A large white offshore wind turbine is the central focus, with its nacelle and parts of its three blades visible. The turbine is situated in the middle of a vast, dark blue ocean. In the distance, another smaller wind turbine can be seen on the horizon. The sky is filled with soft, white clouds, suggesting a bright but slightly overcast day. The overall scene conveys a sense of clean, renewable energy in a remote maritime location.

CATAPULT
Offshore Renewable Energy

**Institute of Corrosion
Integrity Engineering Conference
site visit**

Tom Chaplin, Marketing Manager

23rd June 2023

THE CATAPULT NETWORK – A NATIONAL CAPABILITY

- Network of 9 world-leading technology innovation centres
- Supporting businesses in transforming great ideas into valuable products and services
- Independent, not-for-profit
- Delivering impact across the UK economy, enabling businesses to thrive in global markets



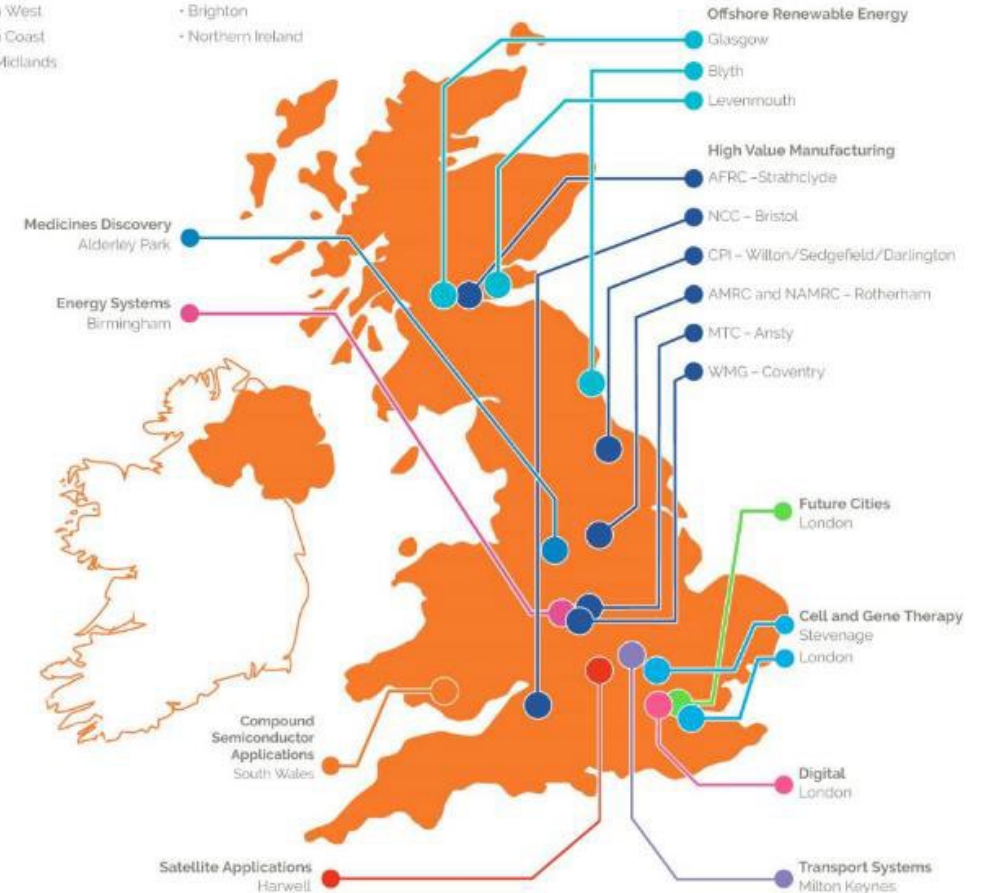
Regional Centres

Satellite Applications

- North East
- Scotland
- South West
- South Coast
- East Midlands

Digital

- North East and Tees Valley
- Yorkshire
- Brighton
- Northern Ireland



THE OFFSHORE RENEWABLE ENERGY CATAPULT

The UK's leading technology innovation and research centre for offshore renewable energy

Mission: to accelerate the creation & growth of UK companies in the offshore renewable energy sector.

