



Offshore Renewables – Focus on health and safety

20th January 2022

David Garcia – Scottish Enterprise

Welcome to the webinar

- Attendees, please mute your microphones and turn off your cameras during the presentation.
- After the presentation there will be time for interaction during the Q&A Session.
- Questions can be formulated in the Q&A window at any time, and they will be addressed during the Q&A session, or afterwards if necessary.
- The event will be recorded, and the slides will be shared on the OPIN website.

Agenda (GMT)

10:00 - 10:15 - Introduction to webinar and the OPIN project

10:05 - 10:25 - Regulatory, technical, financial and policy requirements

Benjamin Lehner- Dutch Marine Energy Centre

10:25 - 10:545- The permitting process of offshore renewables

Tom Baur- Neodyme

10:50 - 11:00 - Human fatigue in the servicing of offshore wind turbines

Chris Lovell - Xodus

11:00 - 11:10 - Q&A

What is OPIN ?

Ocean Power Innovation Network (OPIN)
is a **European collaborative network**

OPIN Aim:

- Develop both cross-regional
and cross-sectoral **collaboration**

OPIN Target:

- In-depth support to over 100 companies
- Develop a self-sustaining network
(>200 members)



From 2019 to 2022.



2.6M€ total project budget
1.5M€ in financial support
from Interreg North West Europe



[Join the network \(free\)](#)

Who are OPIN ?

7 partners from Ireland, UK, Belgium, France, the Netherlands and Germany



driving industry by technology

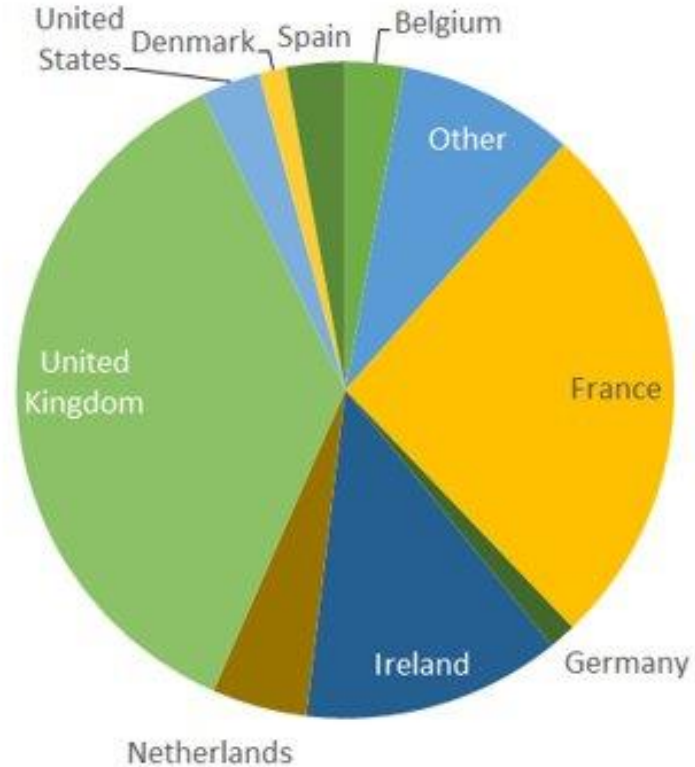


Project Partners	Countries/Regions
Sustainable Energy Authority of Ireland (SEAI)	Ireland
Scottish Enterprise (SE)	Scotland
Offshore Renewable Energy Catapult (OREC)	United Kingdom
Sirris, het collectief centrum van de technologische industrie (SIRRIS)	Belgium
West Atlantic Marine Energy Community, École Centrale de Nantes (WEAMEC)	France Pays de la Loire
Dutch Marine Energy Centre (DMEC)	Netherlands
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer IEE)	Germany

OPIN Members



493 members from 34 countries
(as of December 2021)



Target Group	Target value	Current value
<i>enterprise, excluding SME</i>	20	62
<i>SME</i>	200	333
<i>sectoral agency</i>	10	18
<i>higher education and research</i>	10	70
<i>business support organisation</i>	6	7
<i>International organisation, EEIG under national law</i>	3	3

Other countries (5 members or less):

Australia, Canada, Chile, Colombia, Finland, Hong Kong, India, Indonesia, Italy, Malaysia, Norway, Poland, Portugal, Russia, Slovakia, South Korea, Sweden, Switzerland, Taiwan, Thailand, Vietnam

What can OPIN do for you (1/2)

Access **free events**: learning and networking opportunities.

- OPIN Masterclass: Multi-source energy parks: potential, risks and policy requirements (8th February)
- OPIN Masterclass: Dynamic cables (15th March)

2022 Annual Symposium - Spring: Side event at [*All Energy*](#), Glasgow

Have a look at our [Events page](#) and register today !

What can OPIN do for you (2/2)

Access expert advice on your technology (TAPs)

- ✓ Independent expert opinion – e.g., on the route to market, on reducing development risks and costs, etc.
- ✓ Advice on next steps, funding and collaboration opportunities



Support collaborative projects (CIGs)

- ✓ Preparatory step to National and EU research calls
- ✓ Find ways to solve technical or financial problems you are facing
- ✓ Expand your network nationally and internationally
- ✓ Benefit from the experience of those in other industries



Receive **travel support**

- ✓ Enabling Irish and Scottish Enterprise SMEs to travel abroad for OPIN events

OPIN Resources



[OPIN Members list](#)



[OPIN Library:](#)

- Workshops/masterclasses presentations
- Value chain study - summary report
- Ocean energy challenges and recommendations: Desktop analysis of studies and reports



OPIN [Twitter](#) and [LinkedIn](#) groups. Join us for the latest updates!



