FLOATING OFFSHORE WIND. FOCUS ON CERTIFICATION, LESSONS LEARNED AND MID-TERM CHALLENGES

MARTECH 15/05/2024

01

BUREAU VERITAS & OFFSHORE WIND

A GLOBAL TEAM OF 340+ DEDICATED PEOPLE

TO GATHER LOCAL EXPERTISE ALL ACROSS THE WORLD

25+
GW de capacidad instalada

90+
Proyectos Offshore wind

20+
Regiones y países donde BV está activo

12+
Años de experiencia

Global team

ensuring the homogeneity of the project execution

Centers of excellences

located in key hubs (Korea, US, UK, France, Germany, Japan, China, etc.)

Pool of inspectors

located close to the fabrication & project site

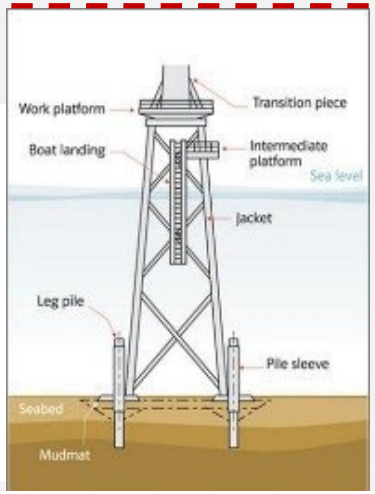
02

FLOATING TECHNOLOGIES AND TRENDS IN CERTIFICATION PROCESS

3 DIFFERENT SCOPES

DEFINED IN BV GUIDANCE NOTES, AND/OR IECRE (International Electro-technical Commission for Renewable Energies) OPERATIONAL DOCUMENTS

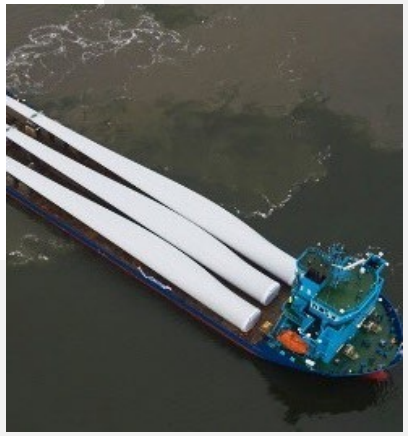
AIP & BDA



Prototype Certification

Addressed to Floater Designer

Component Certification



Type Certification

Addressed to Turbine OEM

Project Certification / Classification

Addressed to Project developer

BDA & Type Certification

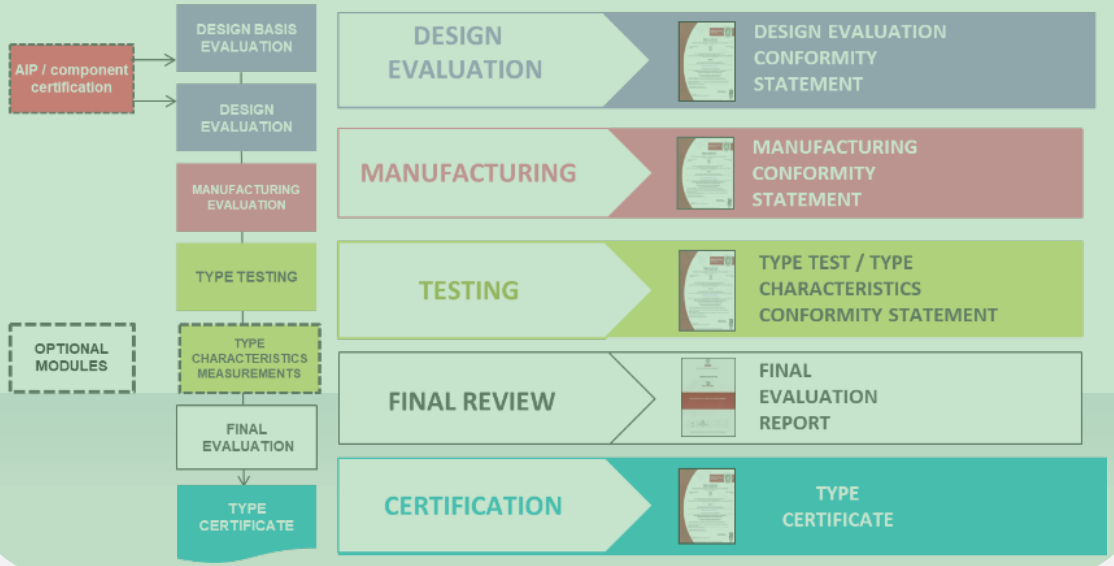
Technical Standards

Class Rules
BV NR 572
Or other Class Rules

Basic Design Assessment

Proven Technology
Concept verification
Correspond to more detailed documentation and analysis

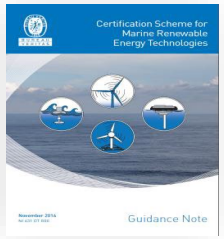
Type Certification



Procedures

IEC Renewable Energy
OD 502
Operational Management Committee

IEC International Electrotechnical Commission



BV NI 572
+ NR 445

PROJECT CERTIFICATION

CAN BE DIVIDED INTO TWO MAIN PHASES

- **Design**
  including verification of the project developer´s site condition assessment, reviewing the basis of the project design to ensure appropriate applicable standards and norms and sound methodologies, and examining the site-specific loads, as well as the entire wind turbine design for conformity with the design basis.
- **Construccti̇on,, installation and commissioning**
  to ensure that these operations are carried out in full respect of manuals, procedures and established safety standards.

