



Offshore energy

Our vision, mission, our people and competences

Sustainable Design Principles

Witteveen+Bos develops resilient, sustainable and cost effective projects which create a **positive impact on our environment**.

To achieve those goals, we combine our experience from early offshore wind developments in Europe, and our **7 Sustainable Design Principles (SDPs)**: Nature-inclusive design (NID), Circular design, TRIAS (limited use of raw materials), Multifunctional design, Flexible design Societal design and Participatory design.

Engineering and environmental consultancy

As an **international and independent consultant**, we support project developers, regulators, grid operators and contractors defining their strategy, executing their projects and optimizing design solutions. The main goal is to balance risk and opportunities, regarding societal benefits, environmental and economic aspects. Our **offshore team** consists of more than 35 academic professionals from 7 different countries. Within this

team we **gained a combined experience** of more than 150 years on about 70 projects.

Our competences

Project lifecycle

- Enhance engineering solutions by applying our 7 SDPs
- Stakeholder analysis and management
- Project and interface management
- Tender and procurement support, field and construction supervision / management (geosciences, offshore substation, cables and dredging)
- HAZID and risk assessment
- GIS project database, BIM and 3D modelling

High voltage, SCADA & Substation

- Primary and secondary electrical systems
- Communication and SCADA system
- Commissioning and testing



Preliminary studies

- Feasibility, desktop studies & design basis (metocean, wind, geology, geotechnics)
- Wind resource assessment, energy yield assessment and wind farm layout
- Levelized Cost of Electricity (LCOE-R) including spatial, technical and financial constrains

Environment and ecology

- System analysis and policy advice
- Environmental Impact Assessment (EIA) and permitting support
- Nature Inclusive Design (NID)
- Monitoring and evaluation plans
- Sea ranging and aquaculture
- Visual and Shadow Flicker Impact Analysis
- Fresh and salt water, cooling water, oil diffusion

Metocean and hydro-sedimentary

- 2D and 3D comprehensive hydro-sedimentary modelling
- Harbour oscillations and weather down time studies
- Induced flow around hydraulic structures
- Sedimentation in harbours and shipping lanes
- Design under ice conditions (load and collision)

Scour and rock protection

- Hydraulic, morphological and ecological rock protection design
- Design, management and supervision of physical model tests
- Crossing designs
- Free-span analysis

Geosciences

- Survey/investigations and Lab testing plan development
- Seabed/coastal morphology and morphodynamics studies
- 3D ground modelling

Cables and interconnectors

- Cable route studies
- Risk Based Burial Depth (RBBDD) and Cable Burial Risk Assessment (CBRA)
- Work plan, Burial Technique Assessment and selection of spread / equipment
- Landfall concept development
- Electro Magnetic Field (EMF) studies

Dredging

- Work plan and selection of spread / equipment
- Volumes calculation, trench design and geotechnical stability
- Ecological dredging
- Turbidity and plume modelling

Marine navigation and mooring

- Mooring design and dynamic mooring analysis
- Fast-time maneuvering simulation
- Marine traffic simulation model & AIS data analysis

Operational and Maintenance (O&M) and decommissioning

- Reliability, Availability, Maintainability and Safety (RAMS)
- Monitoring and maintenance plans
- Asset inspection, management & performance assessment (BIM and Asset management tool)
- Decommissioning plan

Videos and web applications

- [7 Sustainable Design Principles](#)
- [Nature Inclusive Design](#)
- [Circular Transition & material passport](#)
- [Digital project platform and stakeholders participation](#)
- [Building Information Management \(BIM\) and Asset Management](#)