Email us at: OPIN@seai.ie



Innovation and supply - A start-ups journey into Offshore Wind

Phil Taylor – Pict Offshore

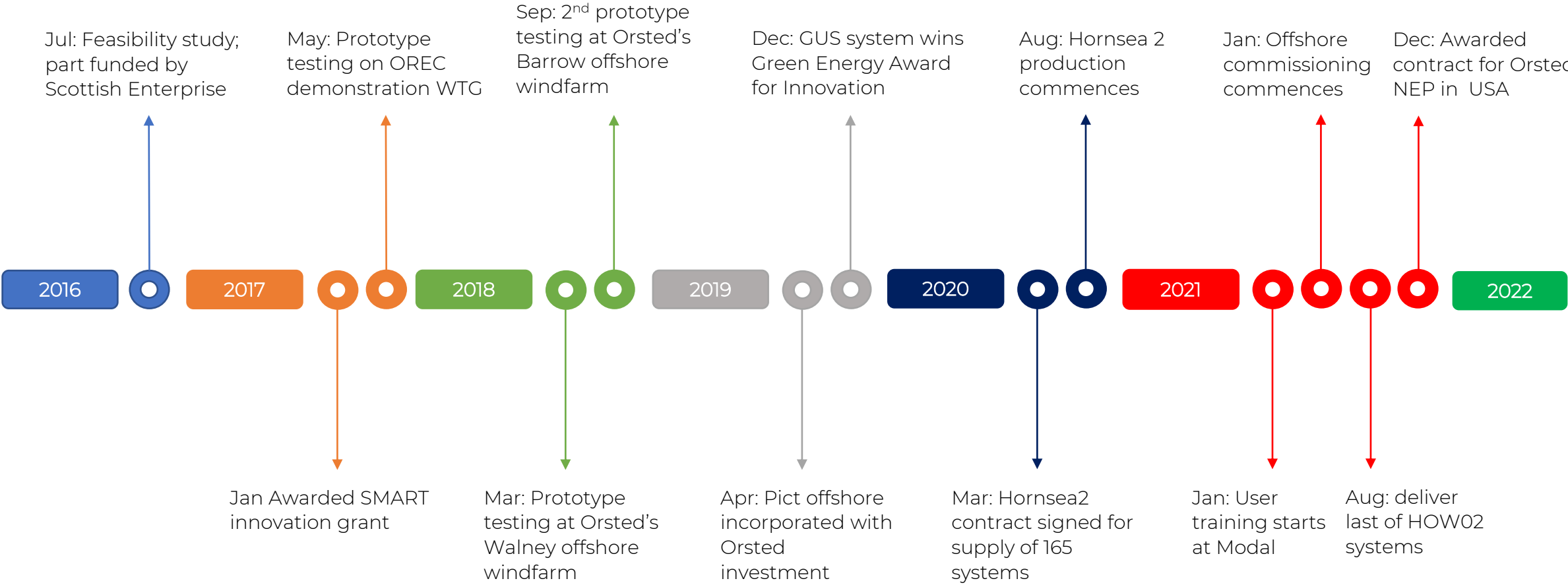


Innovation and supply
A start-ups journey into Offshore Wind

OPIN Webinar: 20th February 2022



Pict Offshore milestones



The 'Get Up Safe' system – key specifications

◇ Get Up Safe

- 1 Active heave compensated hoist for offshore personnel transfer
- 2 Integrated laser and motion reference sensors to provide real time deck movement data
- 3 IPR registered in Europe, United States, India, China and Japan
- 5 SCADA connection for remote system diagnostics and sea state data
- 6 Drive train and electronic components from world class suppliers inside stainless-steel enclosures
- 7 Outer panels afforded environmental protection with CX class offshore coating system
- 8 Integrated back up power supply and emergency systems to bring personnel to safety in all scenarios

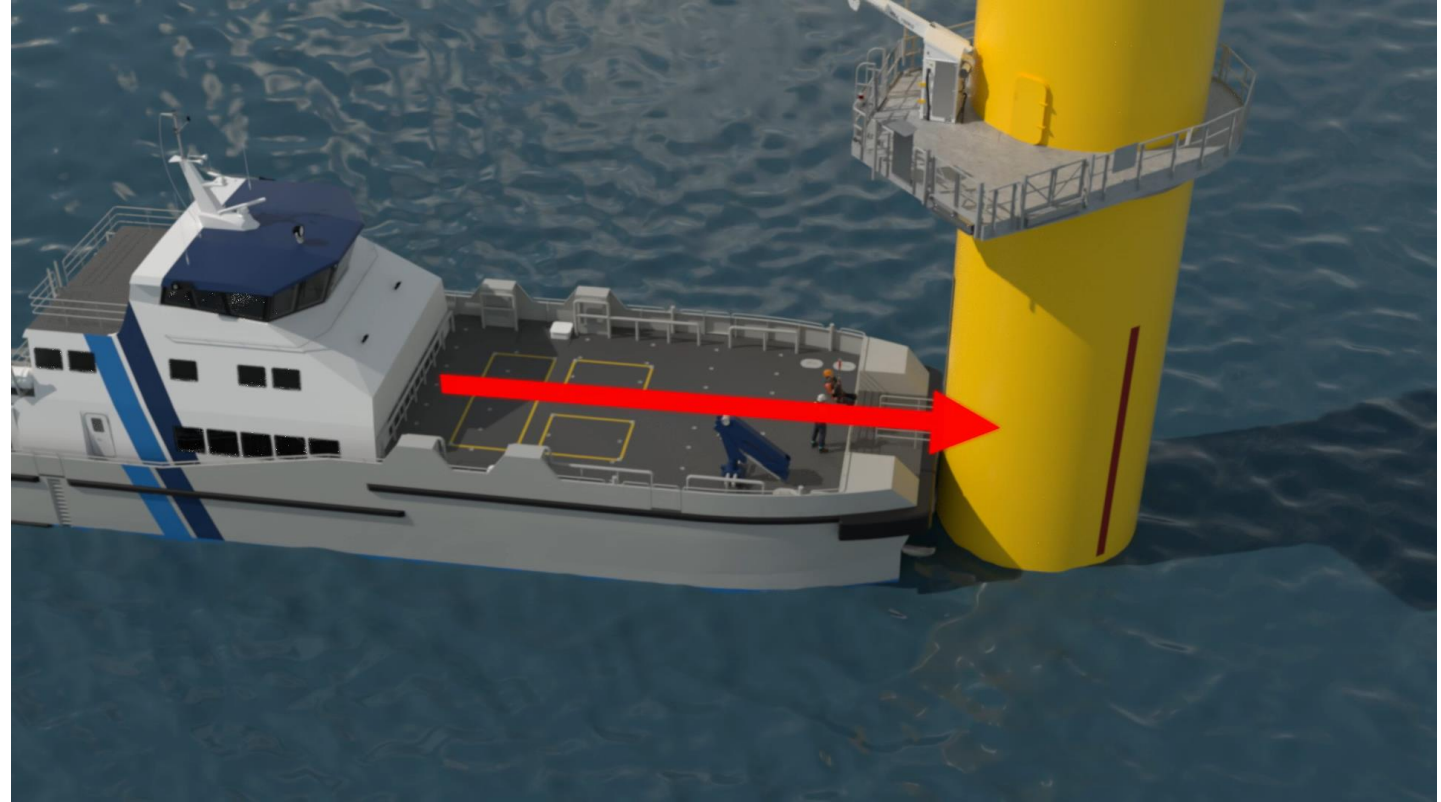
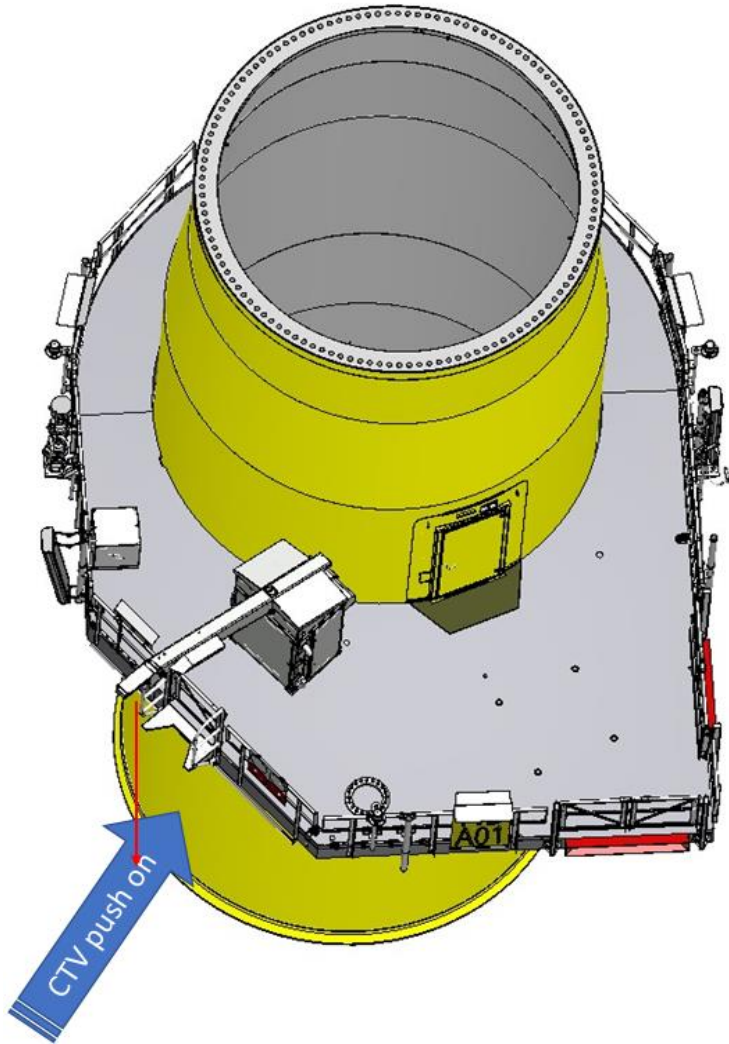


