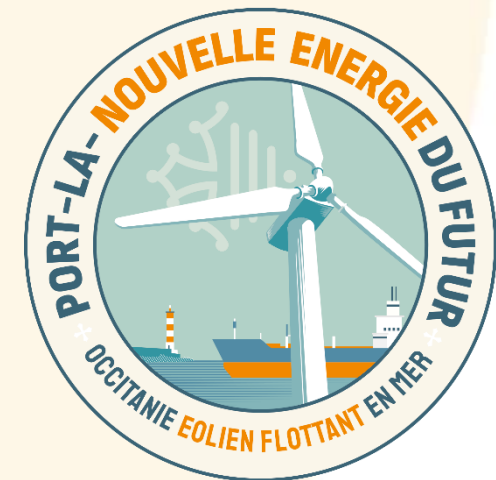
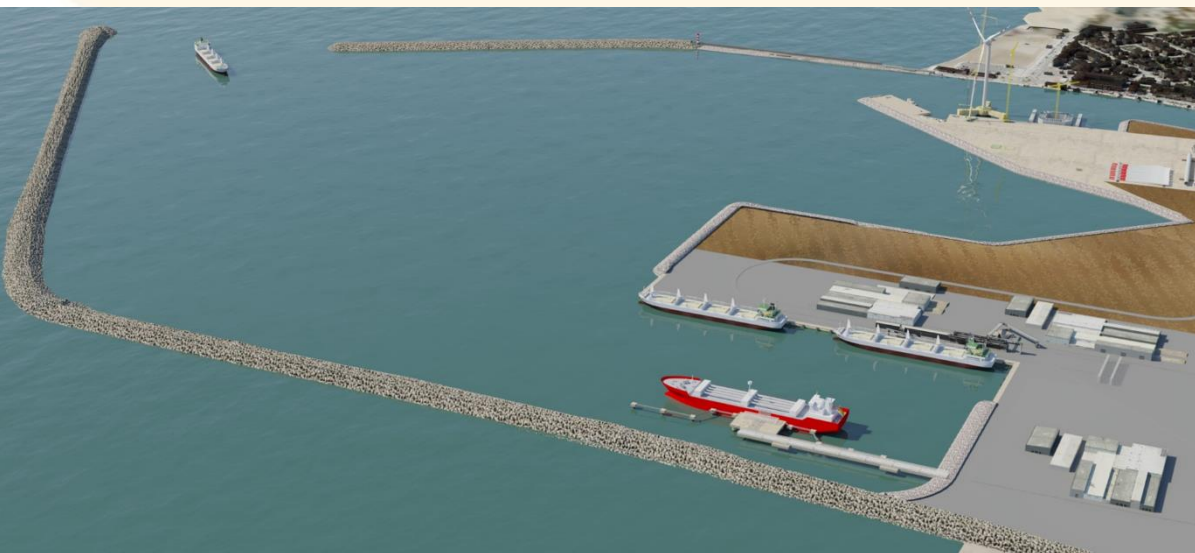


# Atelier Normes et Réglementations Eolien en mer 1er avril 2021



# Programme

**Introduction** 10h00-10h05

**La filière éolien en mer flottant régionale et objectifs de l'atelier** (Marie-Laure Barois, Wind'Occ / Julien Ciglar, AD'OCC) 10h05-10h15

**Offshore Wind Turbine Certification (en anglais)** (Susanne Landskröner, DNV / Kimon Argyriadis, DNV) 10h15-11h15

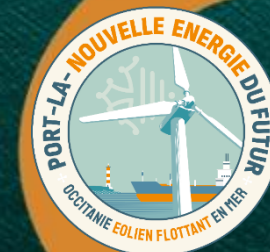
**Questions et réponses** 11h15 – 11h30

**Certifications et formations, témoignages d'entreprises régionales :**

- **Cameron / Schlumberger site de Béziers** (Luc Mas, Schlumberger / Benoît Jauzion, Schlumberger / Stéphane Henry, Schlumberger) 11h30 – 11h40
- **Dietsmann** (Cédric Fargues, Dietsmann) 11h40-11H45

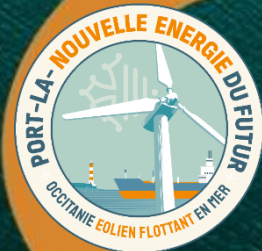
**Échanges participants et suites à donner** 11h45 – 12h00

**Conclusion**



# La filière éolien en mer flottant régionale et objectifs de l'atelier

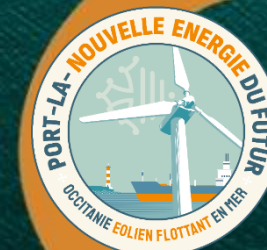
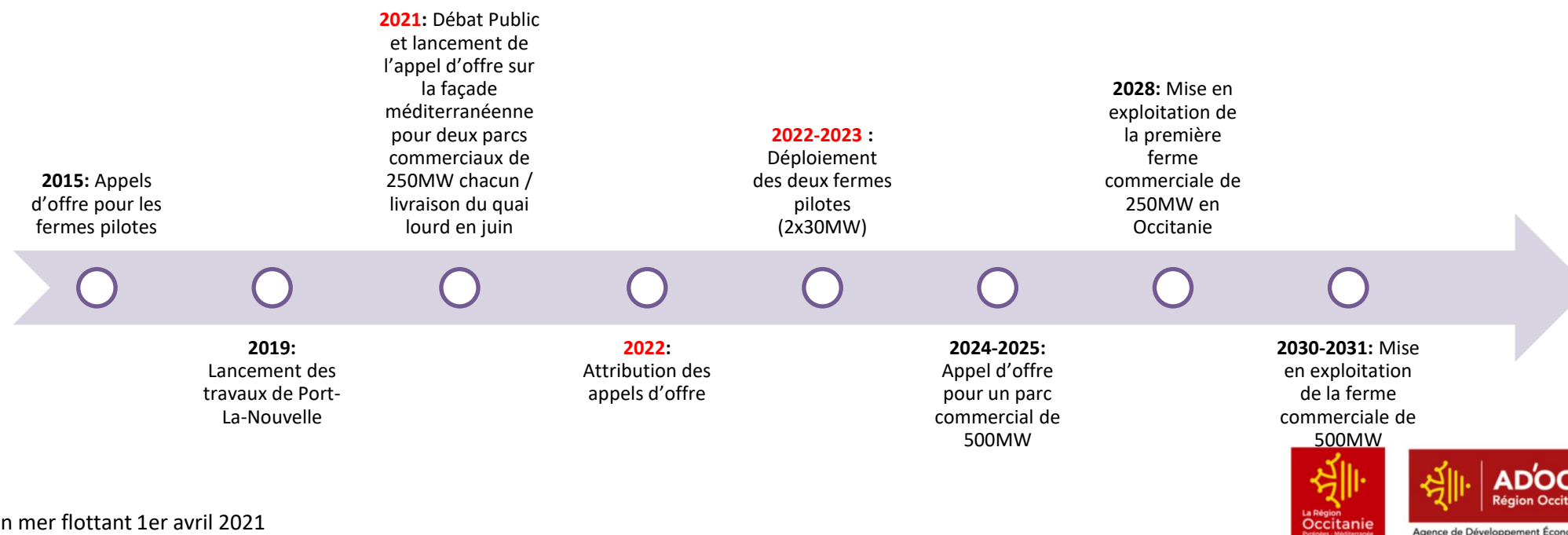
(Marie-Laure Barois, Wind'Occ / Julien Ciglar, AD'OCC)





# Le Calendrier en région Occitanie

- **2015:** Appels d'offres pour les fermes pilotes
- **2019:** Lancement des travaux de Port-La-Nouvelle
- **2021:** Débat Public et lancement de l'appel d'offre sur la façade méditerranéenne pour deux parcs commerciaux de 250MW chacun / livraison du quai lourd en juin
- **2022:** Attribution des appels d'offres
- **2022-2023:** Déploiement des deux fermes pilotes (2x30MW)
- **2024-2025:** Appel d'offre pour un parc commercial de 500MW
- **2028:** Mise en exploitation de la première ferme commerciale de 250MW en Occitanie
- **2030-2031:** Mise en exploitation de la ferme commerciale de 500MW

