

Levenmouth 7MW demonstration offshore wind turbine

CATAPULT
Offshore Renewable Energy

Specification sheet



ORE Catapult's 7MW demonstration offshore wind turbine, located at Levenmouth in Fife, is the world's most advanced open access offshore wind turbine dedicated to research and product validation. It also offers complementary opportunities for training and development of skills vital for the future of the offshore wind industry.

Features

Wind class
IEC Class I_A/S_B

Rotor dia.
171.2m

Capacity
7MW at grid side

Hub height
110.6m

Blade length
83.5m

Total height
196m blade tip to sea level

Generator
Medium voltage PMG (3.3kV)

Converter
Full power conversion

Drive train
Medium speed (400rpm)

Rated frequency
50Hz

Rotor speed
5.9 ~ 10.6rpm
Wind speed
3.5 ~ 25m/s

Temp. range
Survival
-20°C to +50°C
Operating
-10°C to +25°C

Lightning protection level
Level 1 (IEC 62305-1)

Corrosion category (ISO 12944-5)
Inside : C4
Outside : C5-M

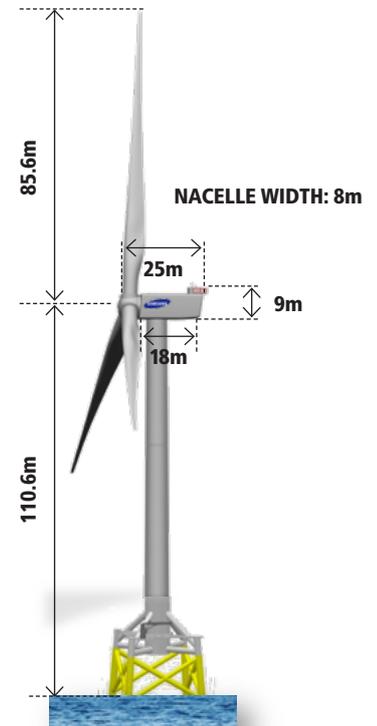
Design life
25 years

Control system features

- Independent and collective pitch control modes
- Active drivetrain damping
- Active load control
- Blade load monitoring

Complementary measurement opportunities

- Access hatches on roof
- Land-side flat locations for lidar installation (including 1 pad with electrical connections)
- On-site IEC met mast with cup anemometry currently installed
- Deck space on transition piece for small instruments



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Service summary



The turbine also provides a broad spectrum of other opportunities to:

- Evaluate environmental conditions, data and/or impact
- Conduct training
- Practice operation & maintenance (O&M) procedures
- Demonstrate remote inspection methods and technologies

The turbine and its onshore met mast offers researchers, developers and manufacturers an excellent opportunity to conduct research and development, introduce new concepts, and carry out product and component validation.

It enables vital testing, verification and validation of remote sensing and other innovative technologies in order to prove reliability, data availability and performance in a next generation offshore wind turbine.

The turbine also provides the opportunity to evaluate real operating conditions against a controlled test programme using the Catapult's 15MW wind turbine nacelle test facility. This will help to improve the quality of tests and better replicate real-life events.

R&D offer

- Product validation of new concepts and technology (including power performance measurements)
- Improve wind resource estimation and standardisation
- Holistic control system development, including control algorithm optimisation
- Prognostic condition monitoring system (CMS) development
- Measurement system development (DAQ, sensors)
- Measure and compare real-life data against a controlled test programme
- Structural mechanics
- Aeroelastic modelling
- Aerodynamic modelling
- Design and analysis tool evaluation

For R&D enquiries email:
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