The end-goal: GUS as alternative to landing structures

GUS offers safety and accessibility benefits, but a key driver for developers is the opportunity to reduce CAPEX through removal of landing steelwork

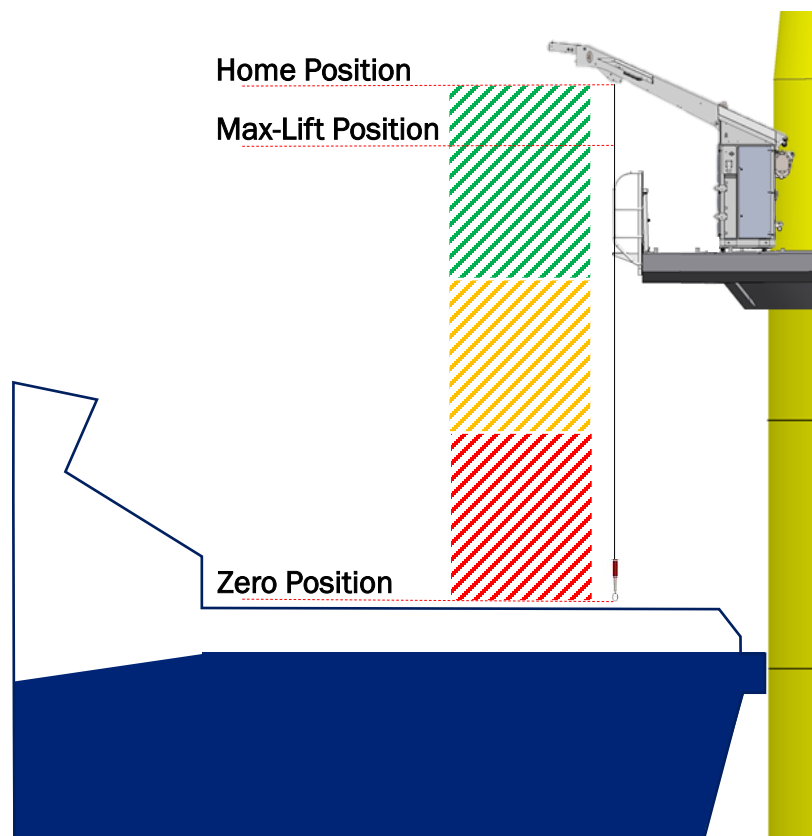


Docking with the monopile



Active heave and zones inside the line of travel

Critical operating difference is that technicians no longer protected from vessel movement by landing bars.
Active heave compensation function plays that role



- Slow speed zone (0.25m/s)
- Normal speed zone (0.5m/s)
- Active heave zone (max 2.12m/s)

- Line responds to control stick on remote control (up/down)
- Deck tracking operates when the end of the line is in Active Heave Zone – inside 6 metres above deck
- Deck movement is automatically overlaid onto up/down commands from remote control
- Deck tracking is upwards only unless within 1 metre of deck where it is up and down

Training for Users and Operators

GUS system is controlled via a wireless remote control by an operator on the CTV. Pict set up an onshore programme with Modal Training to train transferees and operators in the use of the system



GUS systems design for HOW02

GUS design incorporates elements aimed at de-risking elements of operation e.g power cable reel, swing arm pulley, access gate interlocks etc



Emergency Scenarios



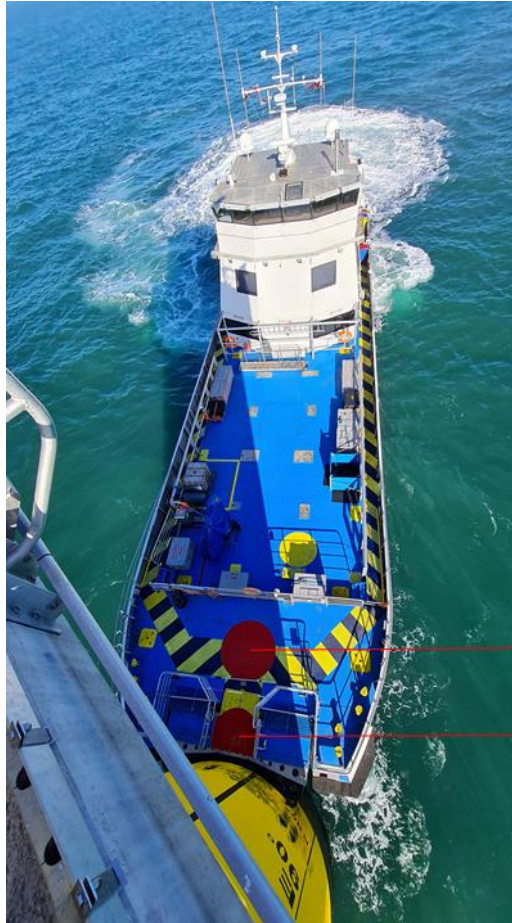
What happens if....?

Power failure/ line is jammed/ GUS malfunctions/ transferee faints/ remote control is dropped overboard/ boat sails away/ tidal wave etc....



CTV deck and fender optimisation

Crew Transfer Vessels have had some modifications made to adapt to the GUS system e.g. fender design but system is intended for operation across vessels of different sizes including workboats / daughtercraft



Transfer zone (2.0m diameter)

Sensor zone (1.5m diameter)
Solid deck surface



Production

- Pict Offshore is based in Inverkeithing, Fife, 1 mile north of the Queensferry Crossing
- Assembly for HOW02 in 14,000' facility in Fife - Aug 2020 - Aug 2021
 - Recruitment & retention: 17 production staff
 - Covid and supply chain
- The supply chain for the Hornsea 2 contract includes many local businesses in Fife, Tayside and Grampian
- Growth in Scottish offshore activity, now including 25GW in upcoming fixed and floating projects

Shipping, installation and commissioning

- Custom designed transport skids for transport to Denmark and Netherlands
- Partnered with technical services companies for onshore and offshore commissioning
- Discussions with foundation designer to 'design in' the GUS to their platforms for future offshore windfarms





What's Next?