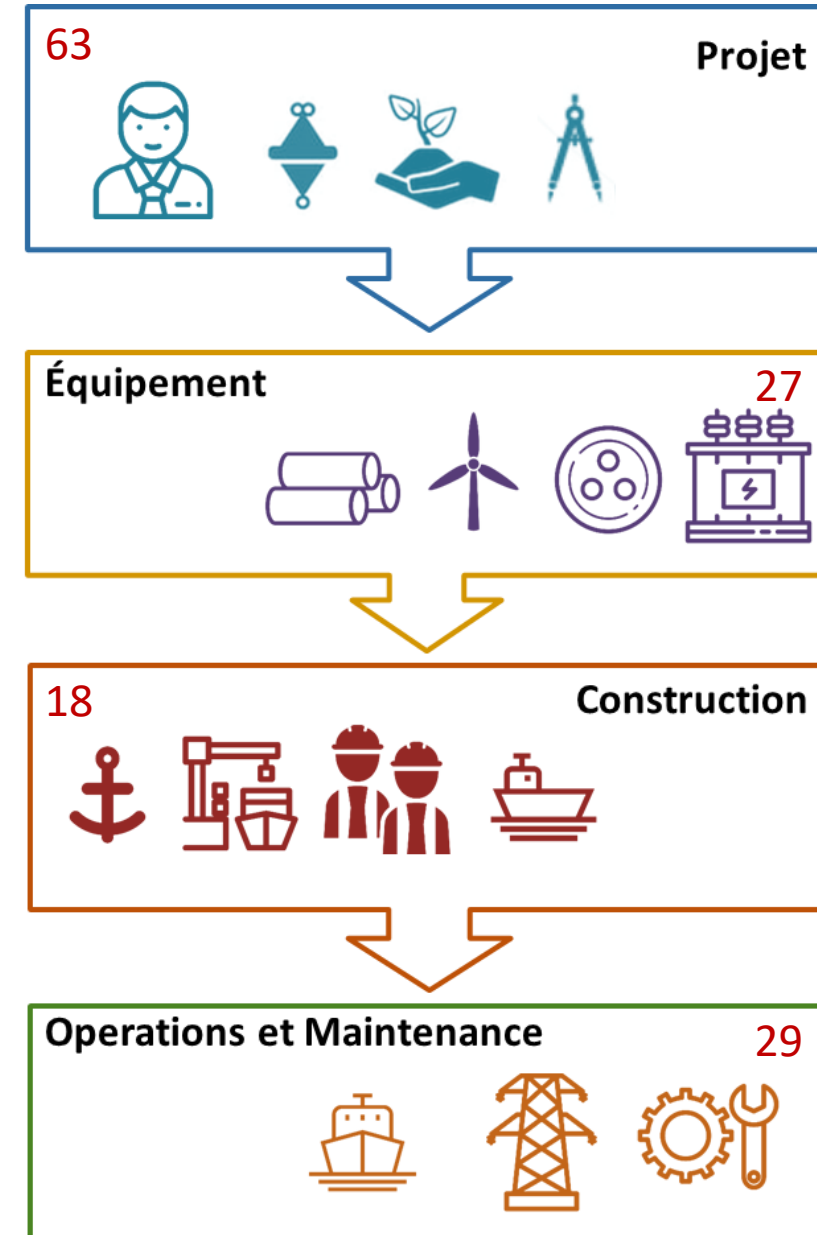
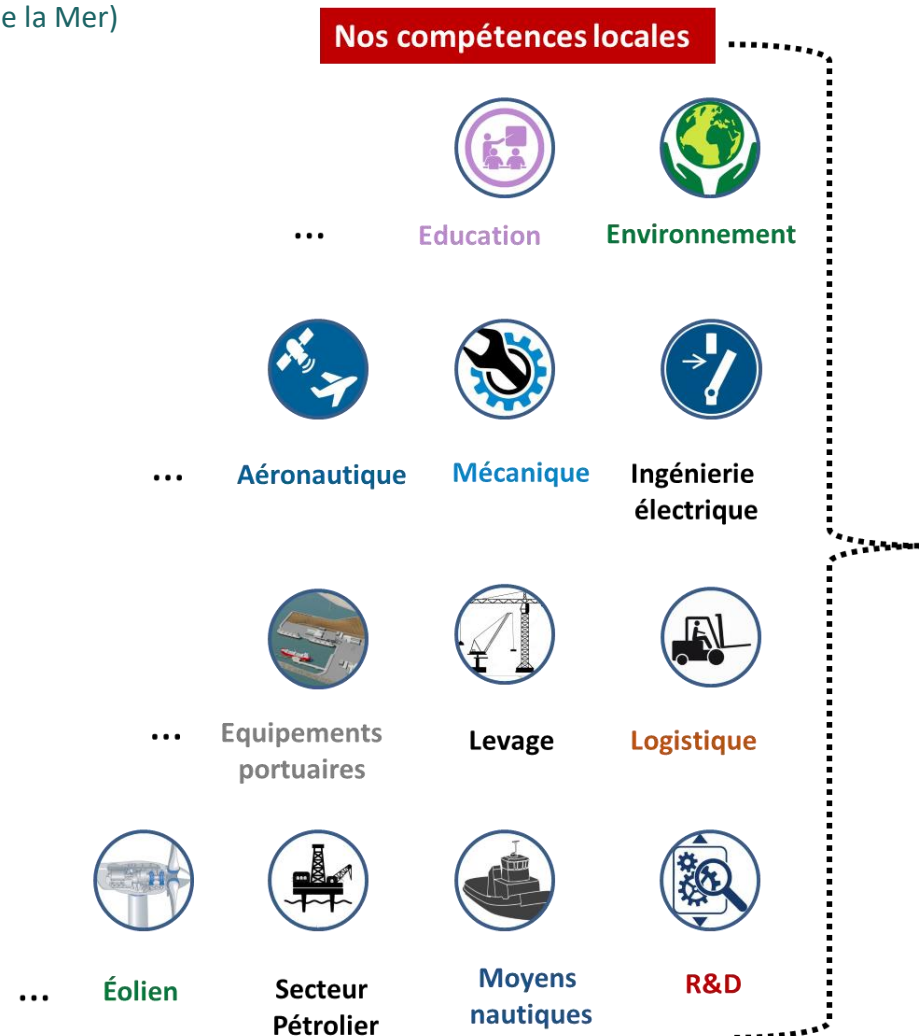


# La filière régionale mobilisée

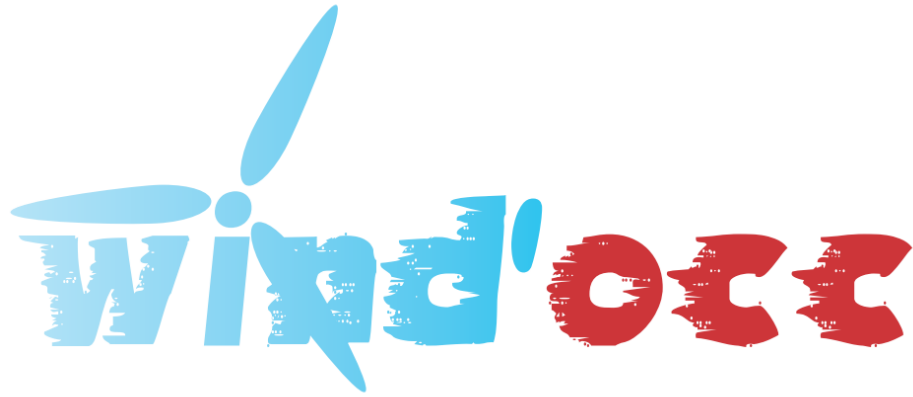
137 entreprises en Occitanie positionnées sur la chaîne de valeurs ou présentant un potentiel pour la filière

108 ETP en 2020 : +52% par rapport à 2019

(Observatoire des Energies de la Mer)



# Structuration de la filière, la dynamique Wind'Occ



1. Échanger



2. Compétences



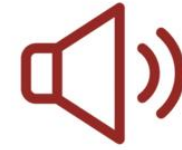
3. Visibilité



4. Communiquer



5. Développer



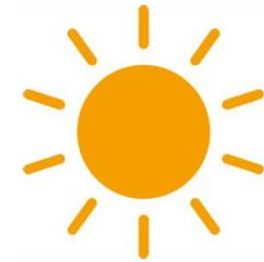
6. Appels d'offres



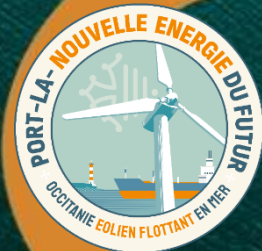
7. Se Structurer



8. R&D

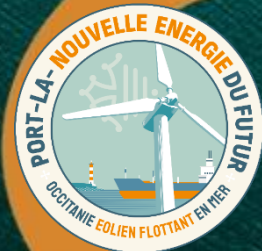


9. Rayonner



# Offshore Wind Turbine Certification

(Susanne Landskröner, DNV / Kimon Argyriadis, DNV)







WHEN TRUST MATTERS

# Offshore Wind Turbine Certification

Éolien en Mer Flottant : Journée filière Wind'Occ 2021

Susanne Landskröner, Kimon Argyriadis

**Jeudi 01 Avril 2021**



# A global assurance and risk management company

**156**  
years

**12,000**  
employees

**100,000**  
customers

**100+**  
countries

**5% R&D**  
of annual revenue

**Ship and offshore  
classification and  
advisory**



**Energy advisory,  
certification,  
verification and  
monitoring**



**Software and  
digital solutions**



**Management system  
certification,  
supply chain and  
product assurance**



**Certification** is a: *Third-party **attestation** related to products, processes, systems or persons*

**Review** is done by: Verification of the suitability, adequacy and effectiveness ...

## Do they match?





# Renewables certification – main services

Accredited certification of equipment (products), services and projects in renewable energy

- Component certification
- Prototype certification
- Type certification
- Project certification

- Onshore wind
- Offshore wind incl. floating
- Energy storage, solar/PV, wave and tidal

Certification is based upon:

- Internationally accepted standards
- Various national standards
- DNV service documents



# Type Certification

- A wind turbine **type**
  - evaluated for compliance with applicable regulations and assumed conditions (e.g. wind turbine class)
- Selected design parameters and conditions
- Manufacturing process and type testing on a sample



VS.

# Project Certification

- Power plant including wind turbines
  - evaluated for compliance with applicable regulations and **site-specific** conditions
- designed for a specific location
- manufactured for a specific project
- installed and commissioned under site-specific circumstances







## Providing Project Certification experience to:

**>130**

offshore wind projects

**12**

countries

**21**

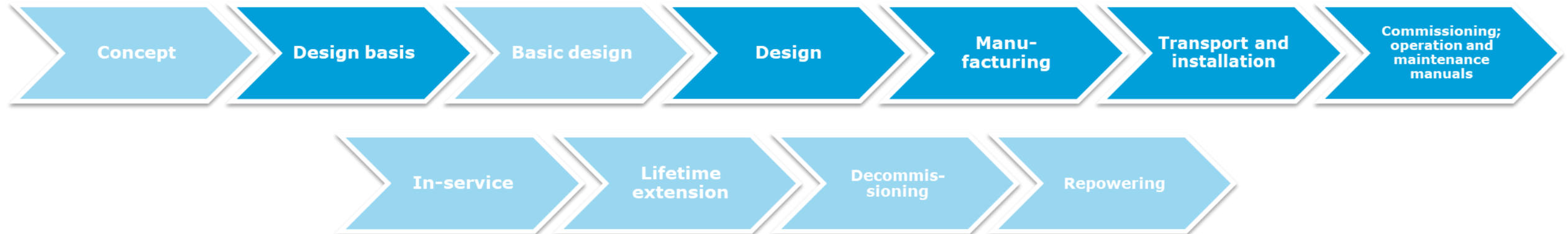
Offshore projects in  
top emerging markets

