



KINECTRICS

Off-Shore Array HV Cable System Commissioning Testing



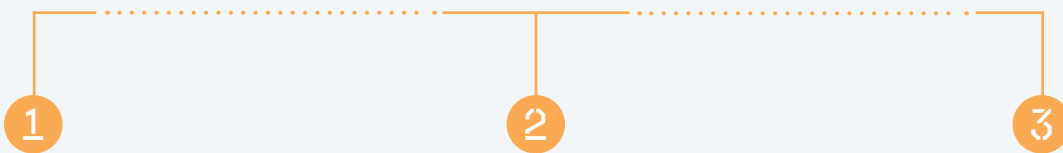
Overview

Off-shore wind is a technologically reliable and financially cost-effective energy source that has become an integral part of the world response to combat climate change. As the demand for off-shore wind increases, technological advances will continue to utilize high voltage inter-array cables. To reliably mitigate risks related to the performance of HV array cables, Kinectrics now offers proven off-shore commissioning testing for HV and EHV cable systems.

Using light weight, modular Resonant Test Sets (RTS), with proven field-testing partial discharge monitoring technology, entire strings rated 66/72kV up to 40 km of length can be tested end-to-end in their final operating configurations. In combination with partial discharge testing, installation life-limiting defects can be detected prior to energization thereby reducing the risk of in-service failures. The test voltage levels, frequency and durations referenced in IEC 63026 have stood the test for nearly 30 years.

Our tests are conducted in accordance with international standards such as IEC 63026, as well as guides such as CIGRE TB 728 and CIGRE TB 841.

How Our System Set Up Works

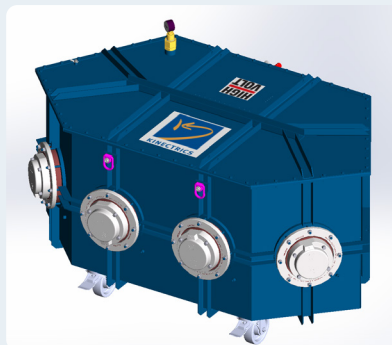


Each module of the **test system is enclosed in a DNV certified 10' container** weighing less than 3.7 metric tonnes.

The modular design allows us to ship the minimum number of resonant test reactors required to site, helping to **reduce the space constraints on the off-shore substation**.

The main part of the system is placed on the top or roof deck connecting the **Inter Array Cable string** under test to the **Resonant Test Set**.

The system can typically be erected in less than two days allowing for one, two or three conductors of a string to be tested in a 10 hour shift. The commissioning tests can be performed during night shifts to ease work planning complications associated with other on-going work on the off-shore substation (OSS).



Why Us?

Complete Off-Shore Cable Testing

For over 40 years, Kinectrics has been performing field commissioning testing of MV and HV cable systems using a combination of withstand and partial discharge monitoring. Through innovations and committee work with IEEE, CIGRE and IEC, Kinectrics continues to drive the industry forward with new test methodologies.

Kinectrics' team is well equipped to meet changing commissioning schedules to execute off-shore inter-array and export cable testing. With experience working in remote areas, satisfying pre-planning, equipment, personnel and tool contingency demands, and real-time assessment of data, we can help clients make informed decisions about their assets.



Full Cable Lifecycle Experience

As an independent service provider, we support Type Testing of HV and EHV cable systems, conduct forensics and in-service failures of MV, HV & EHV cable system components, that are back by full-fledged laboratory capabilities. Our cradle to grave experience with HV & EHV cable testing allows us to provide unique insights into long-term performance of HV & EHV cable systems based on proven test results.



Our Proven Experience

Extensive MV, HV & EHV Cable History

Kinectrics, formerly part of Ontario Hydro Research Division before being privatized, has collectively been testing MV, HV and EHV cable systems in the field since the mid-1970s.

Many of the technological approaches used today stem from the research we conducted in collaboration with other entities, such as EPRI.

Some relevant additional testing that Kinectrics offers includes:

- ✓ Tan δ tests in conjunction with commissioning testing
- ✓ Dielectric Spectroscopy Tests
- ✓ Cable Line Resonance Analysis (LIRA)
- ✓ OTDR
- ✓ TDR



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