- Huge opportunity: By 2025 there is projected to be 23,000 offshore wind turbines worldwide (vs 7000 currently). Scotwind projects alone should add approx. 1700 new WTG
- The GUS system is a unique solution with patents in UK, EU, India, Japan, China and USA
- GUS offers wind farm operators productivity and safety benefits and allows developers to reduce capital costs by designing out structural steelwork
- Commence Operations and Maintenance contract at HOW02
- Preparing to fulfil next contract for supply systems to 3 Orsted projects in USA
- Expand customer base

Questions?





Offshore health and safety risks and mitigations

Simon Merland – Neodyme

NÉODYME OFFSHORE WIND ACTIVITIES IN FRANCE

HSE MANAGEMENT AND SUPERVISION

- CONCEPTION
- FABRICATION & INSTALLATION
- OPERATIONS & MAINTENANCE



Néodyme

SOMMAIRE

1. Néodyme group
2. Our specific skills
3. Our successes in offshore wind

NÉODYME GROUP

Hystory, evolution and locations

► NÉODYME GROUP

- › Founded in 2004 by 5 HSE experts, Néodyme is based on 4 values embodied by all and which are **Technical Excellence**, **Impartiality**, **Teamwork and friendliness** and **long terms client relationship**.
- › 16 years later, the company has changed its formal status in a cooperative status involving 80% of personnel as shareholders contributing so in organizational and strategical decisions.
- › We provide many services in Health, safety and Environment including HAZOP/HAZID, safety in design, environmental studies, project HSE management and site supervision, ATEX studies, HSE trainings ...



NEODYME GROUP



2004

First activities



130

collaborateurs



8

Offices in France



3

International offices



>9 M€

Of revenue in 2021



3

Subsidiaries

Independent company with a share capital owned by 80% of our employees



▶ NÉODYME EVOLUTION

› Starting with few client still working with us in 2004 :