# Project and certification - PHASES

- **Project phases - simplified phases**



- **Certification phases**

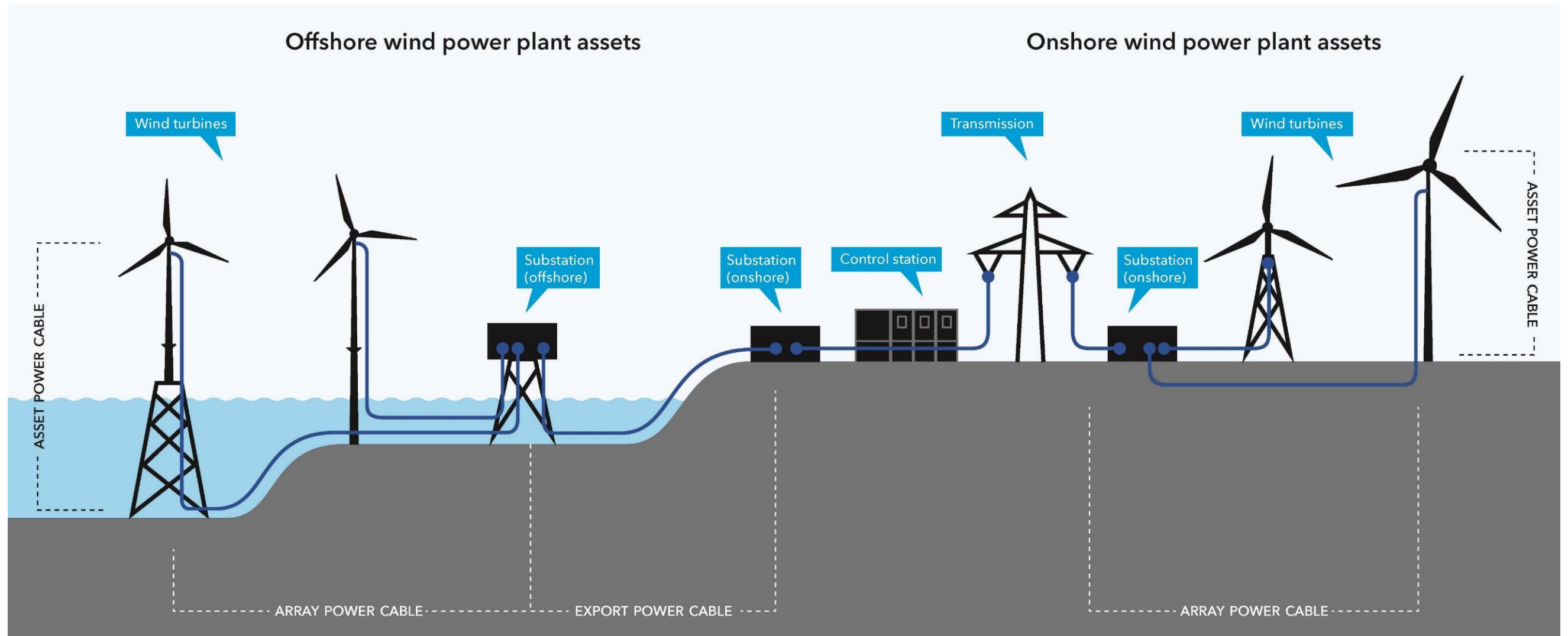


**Legend**

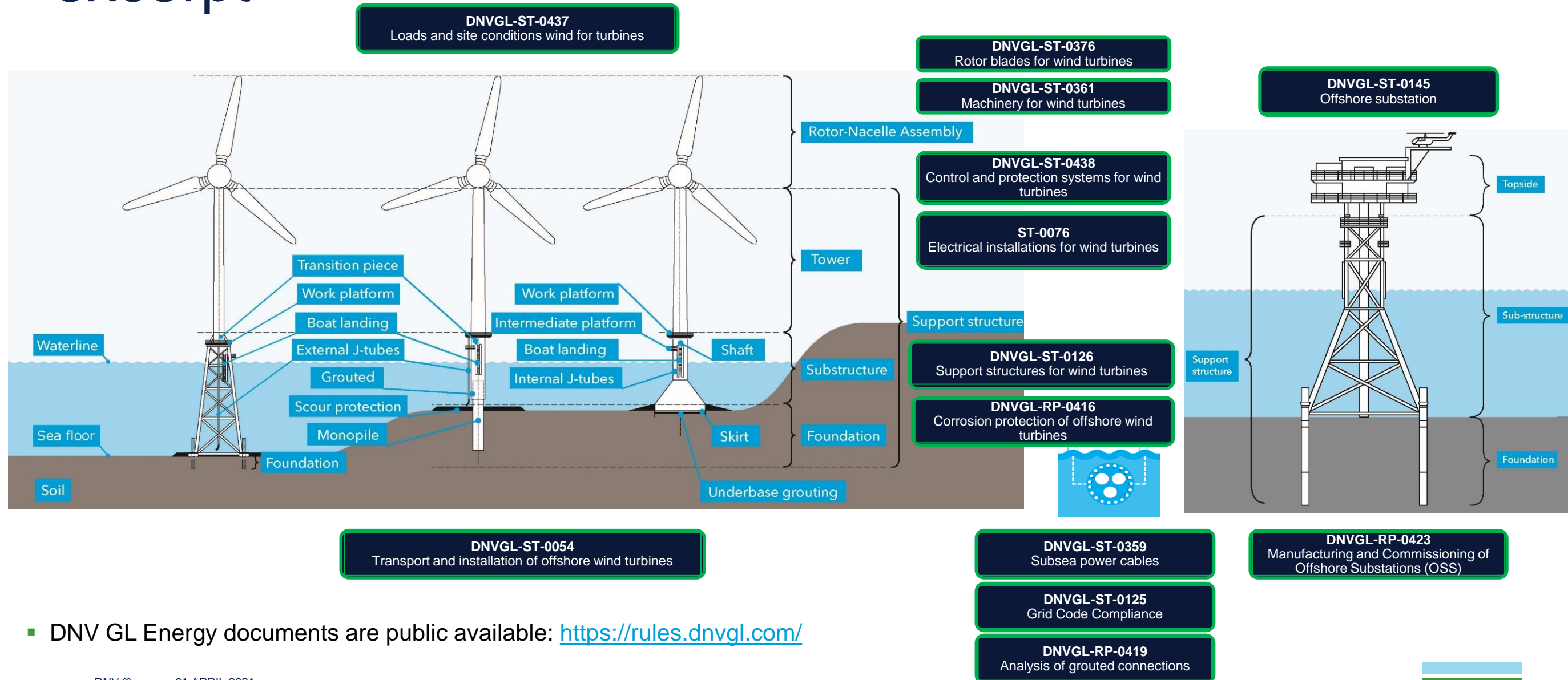




# Wind power plant - ASSETS



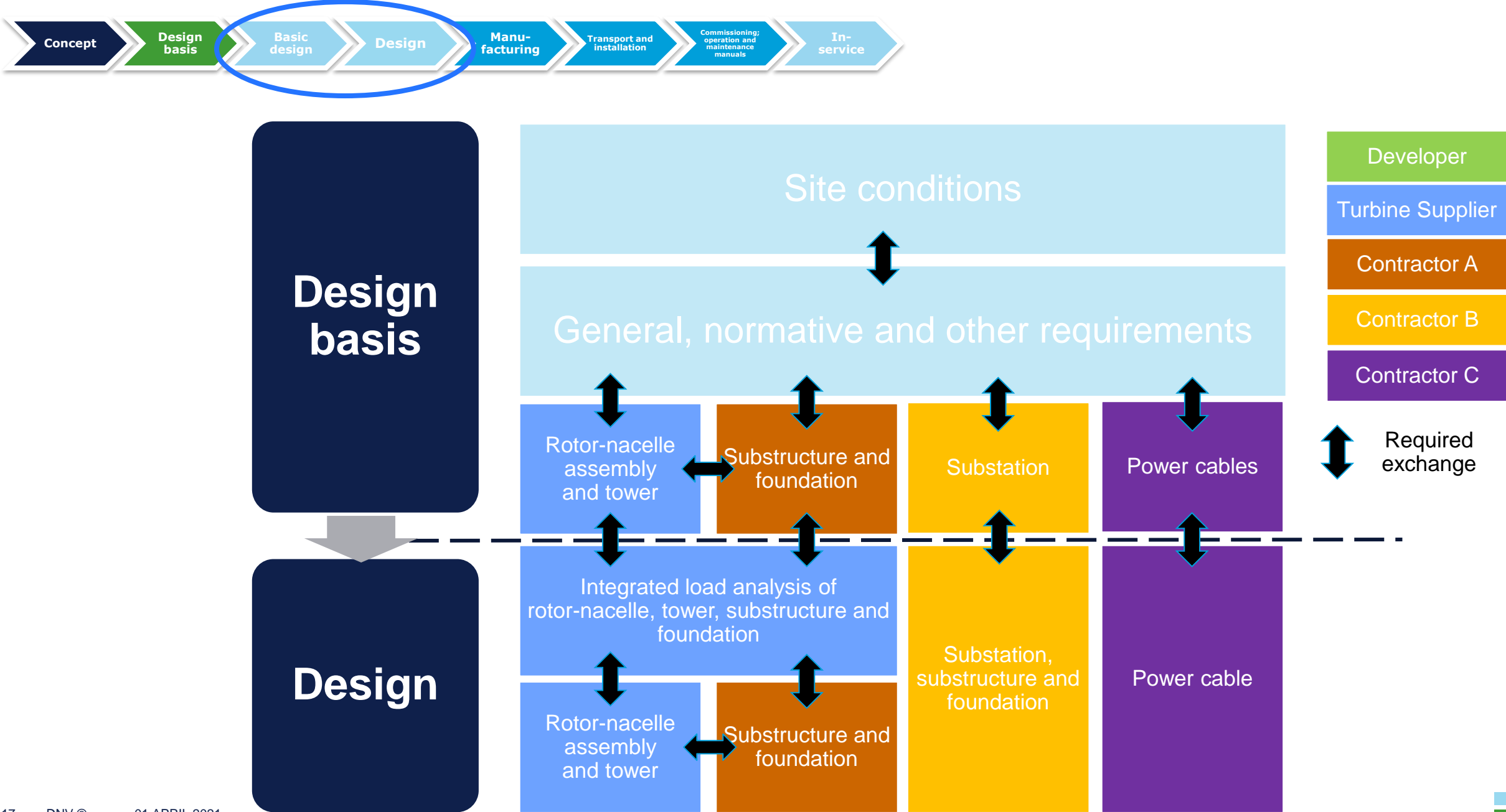
# Relevant standards and recommended practices – excerpt