BUREAU VERITAS IS INVOLVED
IN MULTIPLE CERTIFICATION PROCESS

AIPS, BDA & prototype certification

Floating substructures for wind turbines

- CMHI (Jiangsu) concept
- Windeed AB concept
- Windcrete from UPC
- INO12 – T.EN & Inocean
- OCG-Wind – OCERGY
- Hi-Float – HHI
- S2 Float – SHI / Saipem
- WindFloat – Principle Power Inc
- DemoSath – Saitec (AIP+Prototype)
- HexaFloat – Saipem
- Eolink (AIP + Prototype)
- XCF – MAREAL/CETEAL
- W2POWER – ENEROCEAN
- HYVEWIND (AIP)

……

Floating wind farms certification

Les Eoliennes Flottantes du Golfe du Lion (EFGL)

- Ocean Winds, Eiffage Metal, Principle Power, Vestas

Provence Grand Large (PGL), France

- EDF RE, SBM-IFPEN, Siemens Gamesa, Eiffage Metal,
- Prysmian

EOLMED, offshore Gruissan, France

- Qair, TotalEnergies , Ideol, Vestas, Ponticelli – Matière

EREBUS, Celtic Sea, UK

- Blue Gem Wind (JV TotalEnergies & Simply Blue),
- Principle Power

BADA

- BADA Energy (JV CORIO Generation, TotalEnergies and SK Ecoplant)

FLOVENTIS, Llyr 1 and Llyr 2

- JV between SBM Offshore and Cierco
- Phase 1: competitive pre-FEED

BUREAU VERITAS

03

FLOATING OFFSHORE WIND. LESSONS LEARNED AND MID-TERM CHALLENGES

LESSONS LEARNED

FLOATING OFFSHORE WIND

- Specific needs of operators (floater selection):

- Technical Due Diligence
- Certification

- Special calculation softwares. In-house developments.

- Key topics:

- Dynamic cables
- Mooring lines
- Life-cycle extension

- New technologies built in concrete.

- Rule update

- Feedback from Pilot projects

MID-TERM CHALLENGES

FLOATING OFFSHORE WIND

- Floating offshore substations.

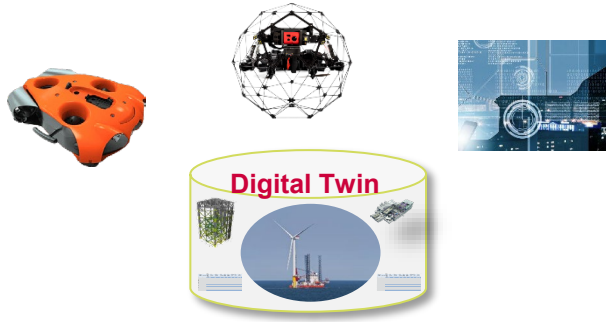
- Underwater cables. Valuable feedback from offshore bottom fixed windfarms.

- Feedback from pilot projects

- Specific Ships to be designed and built for wind farms installation, operation and maintenance

- Incorporación de O&M en Fases de diseño. Clasificación:

- Risk Based Inspection Plan (RBI)
- Remote inspections Techniques
- Digital Twin and 3D Classification



VESSELS FOR INSTALLATION, MAINTENANCE & OPERATION

Anchor Handling Vessels

SOV & CSOV

Cable layer ships

Crew Transfer Vessels

Specific ships

- Ships highly specific and adapted to its purpose, with innovative designs continually emerging.

- For shipowners to adapt to advancing offshore wind technology & playing a key role in the industry`s energy transition

- Type of vessels will grow in prominence as floating offshore wind develops.

WANT TO KNOW MORE?

JAVIER GONZÁLEZ ARIAS

Floating Offshore Renewables Market Leader BV Iberia

677 995 740
javier.gonzalez-arias@bureauveritas.com

BUREAU VERITAS

NEW TECHNOLOGY REPORT ON FLOATING OFFSHORE WIND

- OVERVIEW OF MARKET POTENTIAL
- CHALLENGES & OPPORTUNITIES OF THE INDUSTRY
- COVERING ALL THE STEPS
  - Design & Construction
  - Transport & Installation
  - Operations
- FOCUS ON PORTS INFRASTRUCTURES
- FOCUS ON CERTIFICATION SCHEMES


BUREAU VERITAS
1828
BUREAU
VERITAS
Shaping a world of trust