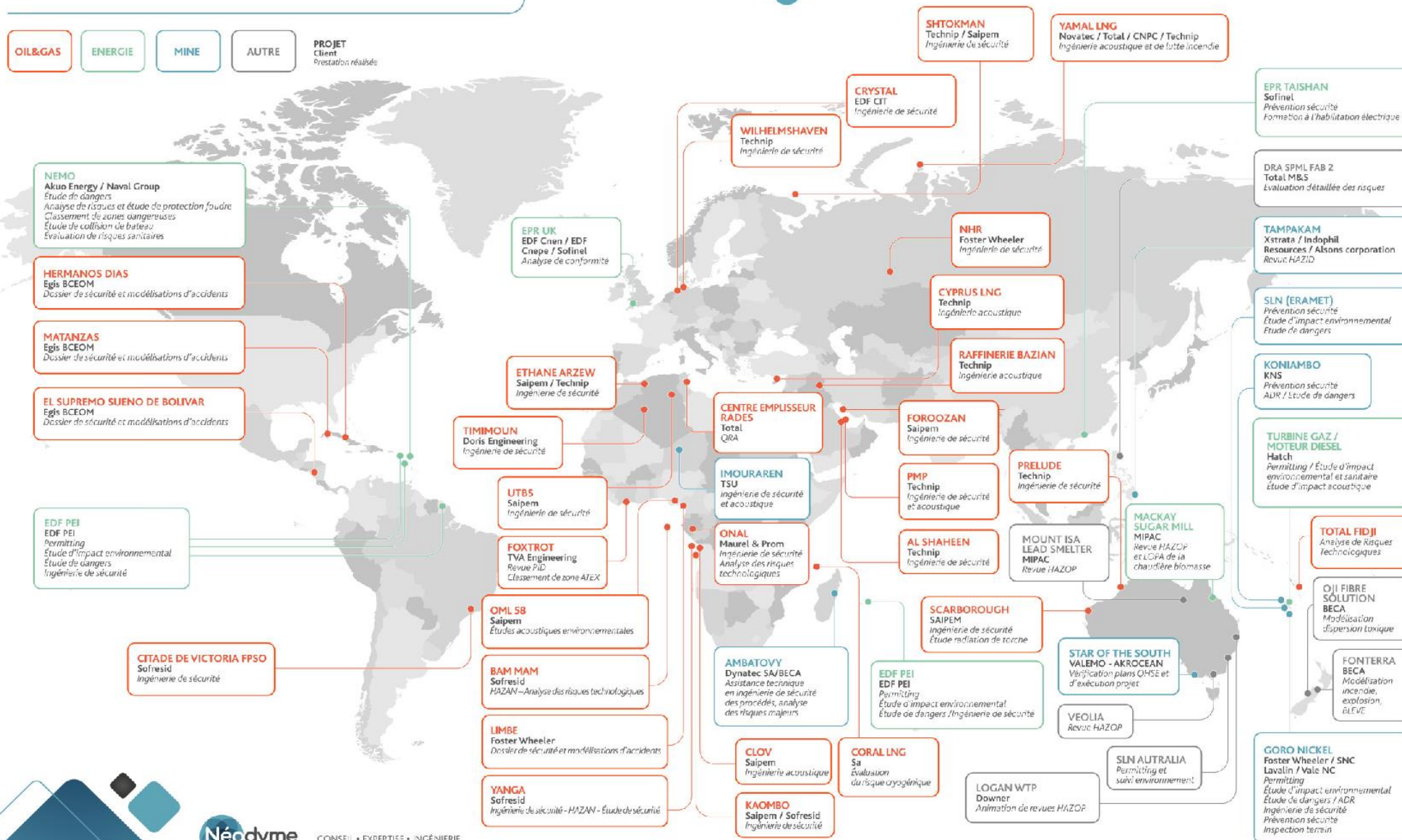


› Before to let others joining us

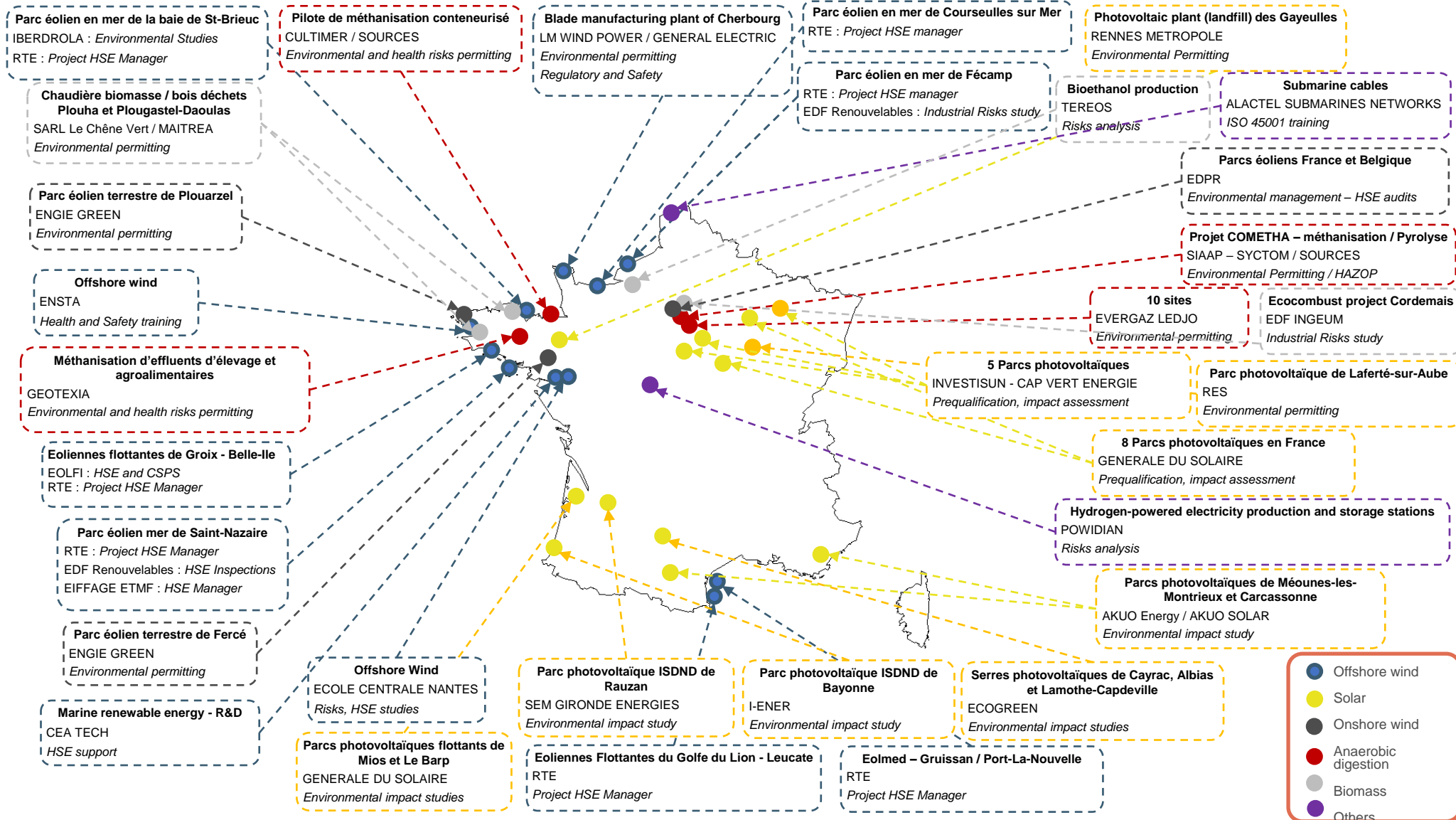




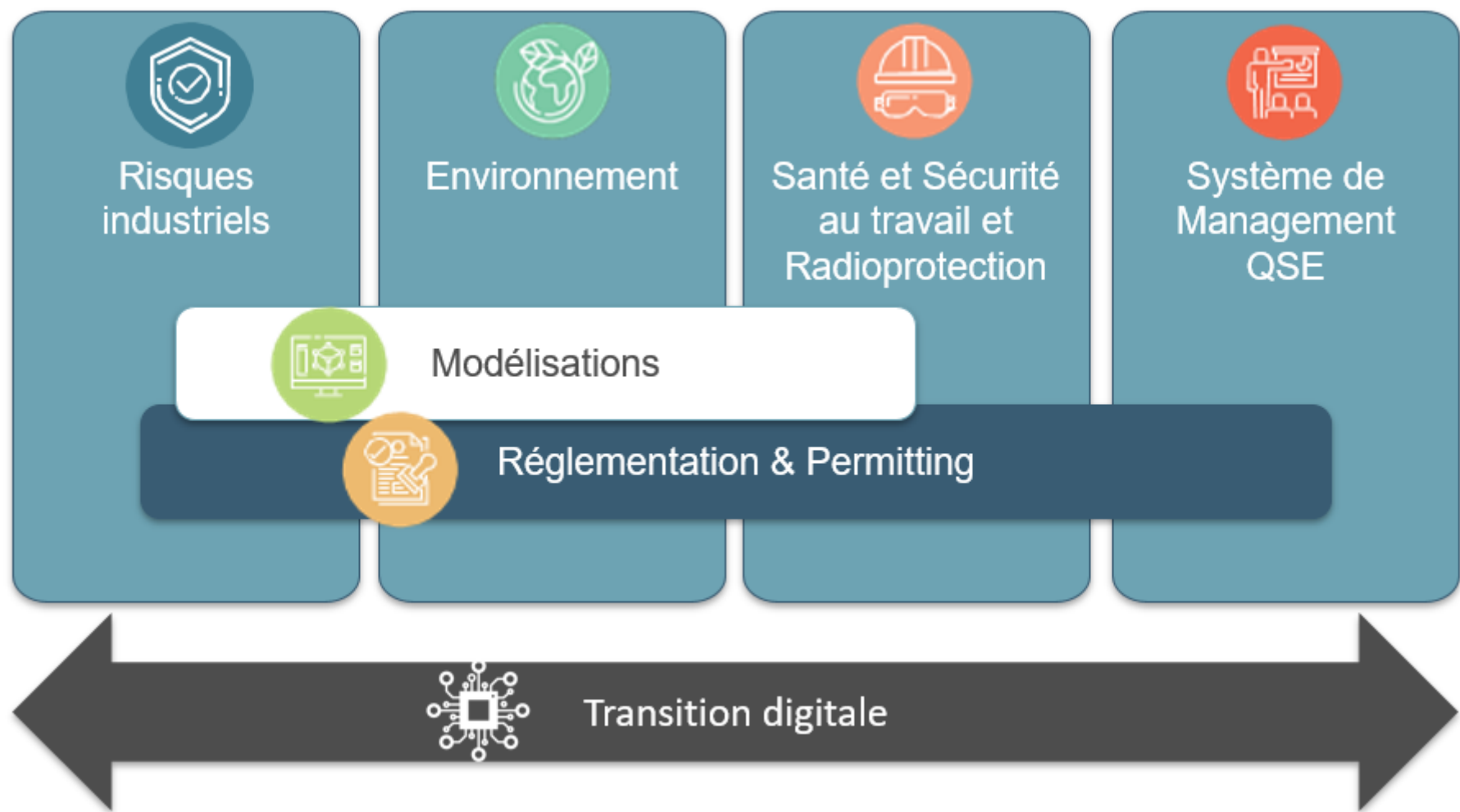
OUR INTERNATIONAL PROJECTS SINCE 2004



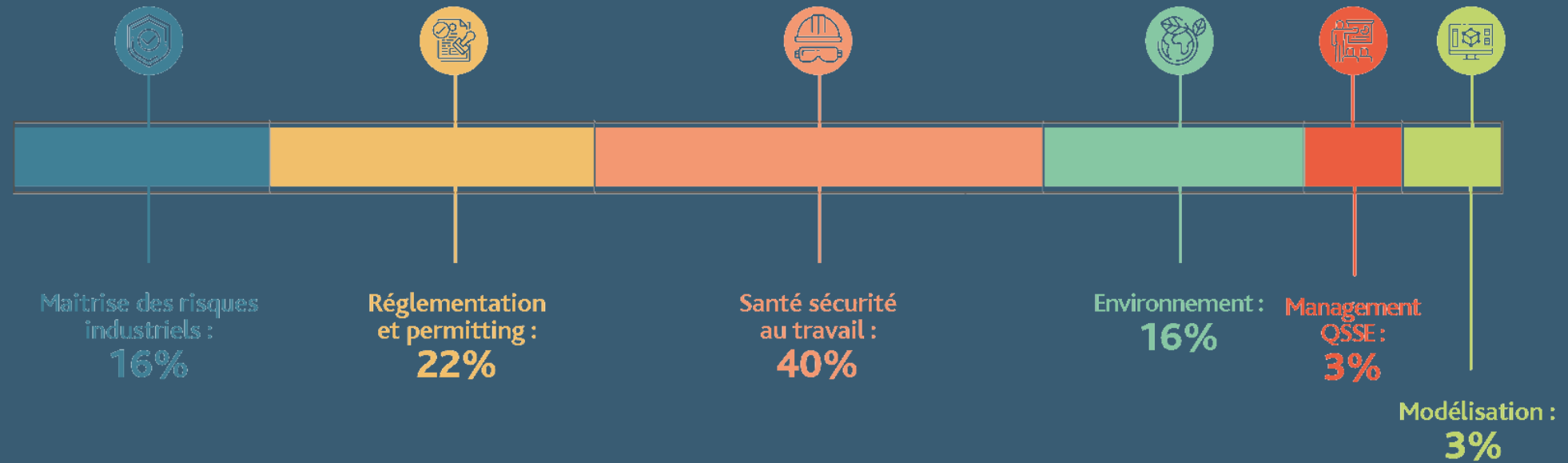
NÉODYME RENEWABLE PROJECTS IN FRANCE



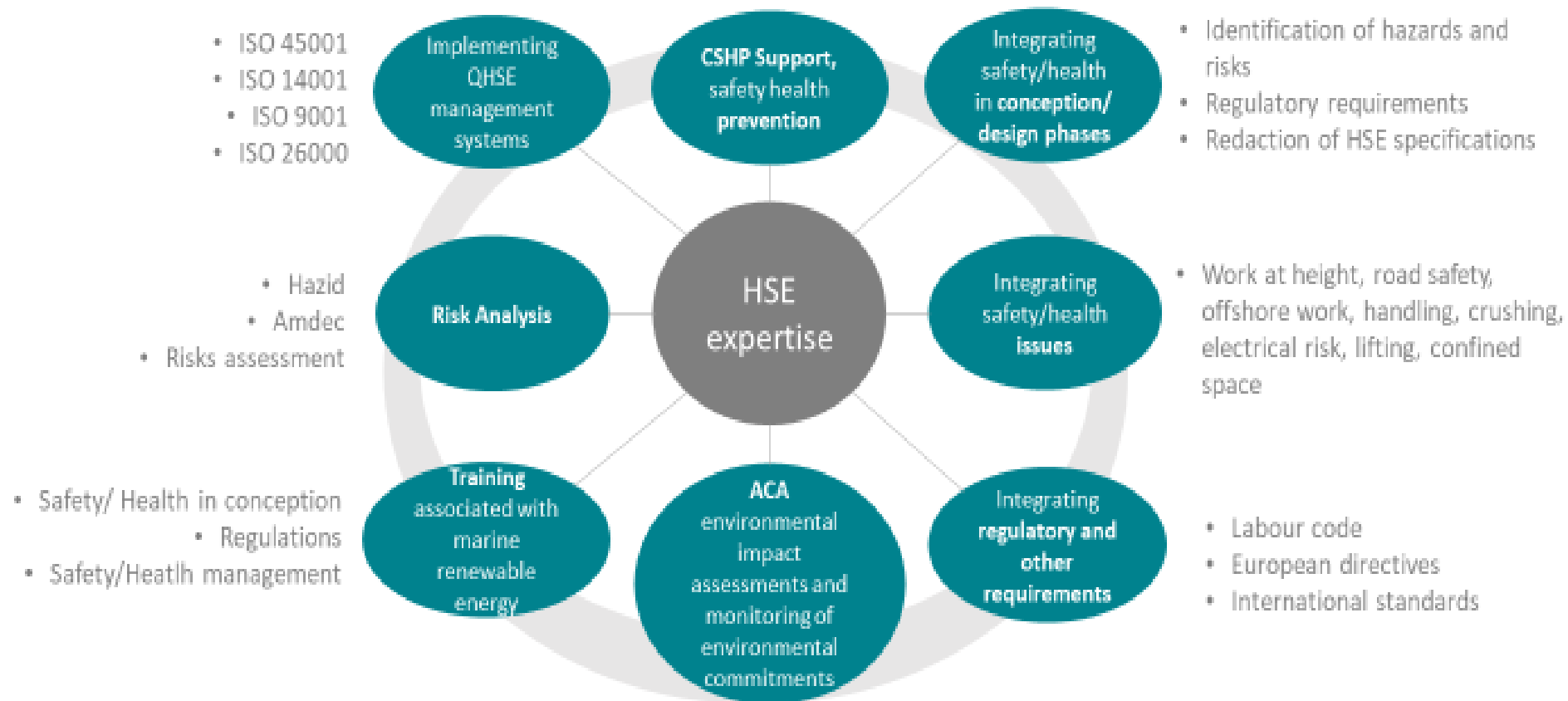
► OUR ORGANISATION



OUR SKILLS



► FIELD OF EXPERTISE IN OFFSHORE WIND





NÉODYME OFFSHORE WIND ORGANISATION