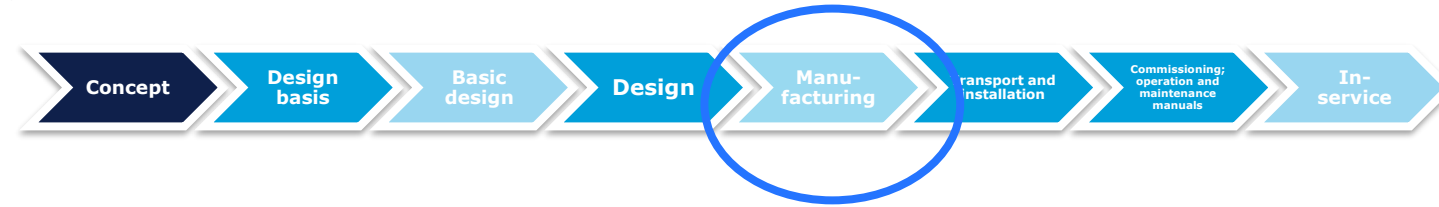
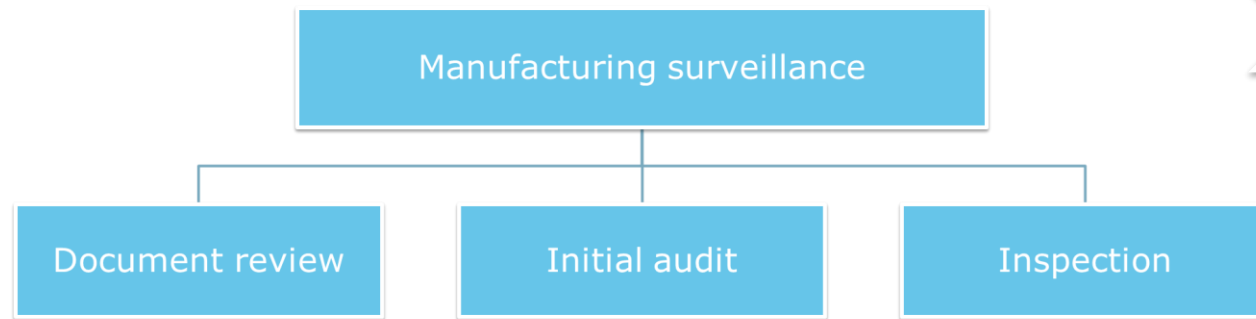
- DNV GL Energy documents are public available: <https://rules.dnvgl.com/>



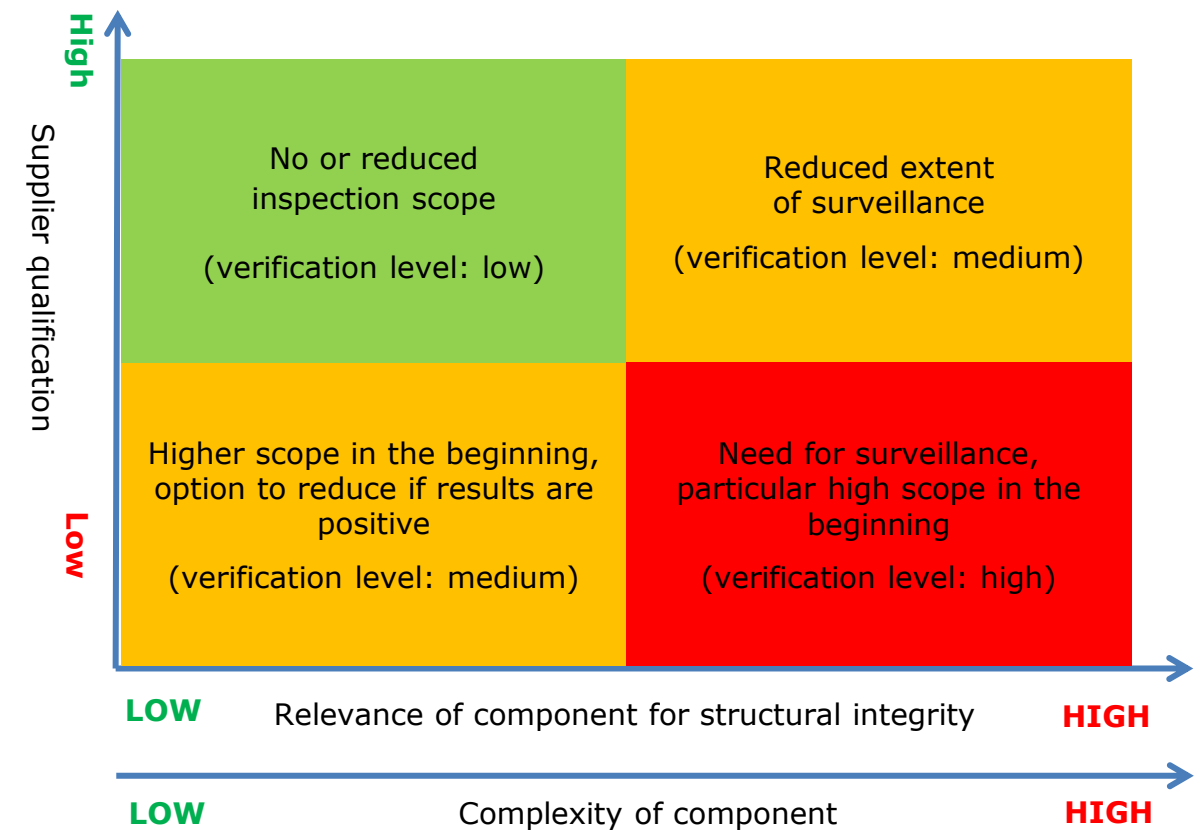
# Multiple partners in the projects – communication lines



# Manufacturing surveillance



- survey of manufacturing
- evaluation of quality management system
- product related quality audits
- survey of contractor's quality management activities.
- The risk level is higher for a component (or an assembly) which failure leads to severe consequences.
- On the other hand a higher verification level will help to reduce the risk level.



# Countries where typically certification for offshore wind is required



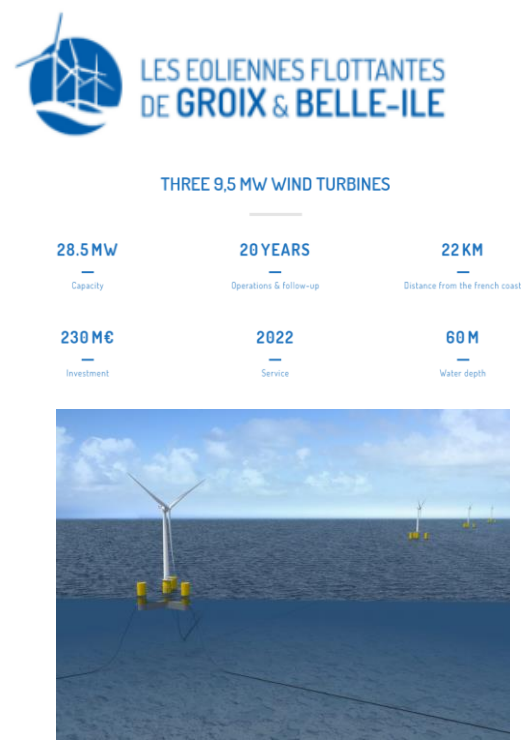


# Offshore wind certification in France

- Responsible: Ministère de la Transition écologique
- NO legal framework or requirement for certification of offshore wind projects  
BUT: French offshore wind projects are applying project certification  
REASON: to reduce the liability risk in connection to the asset installed – Loi Spinetta (1978)
- Applied certification schemes for French offshore wind power plants:
  - IEC 61400-22 (withdrawn in 2018),
  - DNVGL-SE-0073 *Project certification of wind farms according to IEC 61400-22* DNVGL-SE-0190 *Project certification of wind power plants*
  - IECRE OD-502 *Project Certification Scheme*
- Project certification  
Project certification by an accredited certification body for offshore wind farms including the wind turbines is common practice.

# DNVGL Renewables Certification in France

## Reference projects



Scope

Project Certification acc. to DNVGL-SE-0442

(ongoing)

Design Basis / Design Brief Certification for the floater acc. to DNVGL-SE-0442



Scope

Certification of Design Basis  
(2017-2021)



- 62 wind turbines manufactured by Siemens Gamesa Renewable Energy
- Power of each wind turbine: 8 MW
- Total power of the park: 496 MW
- Park located 15.5 km from Le Tréport
- Park located 17 km from Dieppe

Scope

Certification of Design Basis and Design  
(ongoing)



Scope

Certification of Design Basis  
(2017-2020)



- 62 éoliennes fabriquées par Siemens Gamesa Renewable Energy
- Puissance de chaque éolienne : 8 MW
- Puissance totale du parc : 496 MW
- Parc situé à 11,7 km de l'Île d'Yeu
- Parc situé à 16,5 km de Noirmoutier

Scope

Certification of Design Basis and Design  
(ongoing)



Scope

Certification of Design Basis  
(2017-2020)

# DNVGL Renewables Certification in France

## Reference projects



### Project

62 Wind turbines, SGRE 8 MW Offshore turbine  
1 offshore substation

### Scope DNV

Certification Scheme: DNVGL-SE-0073

Design Basis / Design Brief Certification ongoing

Design Certification starting spring 2021



### Project

62 Wind turbines, SGRE 8 MW Offshore turbine  
1 offshore substation

### Scope DNV

Certification Scheme: DNVGL-SE-0073

Design Basis / Design Brief Certification ongoing

Design Certification starting spring 2021



# DNV's experiences

- Acceptance within the population
- Extensive permitting process
- Static permission: No envelopes for turbines and support structures
  - ⇒ Every changes requires an update of the permission
  - ⇒ Extension of the planned timeline by around a year
- Requirements for local content
- Challenging environmental conditions in the Channel and on the Atlantic coast
  - Extreme tidal range on the Channel coast
  - Soil: rock on the Atlantic Coast
  - Water Depth especially on the Atlantic and Mediterranean coast

