



**KINECTRICS**

# Transmission, Distribution and Generation

Complete Lab and Field Testing Services



Reliable, qualified testing by the industry's leading international experts independent confidential services for certification and product development requirements testing to industry standards (IEEE, IEC, ASTM, ANSI, CSA & ISO)

## ASSET MANAGEMENT, CONDITION ASSESSMENT AND LIFE EXTENSION



Overhead view - cable testing in HV Lab

Solutions developed and applied by Kinectrics support cost-effective asset management practices for utilities and other power industry clients. The experience we bring will help directors, managers and engineers determine and justify the best options for successful management of transmission, distribution, and generation assets.

## ELECTRICAL TESTING



Outdoor testing cell in HC Lab

### High Voltage (HV) Lab

Kinectrics' High Voltage equipment testing capabilities include switchgear, transformer, power cables, insulators and other transmission and distribution equipment rated up to 500 kV under lightning and switching impulse and power frequency voltages.

### Environmental Test Chamber (ETC)

The ETC is capable of simulating fog, freezing rain and icing conditions continuously, while monitoring the performance of insulation up to test voltages of 350 kV.

### High Current (HC) Lab Arc Hazard Testing / Analysis – Personal Protective Equipment (PPE) Testing

HC Lab test areas include a reinforced concrete test cell for destructive type testing, a 200 ft. outdoor test span with reinforced towers for line hardware, and an indoor area for temperature rise tests. Modern multi-channel recording and professional video systems provide a detailed record of HC lab test programs and procedures.



Live-line tool safety testing

### GRIDSIM Power Lab

- Distributed Generation facility for inverter / generator testing up to 12 MW
- GRID simulation capabilities to test transformer equipment against transient events (voltage, frequency, harmonics) at real power
- Compliance testing to UL1741SA, IEEE 1547.1, UL62109 and many others.



GRIDSIM Power Lab

### Safety Testing

Kinectrics testing labs comprise advanced facilities for the assessment of safety equipment including blankets, gloves and live-line tool capabilities.

## TRANSMISSION – MECHANICAL TESTING AND FIELD INSPECTION



LineVue® inspection tool

Mechanical testing and field inspection services cover conductors, connectors, accessories and fibre optic cables. Kinectrics' high temperature, qualification, performance testing capabilities, and specialized studies can help manufacturers and asset owners minimize loss and maximize component life.

- Conductors, connectors, components & accessories
- Fibre Optic Cables (OPGW)
- Failure analysis and diagnostics
- **Kinectrics' LineVue® inspection tool for non-destructive evaluation of energized lines up to 500 kV**

## DISTRIBUTION SERVICES – ENGINEERING AND DIAGNOSTICS



Distribution station equipment

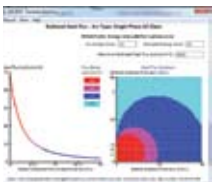
Proven expertise and experience to optimize infrastructure utilization, maintain assets, and extend equipment life for utilities and other power industry clients.

- Testing, Failure Analysis and Forensic Studies
- Distribution Engineering Consulting
- Technical Auditing, Benchmarking and Expert Witness Services
- Reliability and Power Quality Services
- Distribution Monitoring, SCADA, and Automation Services
- Smart Grid and Metering Capabilities

Kinectrics has the knowledge and experience needed to help clients get DG projects on-line quickly and cost-effectively. Our specialists deliver practical technical support in the areas of:

- Assessment of DG impact on voltage regulating equipment
- Connection impact assessments

ArcPRO™ is the industry's most widely-used application for computing medium and high voltage arc hazards and selecting protective clothing and is OSHA endorsed.



ArcPro 3.0

## SUBSTATION SERVICES



Real Time Digital Simulator (RTDS)

Kinectrics operates an IEC 61850 Interoperability Lab, which supports all major manufacturers of substation automation equipment. A Real Time Digital Simulator (RTDS) system is used to emulate the electric grid and allow for testing of multiple components as they would be configured in an actual substation.

- Complete Substation Automation testing and development
- IEC 61850 Interoperability Testing capability
- Protection and Control power system studies
- Real Time Digital Simulator (RTDS) power system modelling
- Grounding, bonding and Lightning Protection Services (LPS) assessments

## ADVANCED TRANSFORMER DIAGNOSTICS



In-situ transformer testing

Comprehensive condition assessment and asset support services, including technical studies, testing, and expert consulting

- Failure analysis and end-of-life inspections
- Factory Acceptance Testing (FAT)
- Specialized testing and PD measurement
- Off-line / On-line non-destructive transformer testing techniques
- Specific studies, investigations, expert consulting, and 3rd party reviews
- Oil and insulation analysis

## HV CABLE TESTING



Kinectrics' mobile Resonant Test System (RTS)

Hi-Pot qualification and "proof of function" tests on HV power cables are performed using Kinectrics' mobile Resonant Test Sets (RTS) rated 260 kV at 83 amps for transmission class cable lines. Kinectrics operates 4 RTS units and provides testing capabilities for up to 500 kV cable systems at 1.7 U<sub>0</sub> as per IEC 62067 and IEC 60840.

- Type testing of HV cables and accessories
- Testing of all insulation types, including extruded, self-contained fluid-filled and high pressure pipe-type systems

## MV / LV CABLE TESTING



MV / LV cable insulation testing

Assessment services for MV and LV power cables, I&C cables, signal and control, telecommunication, and grounding cables employ several methodologies and, combine historical data with diagnostics to arrive at the condition of installed cables.

Kinectrics has been testing cables in the 5 - 46 kV range using AC Hi-Pot and Partial Discharge methodologies for over 30 years. Our cable commissioning and maintenance testing services include mobile equipment with a full range of diagnostic capabilities, and forensics in our advanced lab facilities. For nuclear plant, Kinectrics can deploy low frequency dielectric spectroscopy on submerged cables.

## HV GENERATOR / MOTOR TESTING AND CONSULTING



Rotating machines stator testing

HV generator and motor services include inspection, diagnostic testing, condition assessment and component type testing. Comprehensive lab and on-site testing and consulting services are provided by qualified industry specialists.

- Partial Discharge testing
- Condition Assessment
- Root Cause Analysis / Forensic Investigation
- DC Ramp Test – IEEE 95
- Voltage Endurance Testing – IEEE 1043 & IEEE 1553
- Thermal Cycling Test – IEEE 1310

## TRAINING – EXPERTS TEACHING FROM PRACTICAL EXPERIENCE

Kinectrics offers a comprehensive range of specialized courses designed to help people from utilities, manufacturing, and related power industries, expand practical knowledge and gain professional experience. Kinectrics' courses, taught by leading industry experts, incorporate practical hands-on experience and case studies based on our long-term technical support of utilities and related companies.



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