8 UK Regional Centres

Aberdeen, Blyth, Fife, Glasgow, Hayle, The Humber, Lowestoft, Pembroke Dock

3 UK Academic Research Hubs

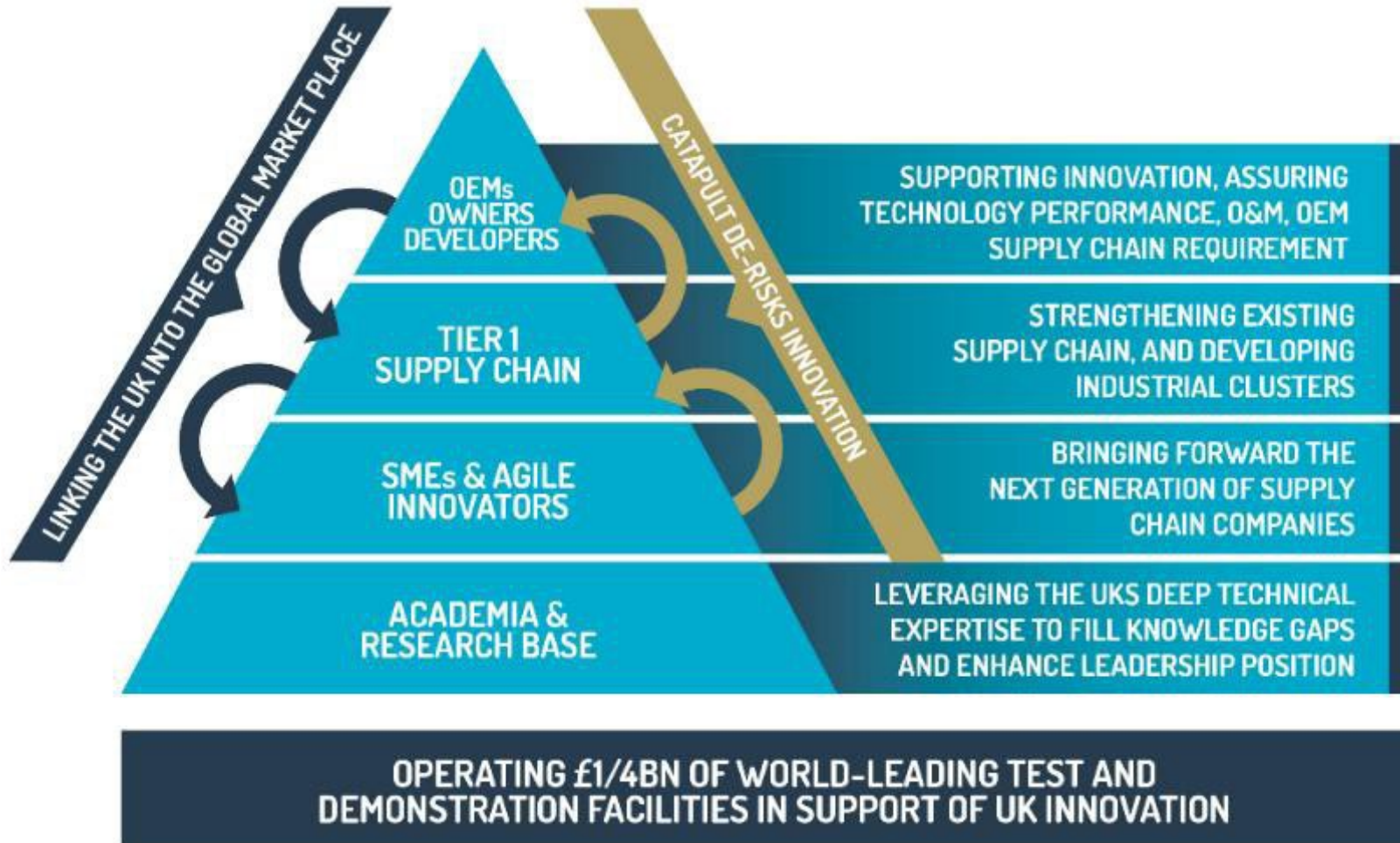
Universities of Manchester & Strathclyde – Electrical Infrastructure
University of Bristol – Blades
University of Sheffield – Power Trains

