Transmission and Distribution Newsletter – Winter 2021

Innovation Corner: Artificial Intelligence and Machine Learning at Kinectrics

Artificial Intelligence (AI) is changing the way we live and work. Machine Learning (ML), a subset of Artificial Intelligence, uses computers to find patterns from experience to:

- Automate tasks
- Provide recommendations
- Find anomalies, and
- Gain new insights.

At Kinectrics, we have the capability to use AI and ML tools to efficiently analyze large volumes of data, using processes that are not possible with traditional data analysis algorithms. Kinectrics can also use these tools to help you teach a machine to learn from the history of human responses given a set of conditions and enable it to automate manually intensive and error prone processes, allowing for better utilization of your workforce.

Why should you trust Kinectrics with your Artificial Intelligence and Machine Learning needs?

- With technical expertise in the T&D industry, we are intimately familiar with system components/processes, which allows us to leverage our engineering experience to influence the Machine Learning models. This increases confidence in model performance and accuracy.
- As an industry leader in AI/ML with many years of experience in data analytics, our understanding of the first principles behind the methodologies allows us to tailor and modify our models to the specific needs of our customers.

Kinectrics is currently undertaking several Computer Vision projects to help stations perform inspections and analysis more efficiently.

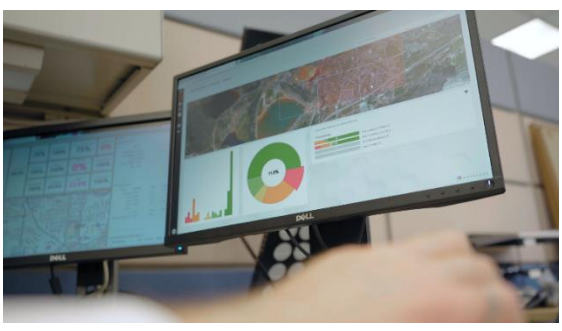
Learn more.

Kinectrics' Virtual World – High Voltage Lab

In our High Voltage lab, Kinectrics can address all of your High Voltage testing needs for 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. We routinely perform tests to ANSI, UL, IEEE, AEIC, NEMA, CEA, IEC and other national and international industry standards.

Take a self-guided tour of this lab here today!

Featured Insight: Asset Management



As power systems age, it can be challenging for utilities to prioritize investments to sustain these assets in a way that finds the optimal balance between financial performance, operating performance, and business risk. Kinectrics helps its clients with overcoming these challenges by providing two types of asset management services: equipment focused, and strategy focused.

Kinectrics has successfully completed dozens of Asset Management projects for 30+ electrical utilities across North America and Europe. In addition, our team has lead the development of asset management methodologies at international organizations, provided training around the world, and has unmatched experience and in-depth knowledge in the area of asset management.

Having deep transmission and distribution electric utility roots, our complete Asset Management solutions go well-beyond paper analysis; we provide specific action plans based on findings, advise on maintenance protocols, develop long term capital investment plans, and recommend and conduct targeted equipment testing, both at our laboratories and in the field.

By integrating available data from a multitude of sources, Kinectrics can provide you with a consistent and cost-effective decision-making strategy and action plans.

We have also further enhanced our Asset Management service offerings by partnering with Asset Performance Management (APM) Platform providers. These platforms enable the integration of data, both static and real-time, to automatically update results, produce customized dashboards and reports, as well as generate alarms and warnings.

Learn more.

Project Highlight: Asset Condition Assessment of New Brunswick Power's Key Transmission System Assets

Kinectrics was contracted by New Brunswick Power to perform Asset Condition Assessments (ACA) for key transmission system assets to determine and justify long-term needs for sustaining the existing asset base. Responsible for the generation, transmission and distribution of electricity, New Brunswick Power is committed to strategic and prudent investment planning for achieving the best possible reliability of supply, while minimizing the impact on customers' electricity rates.

Kinectrics performed ACA for all major transformer station assets, as well as for overhead transmission lines using available data and information, such as test and inspection results, corrective maintenance records, reliability performance, criticality, loading and input from the utility's field and technical staff.

The work involved:

- Utilizing Kinectrics' methodologies and formulae customized for New Brunswick Power's processes and work practices to determine the condition of assets using Health Indexing
- Employing a risk-based approach for developing a long-term plan that identified units that required attention and possible action
- Providing assessment of data quality and data gaps

Upon the project's completion Kinectrics provided New Brunswick Power with age distribution, Health Index distribution, data availability assessment, condition based 10-year flagged-for-action plan and a prioritized list of assets that require attention for each of the asset categories (i.e., transformers, breakers, transmission lines, etc.).

New Brunswick Power realized several benefits from this project.

Read the full case study here.