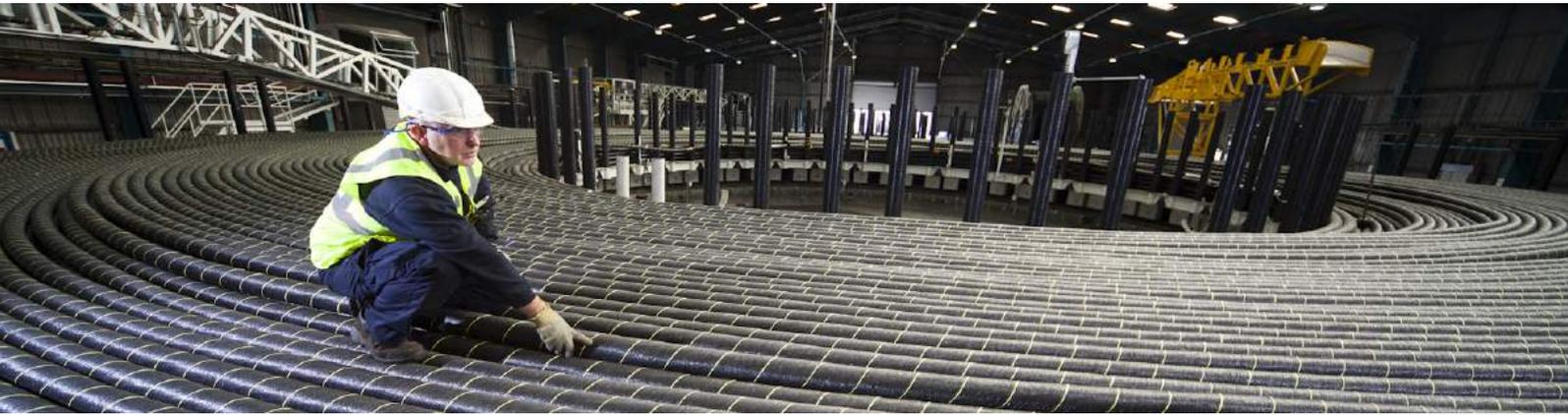


JDR CABLE SYSTEMS 66kV CABLE ELECTRICAL TESTING



CASE STUDY



TAILORED ELECTRICAL TESTING FOR THE NEXT GENERATION OF OFFSHORE WIND ARRAY SYSTEMS

To bring its pioneering 66kV technology to market, subsea cable manufacturer JDR chose ORE Catapult to provide electrical testing throughout its development, qualification and type testing programme.

As offshore wind farms increase in size and capacity, the demands on the subsea cables that connect the turbines and substations become greater. By doubling the voltage of the industry-standard 33kV inter-array cable, JDR's technology allows increased transmission between turbines at higher-capacity wind farms – a vital factor in reducing the cost of offshore wind.

The UKAS-accredited high voltage laboratory, at ORE Catapult's National Renewable Energy Centre in Blyth, is one of the few facilities in the world with the required capacity to carry out automated step-breakdown testing of 66kV systems using water terminations. Its capabilities include the ability to exert up to 20 times the rated operating stresses on the cable.

As a long-term test partner of JDR, we developed a bespoke facility to validate and de-risk the new cables, giving the Hartlepool-based firm – and its potential clients – the confidence that this first-of-its-kind technology can withstand the higher loads and harsh conditions offshore.

“ ORE Catapult's testing facilities, and their capability and expertise, were vital in allowing us to move to 66kV inter-array power supply – a key driver in ensuring future offshore renewable energy developments are cost-effective and reliable. ”

Jeremy Featherstone, Product Development Director at JDR Cable Systems



Upgrading to 66kV inter-array cables has the potential to bring about a 3% reduction in the LCoE of offshore wind.



After launching to the market in 2016, JDR won contracts to supply 175km of its 66kV subsea cables within months.



Our UKAS-accredited laboratory can exert up to 20 times the rated operating stresses on inter-array cables.

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The development, qualification and type testing programme included validation of terminations and cable accessories, and was inherently collaborative: the supply chain, developers and other stakeholders played key roles.

After the unveiling of the new cables in July 2016, what happened next was unprecedented. JDR was awarded its first 66 kV array cable contract in December that year, to manufacture over 20km of cable for the 90+MW European Offshore Wind Deployment Centre in Aberdeen Bay.

April 2017 saw further success for the cable maker, with a contract to supply 155km of 66kV cables at ScottishPower Renewables' €100m East Anglia One – a project that will see the world's first commercial deployment of the technology.

This order represents a sure sign that offshore wind markets see value in – and are ready to step up to – 66 kV array systems.

The benefits – in reducing technical, commercial and project costs for the offshore wind industry, in UK supply chain content, and in creating jobs – have already been enormous, and they haven't yet been fully realised. This is a UK-forged success story that has the potential to keep getting bigger.

ELECTRICAL TESTING SERVICES

Our laboratories are equipped with an extensive suite of specialist test and measurement facilities. We help clients develop technologies that cater for the needs of developing power systems, and explore life extension opportunities for ageing assets.

- Type certification of HV cable systems, switchgear and other HV insulation systems
- Cable accessories (joints, splices, connectors), integrity and type testing
- HV and insulation breakdown testing up to 600kV AC, 1MV DC
- Product development, testing and certification support
- HV bushing and transformer performance testing
- Accelerated ageing testing, including live environmental, mechanical, thermal and electrical stresses
- Materials and coatings selection, testing investigations, salt water corrosion and oil analysis
- Environmental assessment and testing
- Temperature and process data telemetry.

We also offer:

- Fault finding, failure investigation and diagnostics of cable accessories and bushings
- Static and fatigue cable testing
- Cable installation and pull-in trialling
- Field services
- Power systems consultancy
- Polymeric materials testing
- Feasibility and market studies
- Collaborative R&D projects and SME product development support