International Research and Innovation Centre

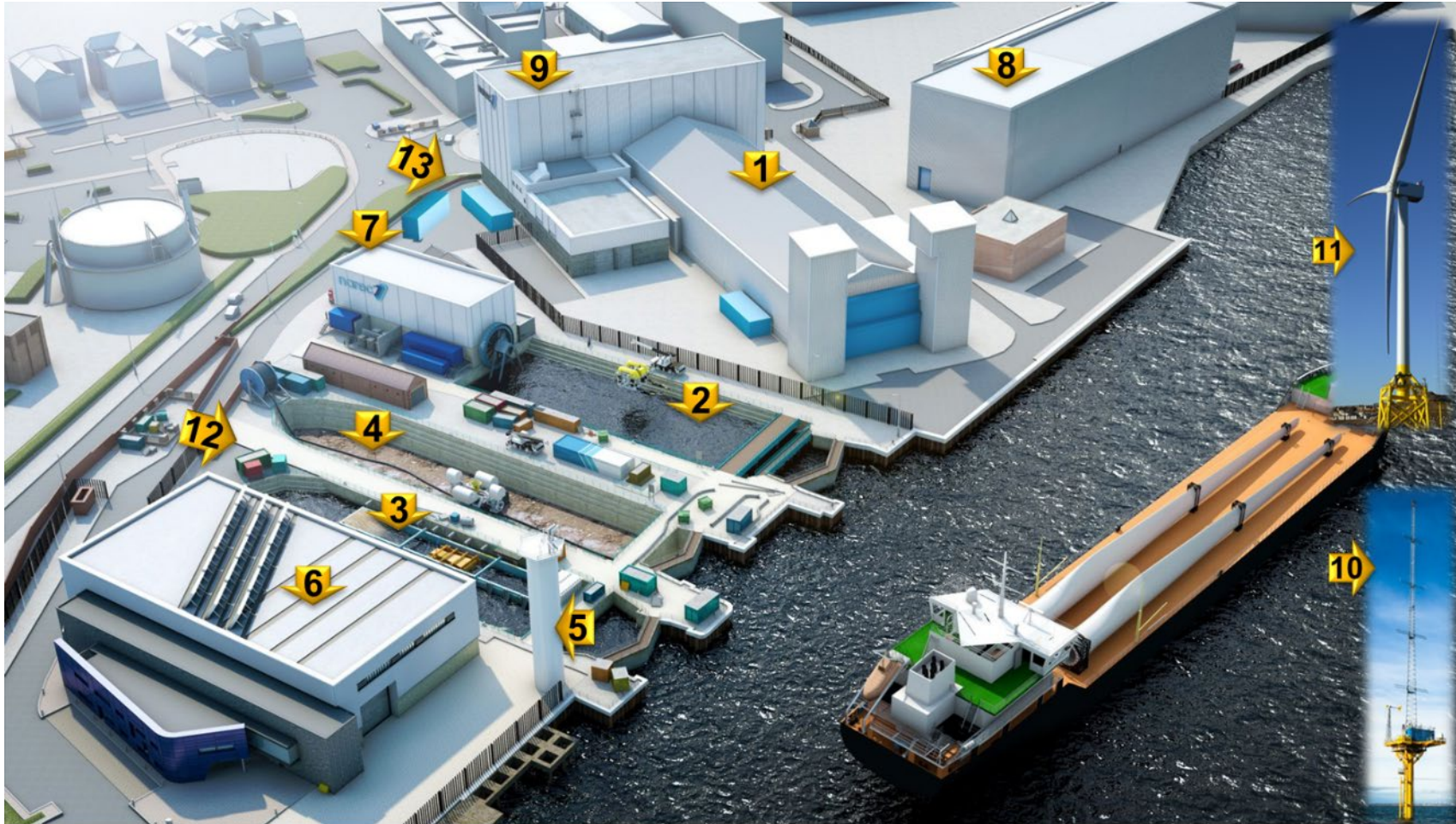
Yantai, China



THE ROLE OF ORE CATAPULT



WORLD'S MOST COMPREHENSIVE AT SCALE TEST FACILITIES

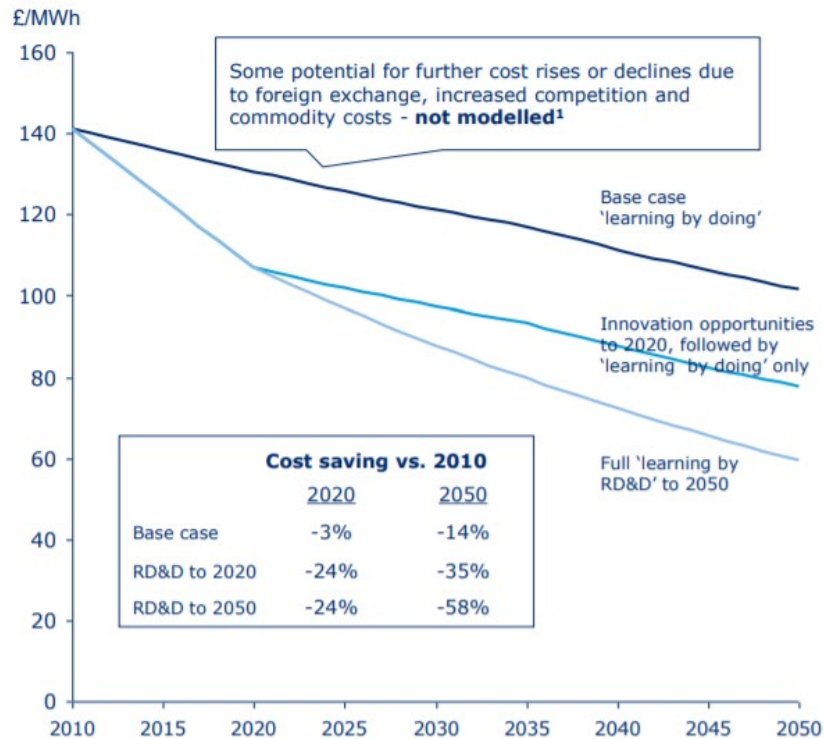


Accelerating the time to market for New Technology

OUR VALUE PROPOSITION

We de-risk and accelerate the time to market of new technologies by leveraging our unique test facilities and expert technical knowledge - offering services which are relevant to technology developers and end users.