› **Our team is composed** by several experts in various disciplines :

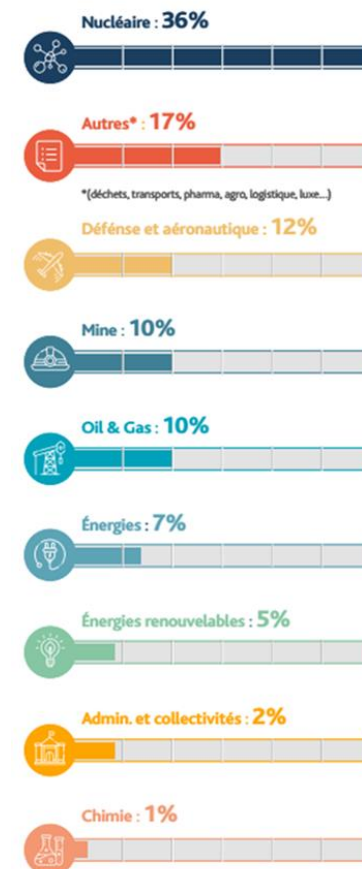
- design safety engineers
- Marine coordinators from French Navy and from the Merchant Navy
- French law and regulation Health and Safety coordinators
- Oil & Gas HSE managers
- Biologist and environmental engineers

All working in the same pole of competence aiming to support any other offshore wind projects.

