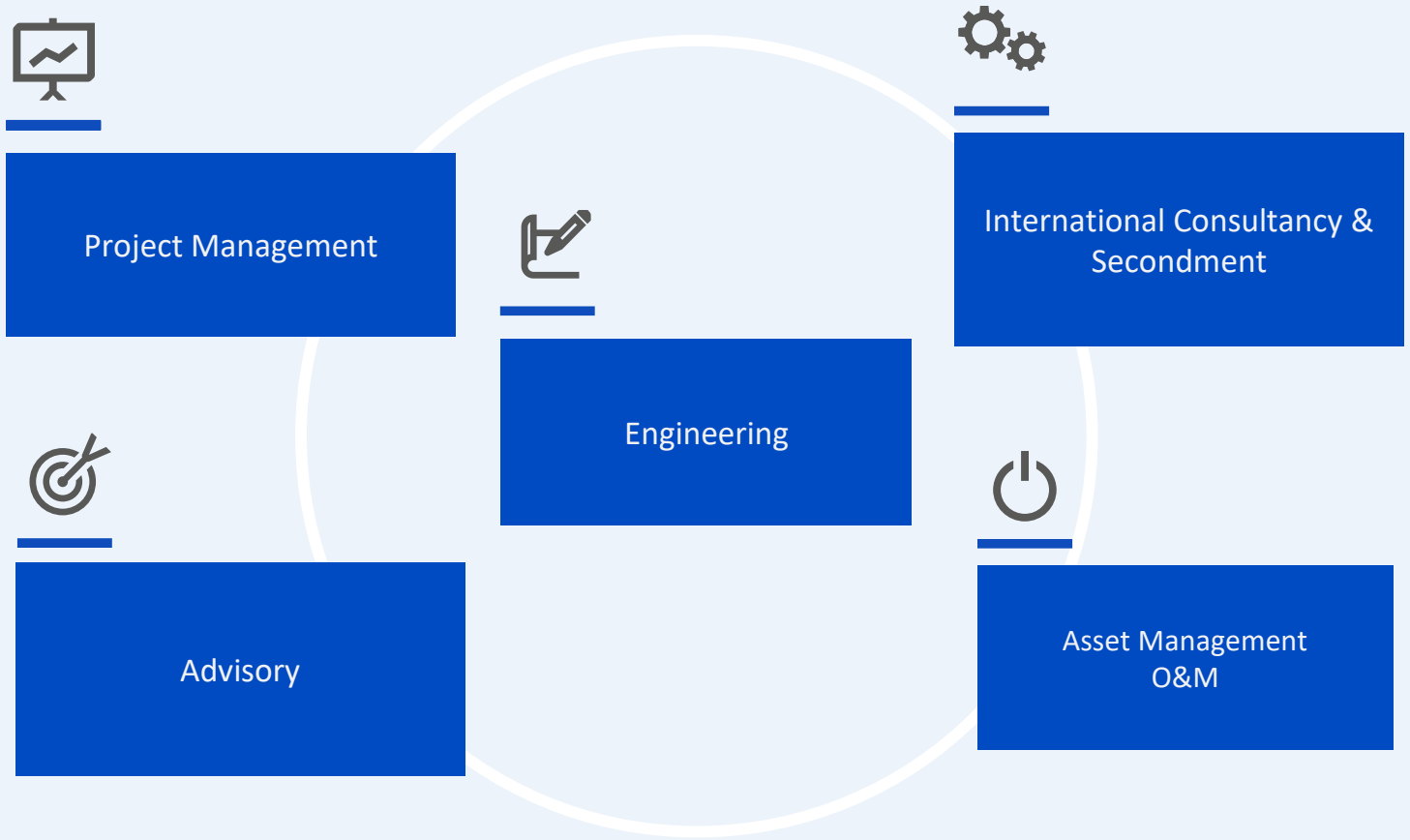
3.0

Our Activities

A virtuous cycle

DORIS provides solutions and services all along the asset life cycle

DORIS activities reinforce from the competencies and experience of the other activities



Confidential

Our Activities



Engineering

DORIS is committed to bringing the highest value to our clients' projects by providing robust engineering during all the phases of a development up to decommissioning.



Advisory

With our independent expertise, DORIS is ideally positioned to resolve the technical and business challenges experienced by governments, operators and project and technology developers.



Project Management

DORIS is prepared to manage projects of any size, both local and international. We provide a complete offering of project management services and can allocate resources on an adaptable basis, be it integrating into our clients' technical team or supervising and managing projects.



