



Collaborative Measurement Campaign

Collaboration Dutch Applied Research Institutes

MatchMaking Borssele V
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www.ecn.nl



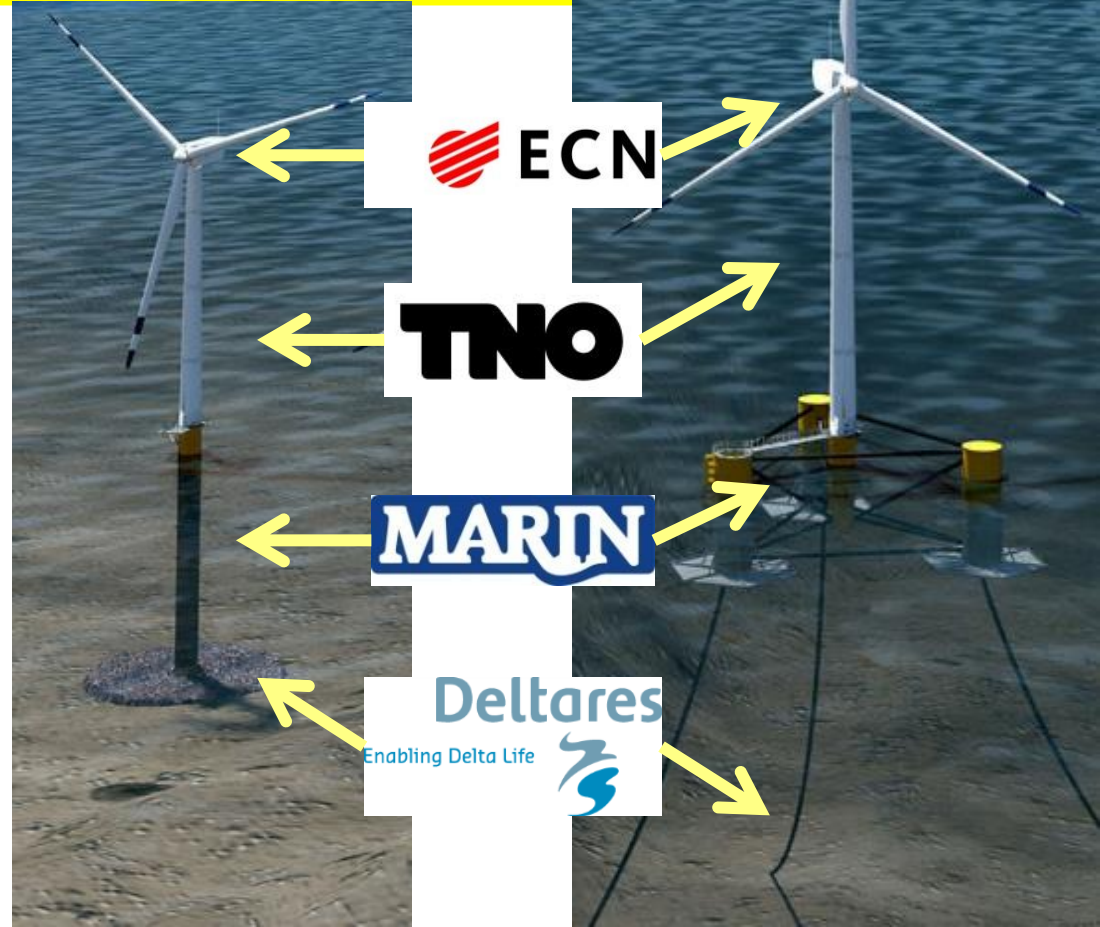
Collaborative Measurement Campaign

Four institutes collaborate to perform a dedicated measurement programme on the demonstration wind turbines:

- A single measurement campaign services the needs of many separate demonstration projects; reduces separate overlapping measurements
- A single data acquisition system:
- Measurements are all synchronized in time
- Measurements are calibrated and validated
- Measurement data are delivered in a single data format
- The four institutes have capacity to deliver high quality data and
- Have experience to distribute data

High Quality

- Get the best of four national institutes to do the measurements on the demonstration wind turbines
- Each institute has its own specific knowledge and measurement equipment that complement each other



Proposed measurement campaigns

ECN (Wind Turbine)

- Aerodynamic and structural response of blades: strains and accelerations
- Structural response of the drive-train and electrical system: accelerations, temperatures, acoustic emission
- Wind and wake characteristics: wind speed, profile, turbulence, direction
- Measurements on the controller strategies

TNO (support structure)

- Structural response of support structure: strains and accelerations
- Material response of support structure: corrosion and fatigue cracks
- Underwater noise: initiation and propagation
- HSE: crew transfers, accidents, near-misses

Deltares (environment support structure)

- Wave and current characteristics: wave height, wave direction, water current velocity and direction, wave-current-structure-interaction
- Seabed dynamics: sand wave migration, (edge) scour
- Soil dynamics: seabed elevation, soil density, bearing capacity

MARIN (environment / floating structures)

- Wave characteristics: wave height, wave direction
- Dynamic response in case of floating and fixed structures
- Logistics: vessel usage, transport issues, delays during construction and operational phase
- HSE: crew transfers, accidents, near-misses