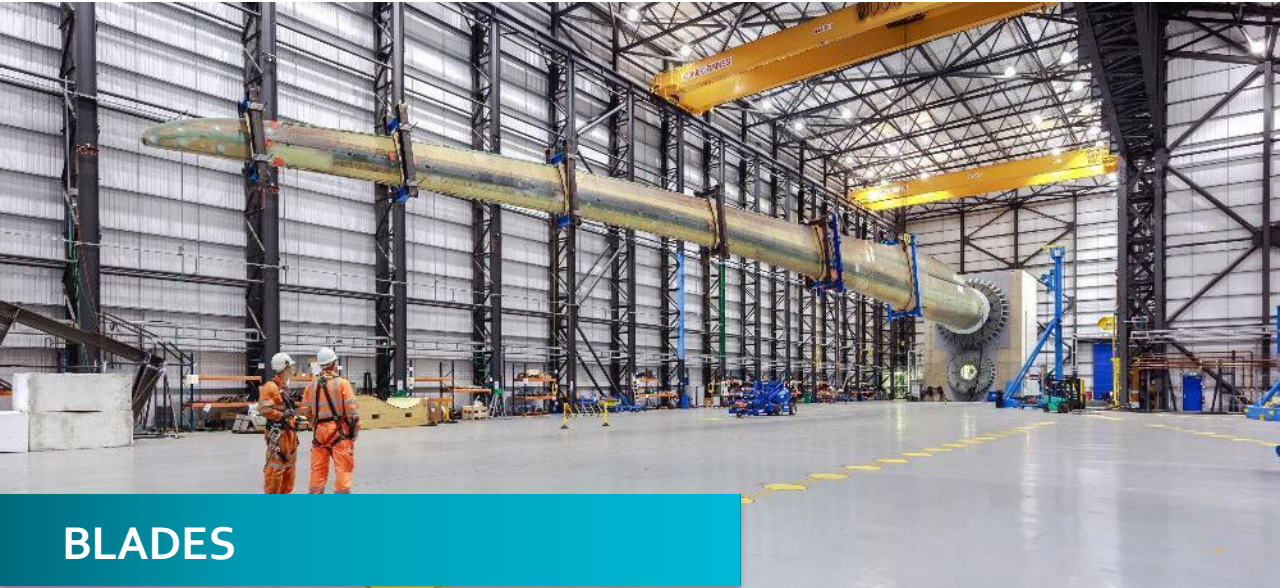
Chart 3 Potential impact of innovation on levelised costs of an example offshore wind site



UK OSW auctions Strike prices and turbine ratings



CORE COMPETENCIES & UNIQUE ASSET BASE



BLADES

- Test & validate next generation offshore wind turbine blades
- Develop and test innovative solutions for rain erosion (e.g. composite materials)
- Accelerate innovative blade designs and materials
- **FACILITIES:** 100m and 50m Blade Test Halls
Blade Erosion Test Rig
Wind Turbine Blade Test Facility