Technical Assistance

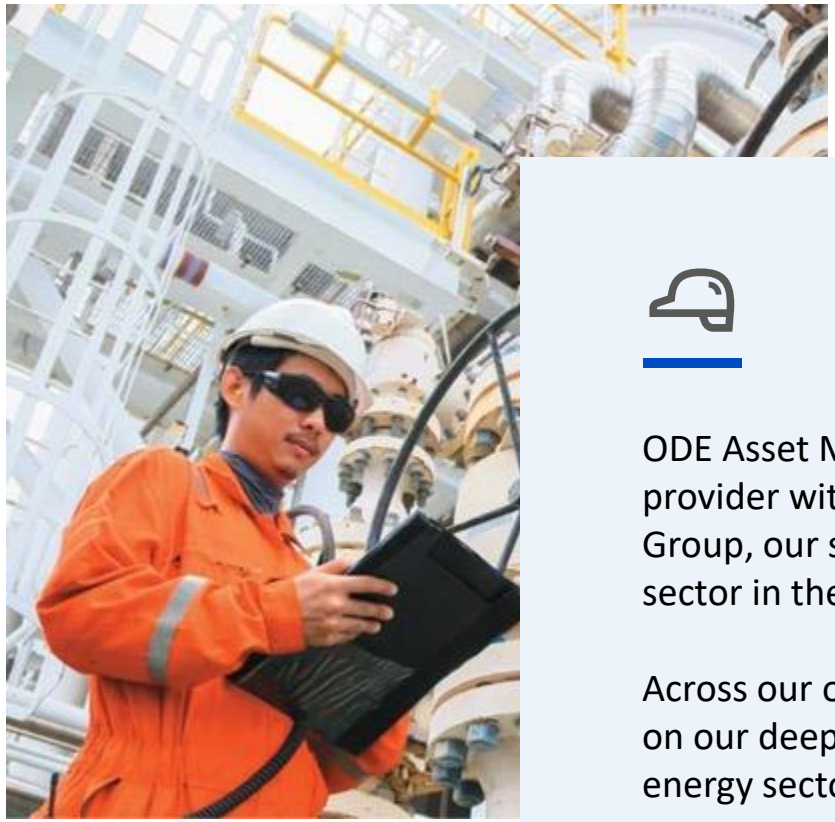
Across our 60 years of experience, we have developed a broad range of technical expertise that we actively reapply to our clients' projects.



Asset Management

ODE Asset Management is an established asset management and operations support provider. Across our operations, we integrate ourselves seamlessly into clients' teams

Asset Management



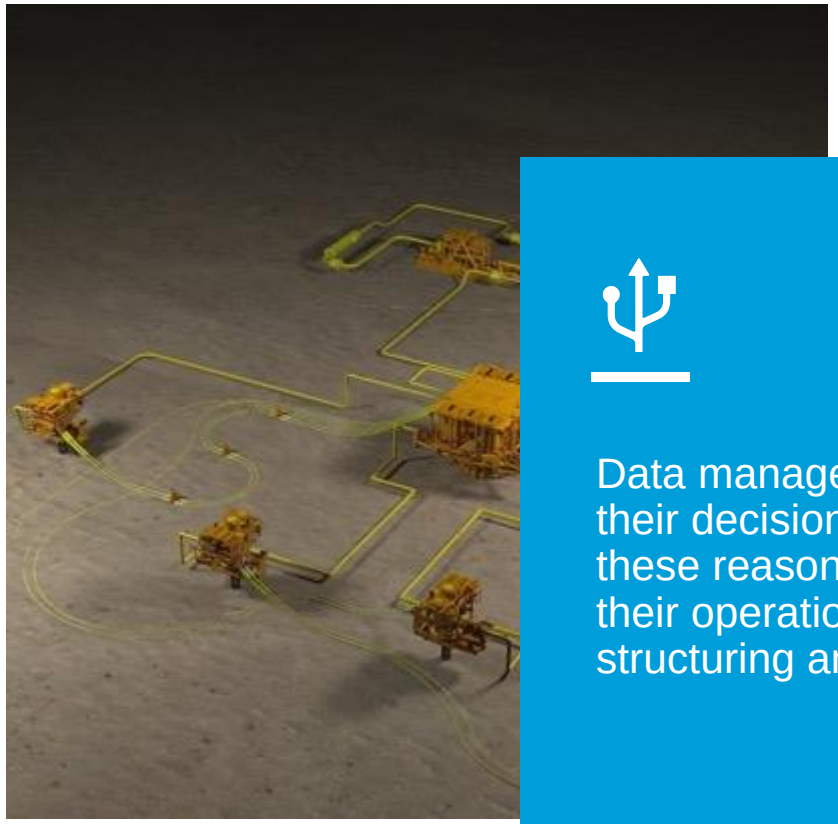
ODE Asset Management is an established asset management and operations support provider with a presence in Aberdeen and Great Yarmouth. As part of the DORIS Group, our services draw on our 15 years of experience directly supporting the energy sector in the UKCS and our collective 50 years of experience in the oil and gas industry.

Across our operations, we integrate ourselves seamlessly into clients' teams. We draw on our deep understanding of the cost and complexity challenges seen in the UKCS energy sector and have a unique service-offering tailored to our clients' needs.

We constantly look to innovate, operating as an enabler of change in the industry.

Confidential

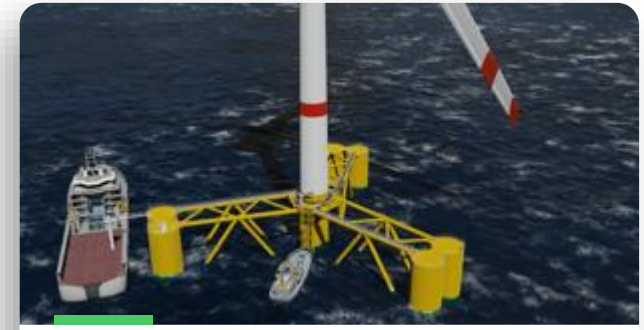
Digital Activity



Data management and valorization allow organizations to be more efficient in their decision-making process and in their project execution and operation. For these reasons, DORIS has developed adapted tools to support our clients with their operational challenges and their continuous process of collecting, structuring and valorizing data.

Confidential

Our Products



Nerewind^{tm}

60 years of DORIS expertise in offshore energy engineering brings us the opportunity to develop a floating wind platform: NereWind ™



AWC

AWC Technology Ltd is dedicated to the development and deployment of the Articulated Wind Column (AWC), a deep-water floating foundation. The AWC is a specialised, single-anchor foundation suitable for water depths between 80 and 250m.



Nerehyd^{tm}

NereHydTM is an innovative solution to produce decarbonated hydrogen in offshore areas at competitive cost.

Confidential

Thank you

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