Development



Technical  
Development  
in turbine size  
or support  
structures

Permitting  
process

Final Design

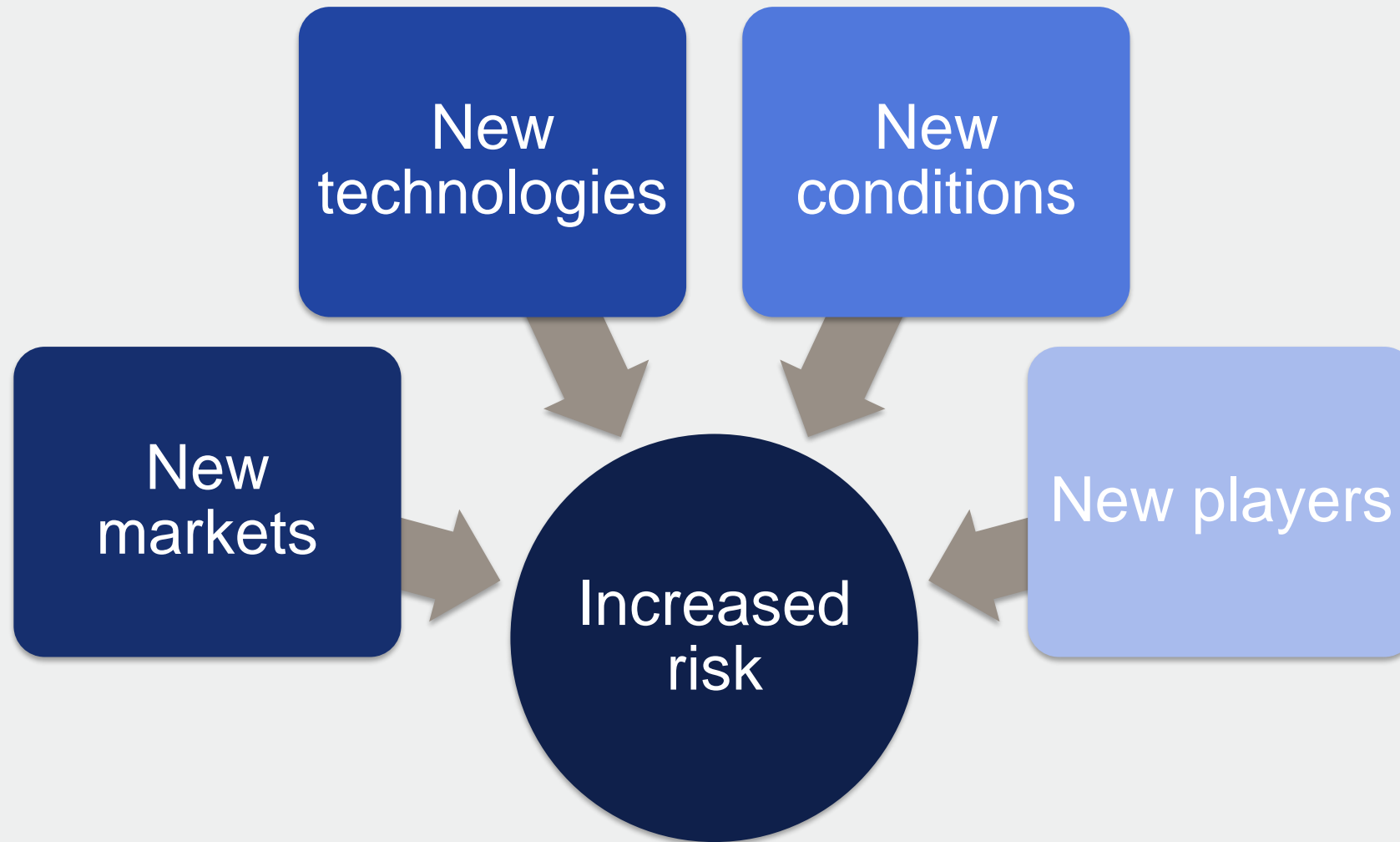


Time [a]