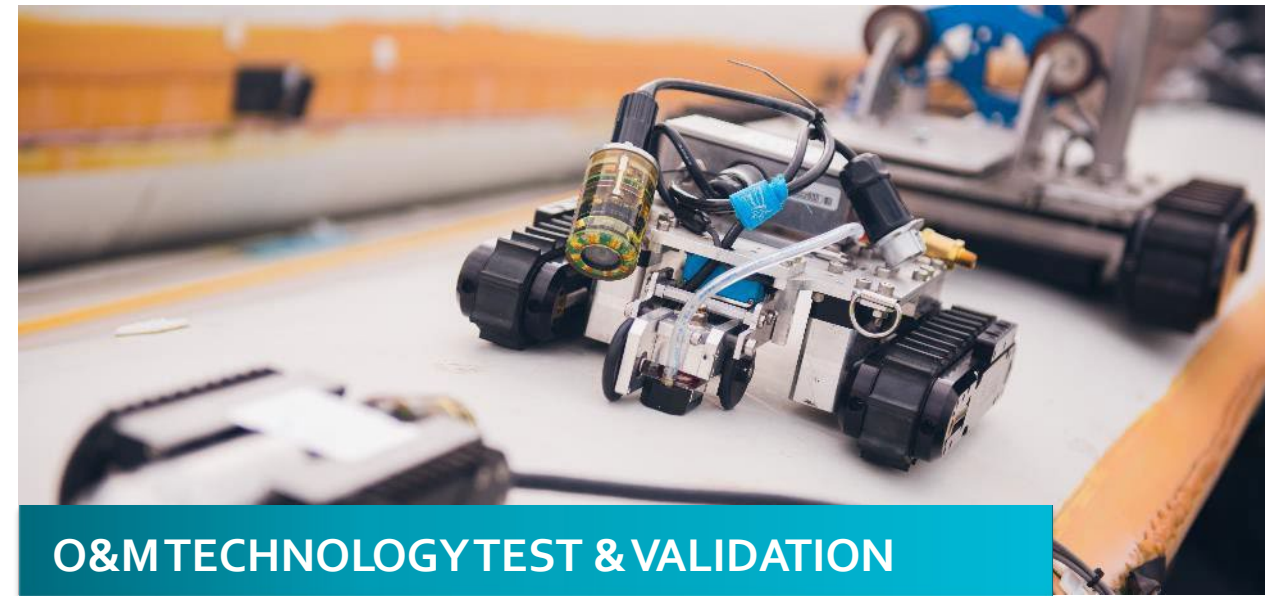
POWERTRAINS

- Test & validate next generation offshore wind turbine powertrains
- Accelerate innovative powertrain technology
- Support development of critical powertrain components: bearings, gearbox, generator
- **FACILITIES:** 1MW, 3MW, 15MW Powertrain
Facilities Wind Turbine Bearing Test Facility

CORE COMPETENCIES & UNIQUE ASSET BASE



- Test & validate the market's largest cables - 66kV - through ageing, insulation breakdown and failure analysis
- Dynamic cable fatigue testing - for the future development of floating wind
- **FACILITIES:** HV and Materials Labs
Pre-qualification bays
Dynamic cable rig



- Test robotics & autonomous systems (RAS) using DARE Centre, controlled subsea dock environment, training tower (drones) and blades (blade inspection)
- Wet and dry controlled dock environment testing:
 - Cable inspection, protection and connection systems
 - Subsea & topside balance of plant
- **FACILITIES:** DARE Centre & Subsea docks
Training tower & blade sections

INTRODUCING THE DARE CENTRE

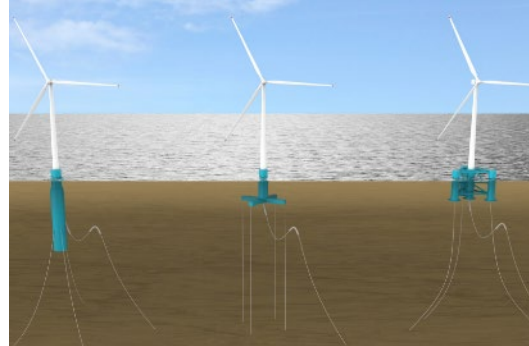
The brand new Digital, Autonomous & Robotics Engineering Centre will drive innovation and technology development across remote robotics, artificial intelligence and autonomous systems, supporting growth and safe operations in the offshore renewables sector.



GRAND CHALLENGES IN THE WIND INDUSTRY



Next Gen wind turbine – toward 20 MW



Floating Wind Technologies –



Digitalised O&M – fully predictive self-diagnostic



Robotic & Autonomous Systems – removing manual intervention for inspection, maintenance and repair



Additive Manufacturing – fully printable turbine components, automated manufacturing



Energy Storage Solutions

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