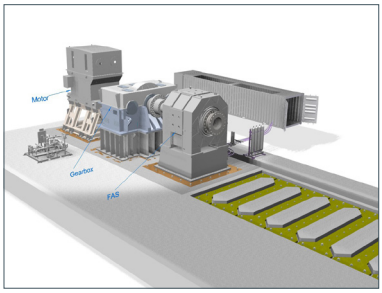
Drive Train Testing Facilities

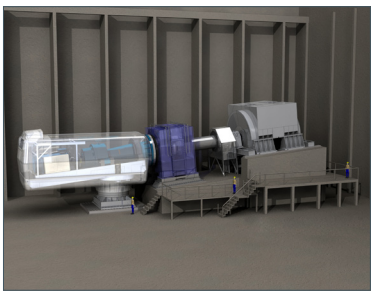
Narec is the UK's national research centre for accelerating grid integration of renewable energy systems and catalysing the development and deployment of offshore wind, wave and tidal energy generation technologies.

Two new drive train testing facilities are under construction for the independent testing of wind and tidal turbines. These facilities will de-risk in-field activities by allowing Narec to perform reliability and performance appraisal of new devices and system components, through accelerated lifetime testing.

FACILITY CAPABILITY	FACILITY 1	FACILITY 2
Continuous shaft input power to test piece	3MW	15MW
Max torque	5MNm	14.3MNm
Max speed	30rpm	30rpm
Max bending moment	15MNm	56MNm
Max Radial Force	4MN	8MN
Max Axial Thrust	4MN	4MN
FAS frequency response	2Hz	2.5Hz
Facility Crane capacity	125 Tonnes	450 Tonnes (x2 cranes)
Voltage at which power is re-circulated	11kV	11kV
Supply frequency	50Hz	50Hz
Customer Data Acquisition	400 channels	800 channels



Drive Train Test Facility 1: 3MW, operational 2012.



Drive Train Test Facility 2: 15MW, operational 2013. *Image provided courtesy of Converteam UK Ltd & MTS System Corporation, USA.*

ACCREDITED TESTING

Narec will perform accelerated lifetime testing of whole nacelles and their individual drive train components, such as gearboxes, generators and bearings for wind and tidal turbine devices.

It is planned that both facilities, once operational, will perform the testing of turbines in accordance with IEC and ISO standards or customer requirements and that the facilities will achieve ISO17025 accreditation by The United Kingdom Accreditation Service (UKAS) once certification standards for controlled environment testing are finalised.

Testing capability includes dynamic torque, axial and radial force application and bending moment application to emulate operational conditions. Unbalanced rotor, break emulation, condition monitoring and control system validation tests can also be conducted.

Advancing Renewable Energy

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