# FWT Certification

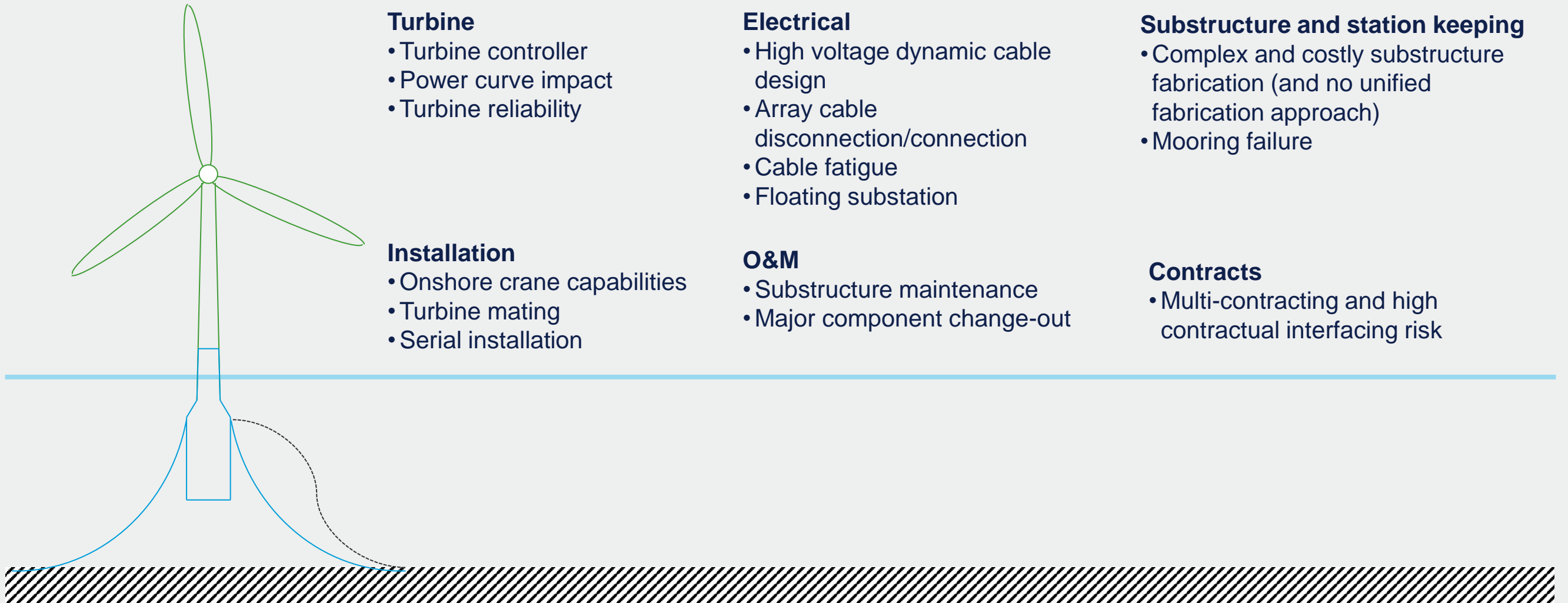


# New risks need to be managed



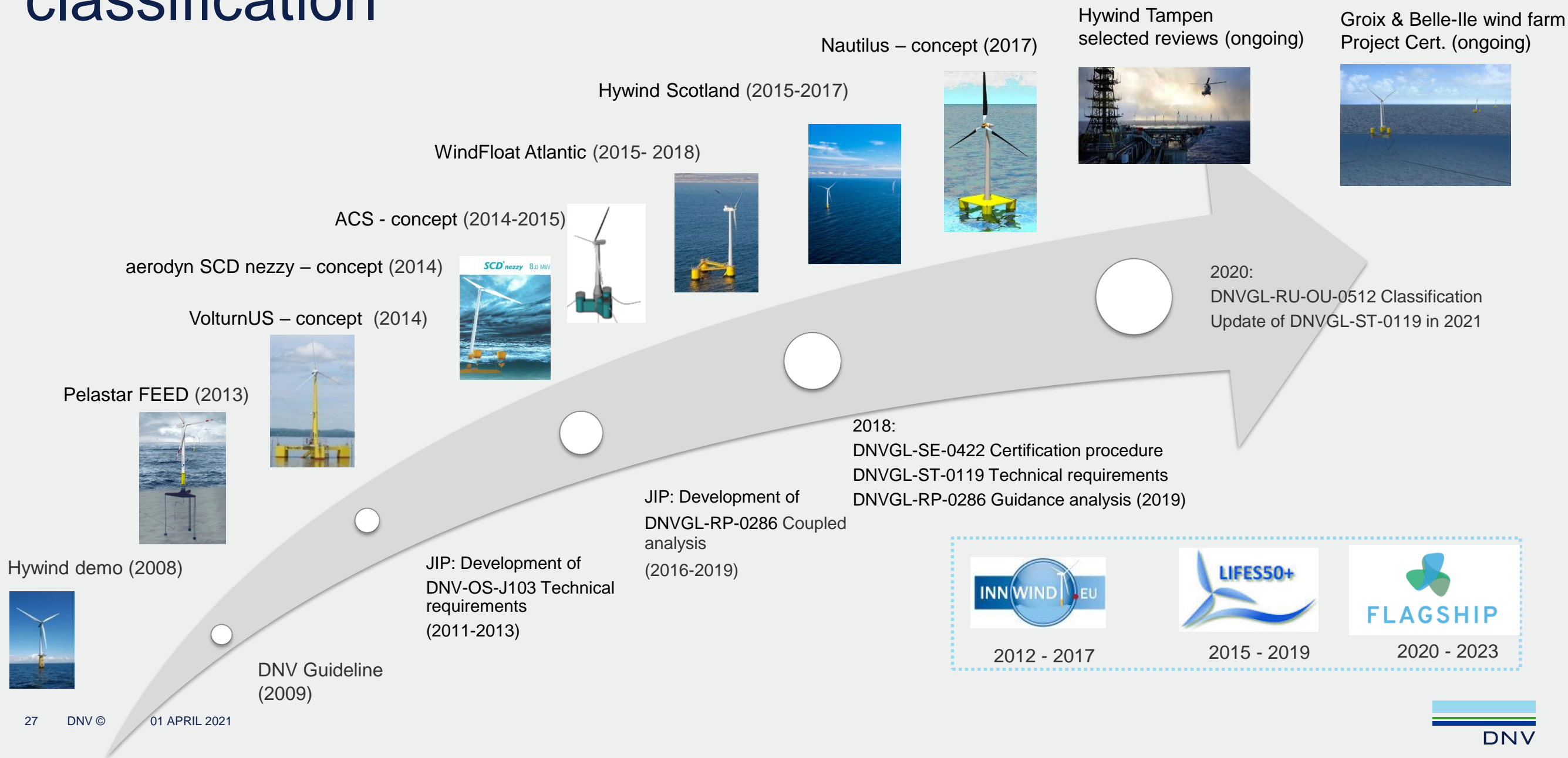


# Floating wind projects – Specific challenges

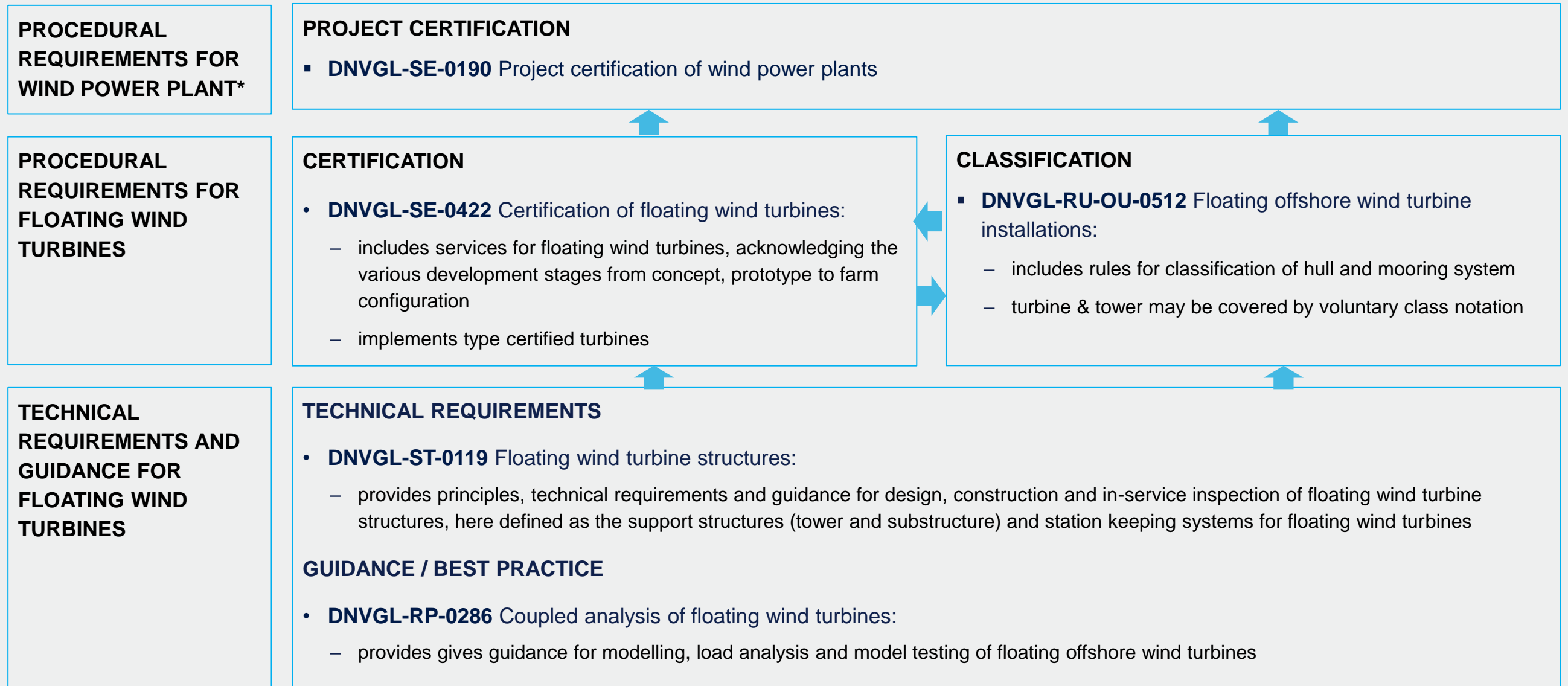


# Floating Wind standards, certification and classification

Selected reference projects



# DNV service documents for floating offshore wind farms



\*Particular relevant for developers and owners of wind power plants

DNV is an accredited certification/classification body for floating wind



# Project Certification and Class rules

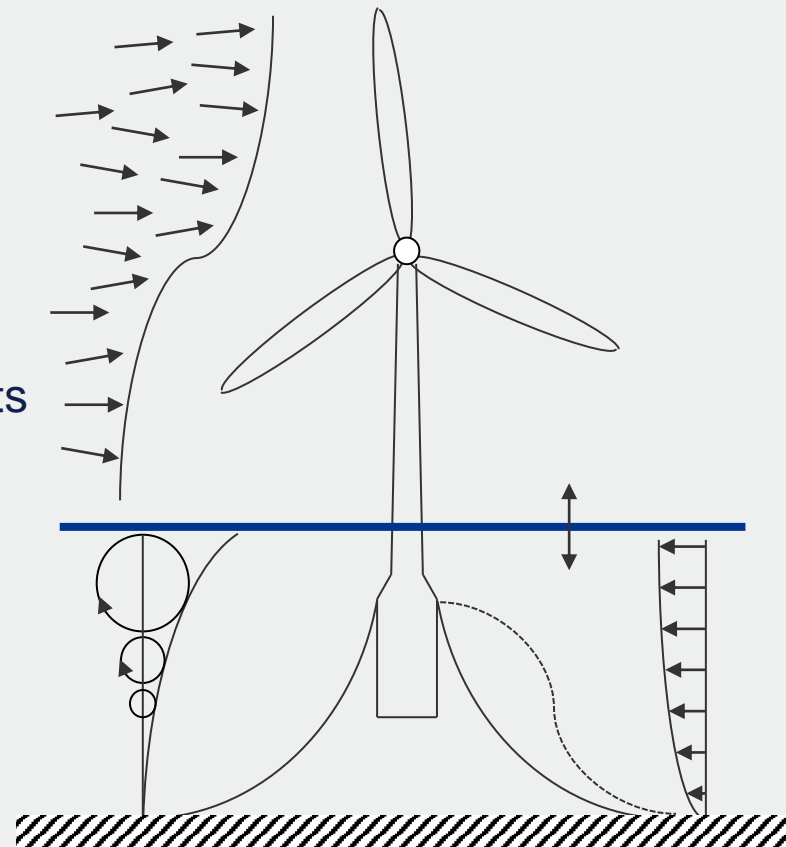
		PROJECT PHASES			
		Design	Fabrication	Installation	Operation
COMPONENTS	Substation	Project Certificate / CVA 30 CFR 585			Project Certificate incl. operation
	Cables				
	Turbines	Classed floater + mooring + turbine			
	Floating structure				
	Mooring and anchoring				

# DNV GL-SE-0422 Certification of floating wind turbines

- Service description specific for floating installations - includes all development phases:



- Applicable for components and complete systems
- Risk based approach
- Extension to DNV GL's existing service specifications:
  - DNVGL-SE-0190 Certification of wind power plants
  - DNVGL-SE-0441 Type and component certification of wind turbines
- IEC compatible



## Consideration of changing floating elements

Loading, stability

Structure type

Mooring and anchors

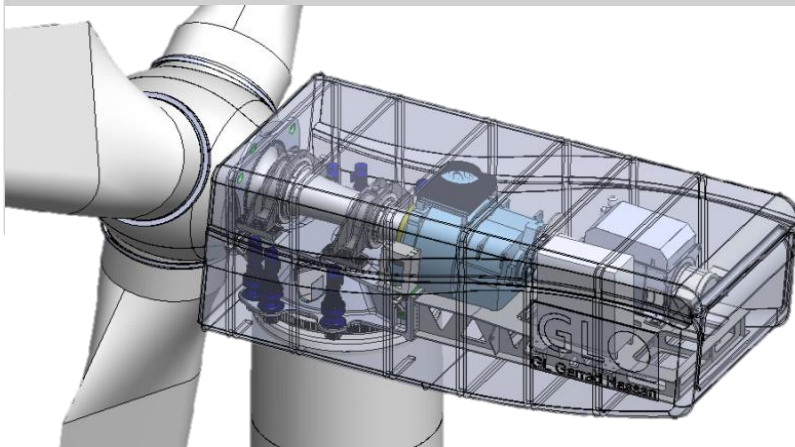
Fabrication

Installation and O&M

# Basic renewables certification elements

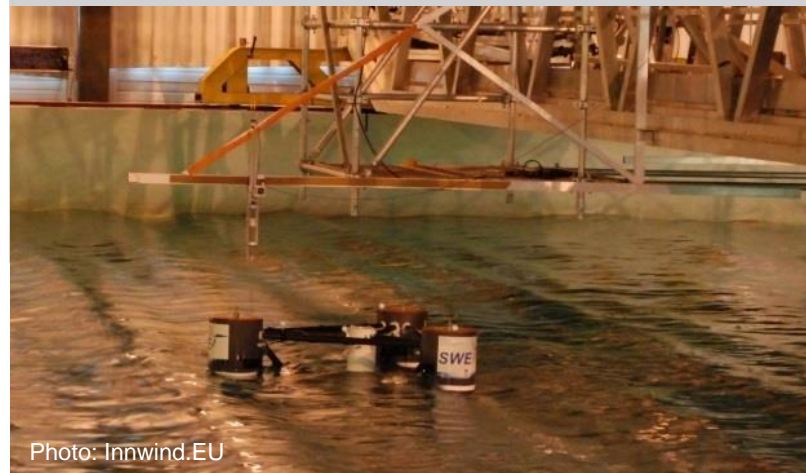
## Design Basis & Design Assessment

- Plausibility of the design
- Protection and safety
- Loading
- Structural analysis
- Mechanical & electrical installation
- Examination of drawings
- Examination of components



## Test

- Model tests
- Component tests
- Test of the prototype
- Comparison of test results with assumptions



## Survey and Quality Control

- Examination of fabrication quality
- Witnessing of installation
- Witnessing of commissioning





# Prototype and Project certification



## ■ Objectives

Ensure safety and integrity

Provide independent review/analysis

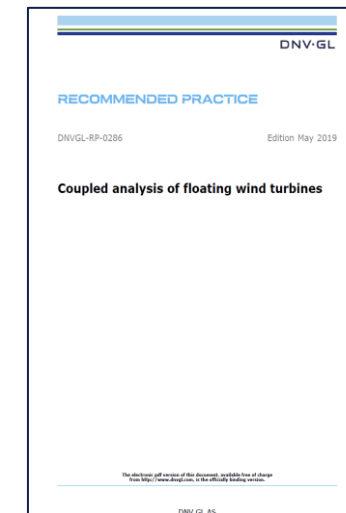
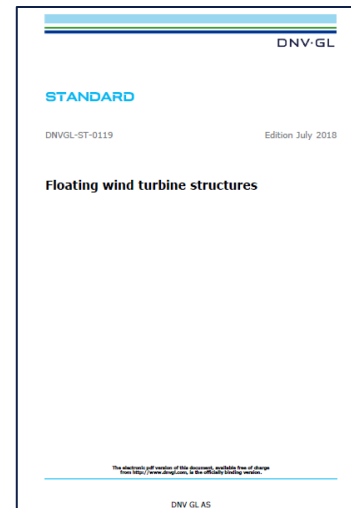
Cover critical technical interfaces