› **We are acting in France on:**

- National Emergency and Rescue coordination with MRCC (Maritime Rescue Coordination Centres) on France costs
- Definition of local rescue organisations (cost guards and onshore rescue centres)
- Drills and table top exercises with French rescue at heigh teams
- Laws and regulations definition with national labour organisation
- Environmental studies

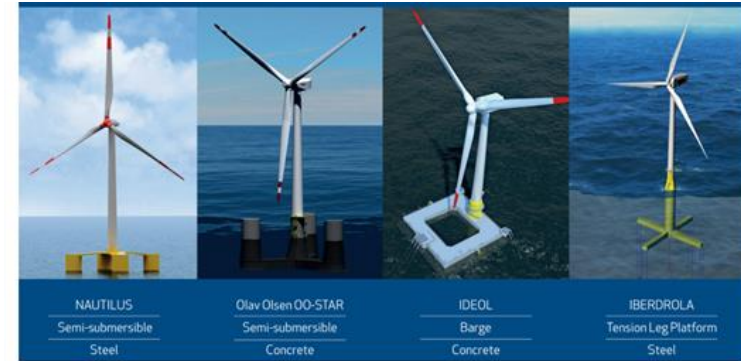
LA RÉPARTITION DES MISSIONS DU GROUPE NÉODYME PAR SECTEUR





HSE IN CONCEPTION PHASE

- › Laws and regulations assessment with
- › Design safety analysis
- › Initial risks review



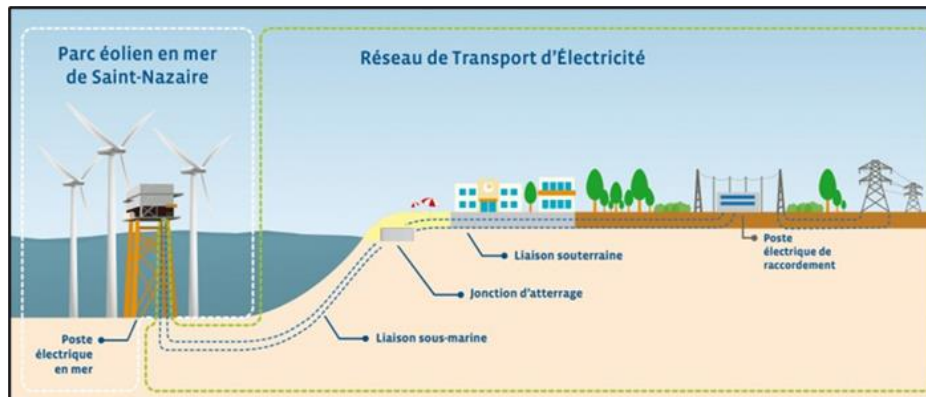
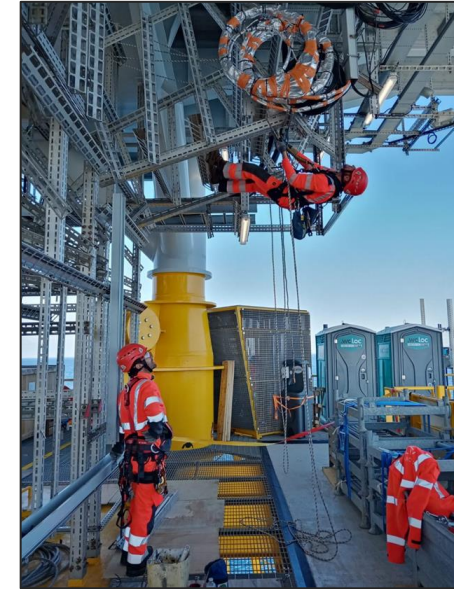
Main challenges : not many approved HSE standard available, only few HSE requirements coming from regulation for the offshore wind development in France

Neodyme has used internal expertise to develop **HSE specifications** suitable for **innovative floating wind turbine substructure** based on :

- Most recent **classification societies** standards : DNV, BV.
- **European** wind turbine standards linked to Protective measures – Requirements for design, operation and maintenance (EN 50308)
- **HSE practices and guidelines in the offshore wind industry** : Life50+ (Innovative floating offshore wind energy) and G+ (Global Offshore Wind Health and Safety Organisation)
- **Neodyme internal expertise** from HSE design applicable to offshore oil&gas, and other applicable HSE good practices in others industries (nuclear, chemical ...)

▶ HSE DURING CONTRSTRUCTION PHASE

- › HSE plan; procedure, instructions
- › Emergency response preparedness (local interfaces management, training and drills, equipment controls,
- › UXO management
- › Risks assessment and job safety analysis
- › Inductions, trainings and familiarisation plans including sessions with a safety leadership systematic approach
- › Laws and regulations, regulatory compliance
- › On site HSE visits and inspections
- › Incidents and accidents investigations
- › Overall HSE communication



▶ HSE DURING INSTALLATION PHASE

- › HSE and emergency management with locales authorities
- › Subcontractor qualification audits
- › Assets Inspections
- › Standard operating procedures review
- › Risks assessments with vessel crew and all parts involved
- › HSE supervision and coaching (toolbox meetings, last minute risks assessment, leadership safety ...) including onshore coordination
- › Contributing to the definition of HSE standards in France in terms of :
 - Trainings
 - Working hours
 - Rescue and abandon plans
 - ...



▶ OPERATION AND MAINTENANCE

- › Preparation and supervision of preventive and corrective maintenance and through works controls:
 - ✓ Lifting operation
 - ✓ Working at height
 - ✓ Hot works
 - ✓ Confined space
 - ✓ Isolation ...
- › Audits and inspections of onshore wind farms:
 - Management systems audit with improvement plans
 - Emergency response plan, drills and onsite familiarisation programs
 - Subcontractors HSE management plans
 - Sites inspections and controls (in and out turbines)

Available on all phases in France and considered as the most experimented HSE company on French offshore wind project.





Thanks for your attention

www.neodyme.fr



Human fatigue in the servicing of offshore wind turbines

Chris Lovell - Xodus



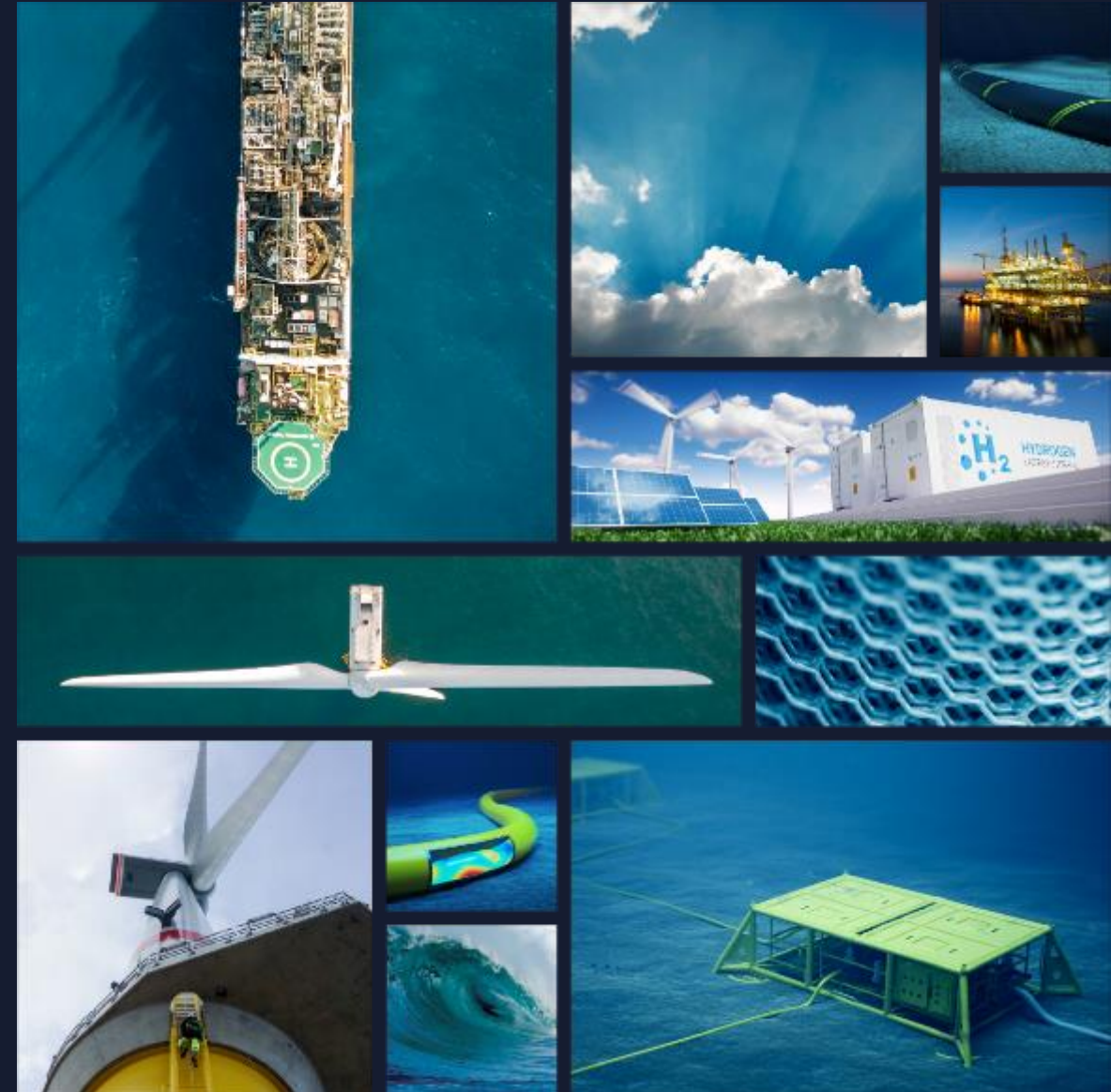
Motion induced fatigue

Chris Lovell

Safety & Reliability Engineer

OPIN Webinar
20th January 2022

WWW.XODUSGROUP.COM



Human fatigue – a recognised issue

- ‘A lack of mental alertness, or drowsiness, arising from lack of sleep. It does not include effects of physical effort, exposure to heat, or stress, or other factors.’

‘Managing fatigue in the workplace – a guide for the oil & gas industry’, IPEACA & IOGP, 2019

✗ **Labour relations issue**

✓ **Included in Safety Management System**

→ and/or Fatigue Risk Management System / Plan



Human fatigue – more than lack of sleep

- Reduced alertness due sleep deprivation

And

- Motion Induced Fatigue (MIF)
'Offshore Technology Report 1999/066 -
Effects of motion on cognitive performance',
HSE (Prof. A. P. Smith)



Human fatigue – offshore wind

- **SPOWTT Joint Industry Project**

‘Safety and Productivity of Offshore Wind Technician Transit’

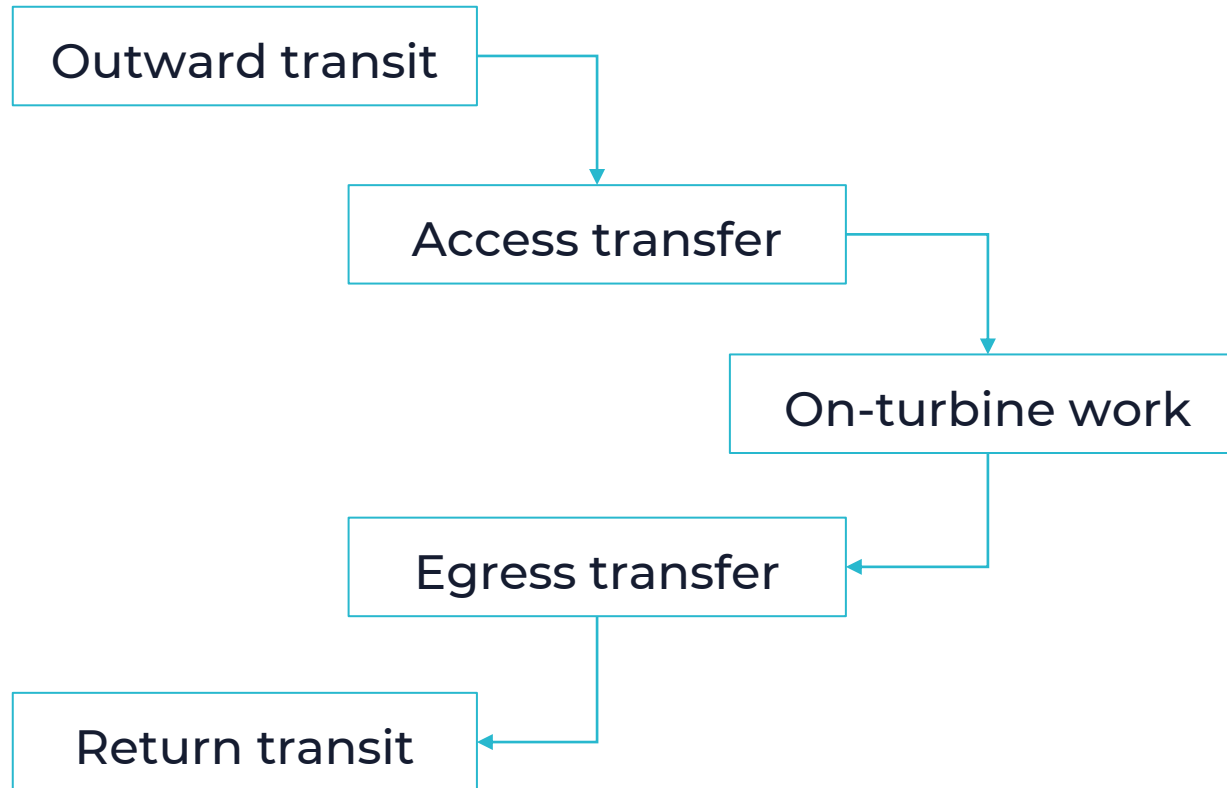
ORE Catapult, University of Hull, Siemens Gamesa, SMC, Marin, TNO, BMO
Offshore

- Primary research
- Development of sea-sickness model
- Decision support for O&M planning
- Considered onshore / offshore transits only
- Greater exposure to MIF in floating offshore wind





An offshore wind technician's day



Human fatigue – management

- Fatigue Risk Management System / Plan.
 - KPIs, frequent reviews, etc.
 - Excellent reporting systems, e.g. ISO 9001.
 - Requires buy-in from many stakeholders and potential culture change.
- Design of maintenance activities to maximise situation awareness, etc.
- Minimise ‘bump and jump’ access / egress (‘walk-to-work’).
- Fixed-bottom offshore wind O&M productivity not immediately transferrable to floating offshore wind?





Offshore Renewables – Focus on health and safety

Q&A Session