Assure documentation is in order and complete

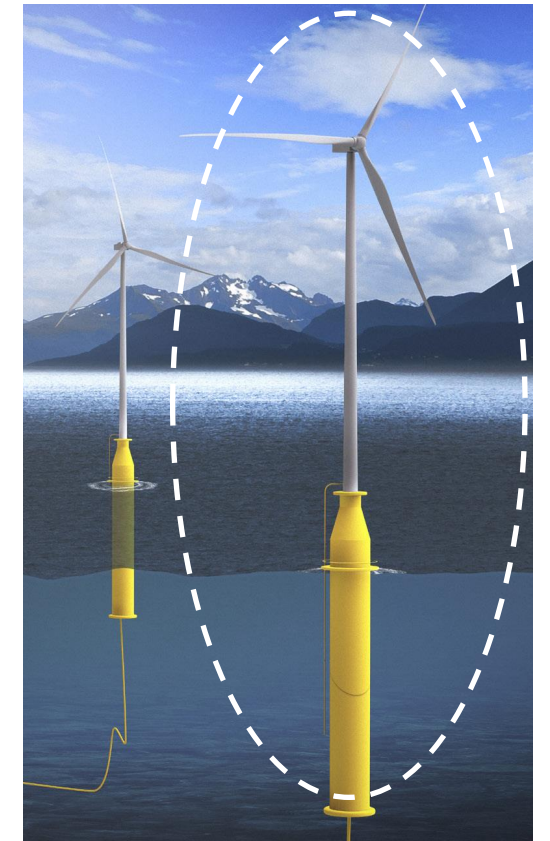
System level review

## ■ Scope of Work

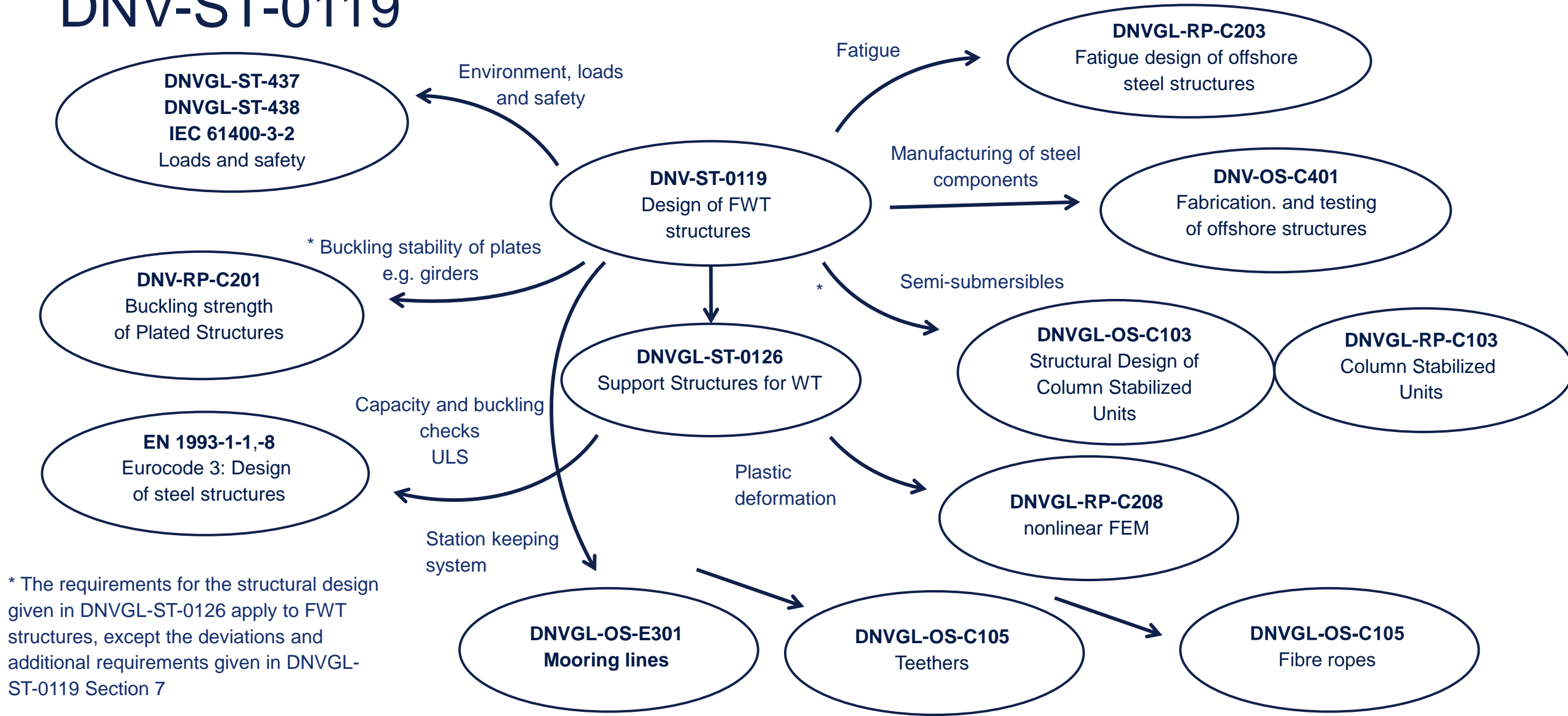
- Site Conditions
- Design Basis
- *ILA (Independent Load Analysis)\**
- Design
- Manufacturing
- Testing
- *Transportation & installation\**
- *Commissioning\**
- *Periodic monitoring\**



*\*Project certification only*



# References scheme for Floater Structural Verification in DNV-ST-0119



\* The requirements for the structural design given in DNVGL-ST-0126 apply to FWT structures, except the deviations and additional requirements given in DNVGL-ST-0119 Section 7



# Challenges = Opportunities



# Offshore Wind Turbine Certification

Éolien en Mer Flottant : Journée filière Wind'Occ 2021

[susanne.landskroener@dnv.com](mailto:susanne.landskroener@dnv.com), [kimon.argyriadis@dnv.com](mailto:kimon.argyriadis@dnv.com)

[www.dnv.com](http://www.dnv.com)

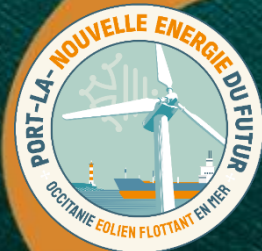




# Certifications et formations, témoignages d'entreprises régionales:

## CAMERON / Schlumberger site de Béziers

(Luc Mas, Schlumberger / Benoît Jauzion, Schlumberger / Stéphane Henry, Schlumberger)



# WIND'OCC 2021

L. Mas / S. Henry / B. Jauzion

01 Avril 2021





# Cameron, a Schlumberger Company

- Fabricant d'équipements pour le secteur Oil & Gas destinés à la mise en sécurité de forages terrestres ou en mer.
- Division « New Energy » rassemblant différentes initiatives (électrolyseur H2, géothermie, lithium, éolien/photovoltaïque offshore)
- Site de production en Occitanie

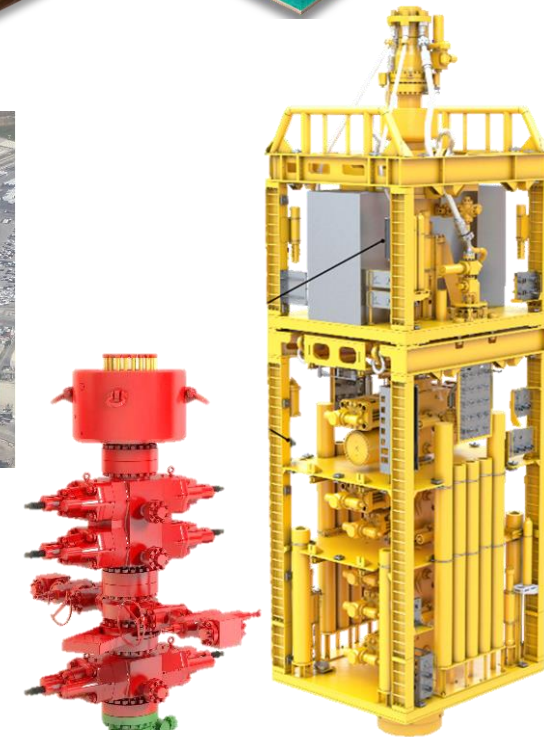
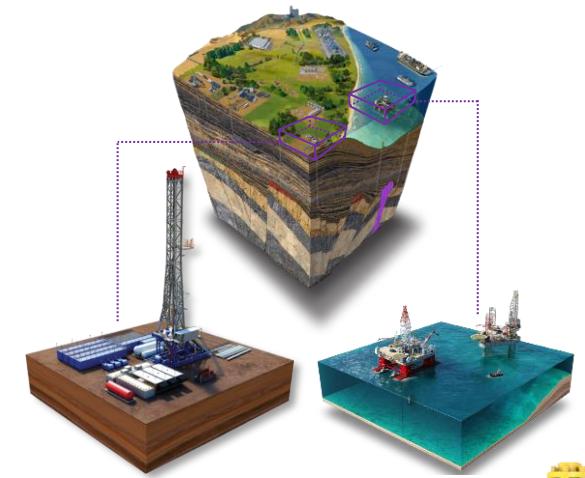
Usine de Béziers:  
environ 10 Ha et  
500 employés



Port de Sète: Zone  
d'assemblage final et  
d'expédition maritime



- Des produits réglementés et certifiés par des normes internationales API (American Petroleum Institute), NACE, ISO,...
- Une clientèle répartie sur tous les continents
- Des demandes permanentes de certification et d'inspection de nos produits par des organismes indépendants



# DNV et nous, un partenariat quotidien

## Nos activités communes

- Certification de **conformité de nos designs** aux exigences DNV
- **Inspection** des nos équipements en cours ou en fin de production selon les plans qualité
- Validation de nos **Certificats de Conformité**
- Validation de nos PV de tests de **qualification de nos produits** (incluant les prototypes)
- **Re-certification** des équipements revenants en usine après utilisation sur chantier pour une durée maximum de 5 ans



## Nos contacts

- Entre les **bureaux d'études** Cameron et ceux de DNV basés à Oslo et Houston
- Entre les **services Qualité** de Cameron et de DNV, dont le bureau le plus proche est basé à Marseille
- Entre le service **contrôle qualité Cameron et les inspecteurs DNV** présents en permanence sur notre site



# Exigence qualité

## Normes

- Exigences qualité des spécifications DNV, par exemple DNV-OS-E101 (« drilling ou well intervention » équipements), standard 2.7-3 (« portable offshore unit »), standard 2.22 (« lifting appliances »)...
- Conversion en langage interne SP (spécification qualité générale) et IP (plan qualité individuel par type de pièce)

## Fruit du partenariat

**DAP:** « Design Approval Package »  
revue individuelle d'un de nos designs par le BE de DNV



**SURVEY:** surveillance de DNV de nos ateliers



## Formation

- Formation et adaptation au poste de nos employés
- Réunion de Pré-Production avec nos fournisseurs
- Formation sur site d'étudiants de l'IFP (Institut Français du Pétrole)
- Formation sur site de nouveaux collaborateurs chez nos clients

<div>PROPERTY OF</div> <div>Schlumberger</div>		DRAWN BY		DATE		REVISION		SP-005050-10			
		YADIRA SORIA		23 DEC 2020							
		APPROVED		DATE							
		JUNE CORDEIRO		23 DEC 2020		14		Page 15 of 27			
SP- LINE	CATEGORY	ASSEMBLY/SUB-ASSEMBLY/COMPONENT			API CATEGORY	Q- CODE	D-NOTE	DNV RATING	INSPECTION PLAN (IP)		
12	RAM-TYPE BOP ASSEMBLY	TANDEM BOOSTER END CAP (U, UM BOP)			OTHER PARTS (CRITICAL)	Q1B	D-000100- 09-07	C	IP_DPC50001_1		
13	RAM-TYPE BOP ASSEMBLY	ADAPTER PLATE (U BOP & UI LIFTING			Property of <div>CAMERON</div> <div>A Schlumberger Company</div>	Created Date		Created By	Change Date	Changed By	IP Number
13.1	RAM-TYPE BOP ASSEMBLY	ADAPTER LIFTING PLATE (U E				27 JUL 2017		103664	15 JAN 2021	24525	IP_DPC50003_01
					INSPECTION PLAN DESCRIPTION:		API 16A 4TH EDITION, DNV, DNV-GL-OS-E101		Revision 5	Change Number: 5098851	
14	RAM-TYPE BOP ASSEMBLY	ALL BUTTONS (FOR OPERATI									
15	RAM-TYPE BOP ASSEMBLY	BONNET OPERATING CYLIND AND UII BOP			INSPECTION / TEST ACTIVITY	INSPECTION ID NUMBER	REFERENCE STANDARD <sup>1</sup>	PROCEDURE AND/OR ACCEPTANCE CRITERIA, METHOD, DOCUMENTATION REQUIREMENT <sup>2</sup>			SAMPLE PLAN
								DOCUMENT REQUIREMENTS: QUALITY TEST COUPON RESULTS REPORT			
								Q-SAMPLE SIZE: 100%			
OPERATION ACTIVITY : 0060 CHEMICAL ANALYSIS											
		0010	CHEMICAL ANALYSIS	DMCRRN05	CAMERON BOM	CHEMICAL ANALYSIS VERIFY THE CHEMICAL COMPOSITION OF THE BASE MATERIAL TO THE CAMERON MATERIAL SPECIFICATION. DOCUMENT ACTUAL WEIGHT % OF ELEMENTS LISTED BY THE MATERIAL SPECIFICATION. ~ SURVEILLANCE ~ CAMERON: REVIEW THIRD PARTY: REVIEW CUSTOMER: NONE DOCUMENT REQUIREMENTS: MATERIAL TEST REPORT SAMPLE SIZE: PER HEAT NUMBER					Sample 100%
OPERATION ACTIVITY : 0070 HEAT TREAT CONTROL											
		0010	HEAT TREAT CONTROL	DMCRRN02	CAMERON BOM	HEAT TREAT CONTROL VERIFY THAT HEAT TREATMENT IS PERFORMED TO THE CAMERON MATERIAL SPECIFICATION. HEAT TREATMENT CERTIFICATION OF COMPLIANCE TO INCLUDE TEMPERATURES, TIMES AT TEMPERATURE, QUENCH MEDIA TYPE AND TEMPERATURE. MONITORING METHOD FOR THE PARTS AND QTC WHEN THE QTC IS HEAT-TREATED WITH THE PARTS IT REPRESENTS, CERTIFICATIONS SHALL SO STATE: EXTRA TEST BAR NOT REQUIRED TO BE HEAT TREATED. ~ SURVEILLANCE ~ CAMERON: REVIEW THIRD PARTY: REVIEW CUSTOMER: NONE DOCUMENT REQUIREMENTS: HEAT TREATMENT CERTIFICATE OF COMPLIANCE SAMPLE SIZE: 100%					Sample 100%

**TAP:** « Type Approval Package »

revue globale de design par le BE de DNV afin de valider une famille de produits

**MSA:** « Manufacturer Survey Arrangement »

délégation des droits de certification donnée par DNV à Cameron Béziers



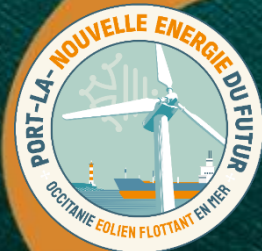
# Bilan du partenariat Cameron Béziers et DNV

- Quelques chiffres:
  - **+30 années** de collaboration
  - 1 inspecteur au minimum présent sur site **tous les jours depuis 2014**
  - Environ **200 dossiers** de production signés par DNV **en 2020**
- Grande compréhension mutuelle de nos contraintes.
- Processus fluides et simplifiés = souplesse vis-à-vis du planning de production
- Garantie supplémentaire pour nos clients.

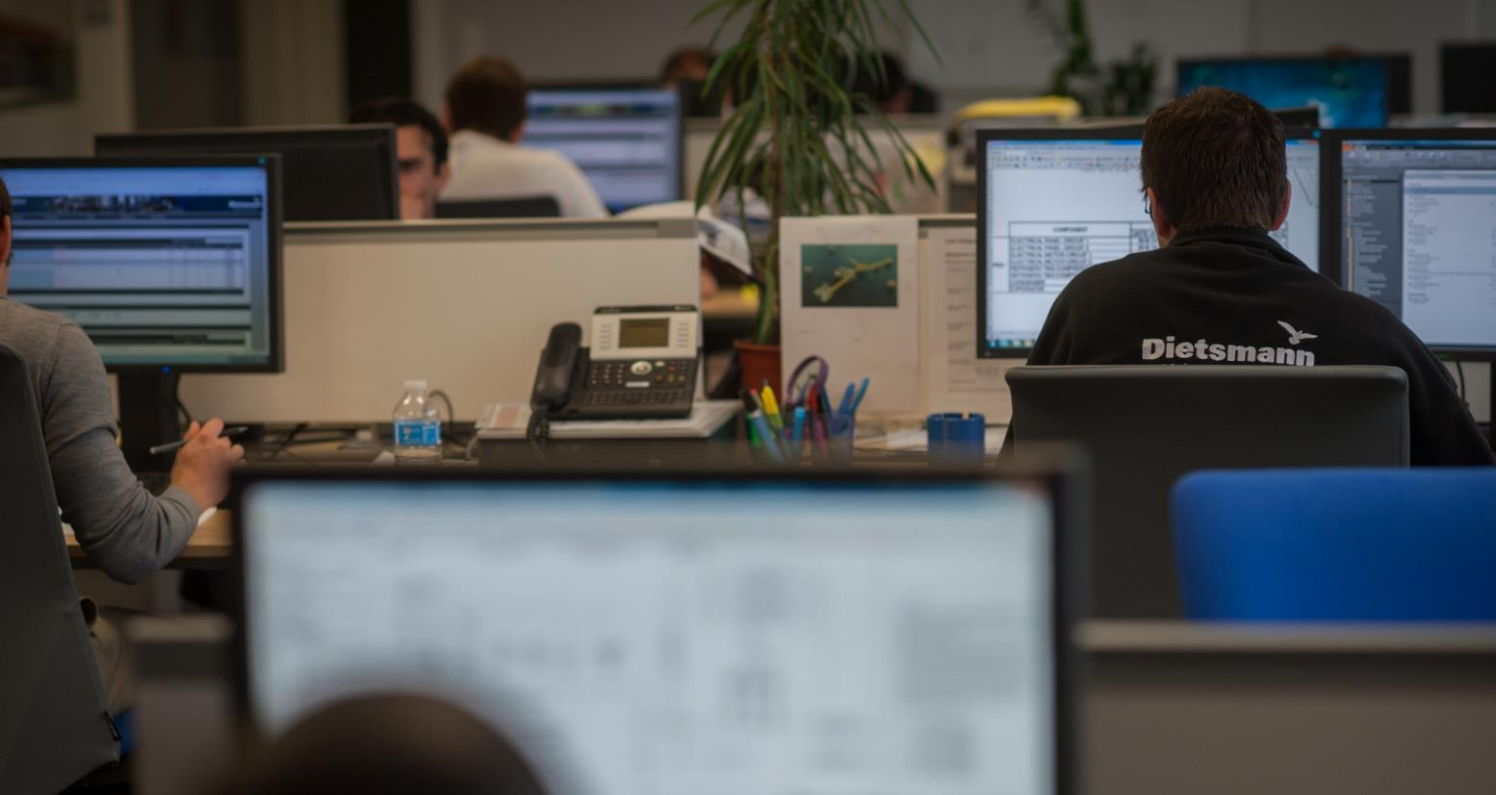
## Facteurs clés de succès

- Transparence et communication ouverte
- Intégration des exigences DNV à nos plans Qualité

# Certifications et formations, témoignages d'entreprises régionales: **Dietsmann** (Cédric Fargues, Dietsmann)







# DIETSMANN TECHNOLOGIES FRANCE

## INGÉNIERIE, CONSTRUCTION, ACHATS & FORMATIONS

SMART MAINTENANCE SOLUTIONS FOR CONTINUOUS PRODUCTION PLANT

  
**Dietsmann**  
Maintaining Energy



# DIETSMANN FRANCE

Basé à Salies-du-Salat, dans le sud-ouest de la France, 24000 m<sup>2</sup> répartis entre les bureaux d'ingénierie, le service achats et l'atelier de construction

## NOS ACTIVITÉS :

- Ingénierie & Construction dans les domaines de l'Électricité, l'Instrumentation & le CVC
- Réalisation et tests de tableaux électriques BT
- Conception et réalisation de cabines techniques (shelters)
- Service Achat & Logistique
- Centre de formations techniques et réglementaires

**SMART MAINTENANCE SOLUTIONS FOR CONTINUOUS PRODUCTION PLANT**

## NOS STANDARDS QHSE :

- Système de Gestion de la Qualité
- Charte & Politique QHSE
- Certificat ISO 9001
- Certificat ISO 14001
- Certificat ISO 45001
- Certification MASE
- Certification QUALIOPI



**RÉPUBLIQUE FRANÇAISE**



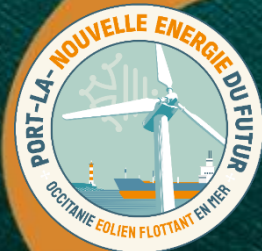
# CENTRE DE FORMATIONS TECHNIQUES ET REGLEMENTAIRES

## Nos formations :

- Formations réglementaires, Habilitation Électrique suivant la NFC18-510, Travaux sous Tension Batteries suivant la NFC18-505, Atmosphère Explosive (Ism\_ATEX INERIS)
- Formations techniques dans les métiers de l'Électricité, la Mécanique, l'Instrumentation & le CVC
- Formations réalisées en présentiel ou en distanciel
- 1000m<sup>2</sup> dédiés à la formation dont 1 salle de Métrologie, 1 local de simulation salle électrique HT/BT, 2 salles de cours, 1 atelier mécanique de 400m<sup>2</sup>, 1 salle spécifique à l'instrumentation et un local dédié aux Travaux sous Tension Batteries



# Échanges participants et suites à donner







# MERCI

## Contacts

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