M&D Success Story
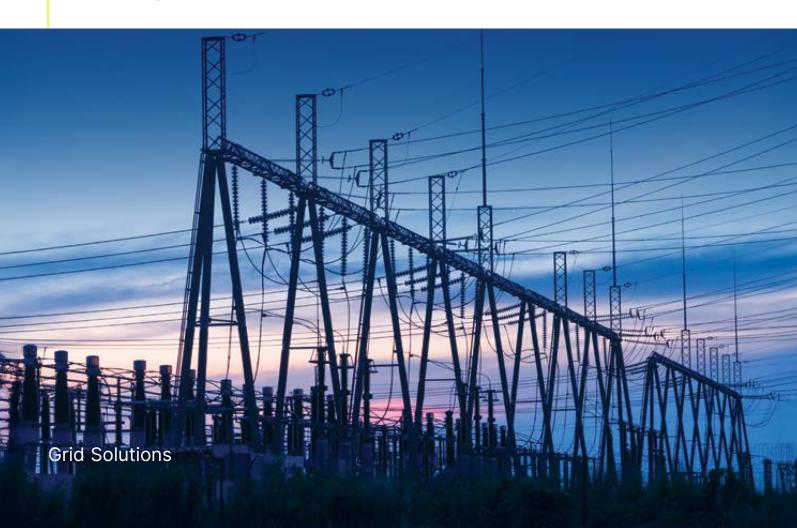
NYPA CONTINUES ITS DIGITAL JOURNEY USING DGA TRANSFORMER MONITORING DEVICES FROM GE VERNOVA

Case Study

Grid Solutions

NEW YORK POWER AUTHORITY

The New York Power Authority (NYPA) is the largest state public power organization in the nation, operating 16 generating facilities and more than 1,400 circuit-miles of transmission lines. More than 80 percent of the electricity NYPA produces is clean renewable hydropower. NYPA owns and operates about one-third of the state's high-voltage power lines which transmit power from hydroelectric as well as wind power generation facilities to connect almost 7.000 MW of renewable energy to the power grid.

THE CHALLENGE

In 2017, with the vision of becoming the first end-to-end digital utility in the world, NYPA established its Integrated Smart Operations Center (iSOC), which has become the new standard in utility asset management. Along with aiding in long term asset planning and strategy, near-real-time insight from asset health aims to improve productive up time and overall health. It would not only help NYPA to optimize regular maintenance spend, defer capital expenditures and reduce environmental, regulatory and safety penalties but also ultimately fulfill its core mission to provide "low-cost, clean, reliable power" and "innovative energy infrastructure and services."

To tackle the challenge, NYPA embarked on a state-wide sensor deployment program, focusing first on the most critical assets across its power grid, one of which is oil-filled transformers.

GE VERNOVA'S SOLUTION

A method to monitor oil-filled transformer health is by sampling the oil for analysis. In the past, physical samples would be drawn, sent to a lab and the dissolved gasses within the oil, along with other key parameters, would be analyzed. Samples were normally scheduled to be taken about every six months. This method is called Dissolved Gas Analysis (DGA) and has evolved from manual samples to self-control sampling equipment that can take multiple samples daily and perform on-site analysis, allowing for a much more refined data set and health indicator of the oil-filled transformer.

With 40 years of DGA experience and a worldwide installed base of more than 13,000 units globally, GE Vernova's Monitoring and Diagnostic division (GE Vernova M&D) is one of the global leaders in the transformer monitoring field.

Partnering with NYPA since the early 2000s with deployment of single-gas and multi-gas monitors on various critical transformers and the use of Transport X portable DGA devices, GE Vernova has long collaborated with NYPA teams.

In the first phase of its nearly $100 million multi-phase sensor deployment program, NYPA aimed to connect all 'islanded' sensors already connected to NYPA's data historian. By 2018, about 5,000 more data points had been added. Since then, the volume of data has increased exponentially, with more than 55,000 data points currently being tapped across the state.

NYPA was an early adopter of transformer monitoring and, over the years, several transformers were saved by the application of DGA monitors. NYPA gained significant experience in monitoring and had a clear vision of the features and services it wanted from a Transformer DGA monitoring solution. In 2019 the second phase of the sensor deployment program called for more DGA monitors.

GE Vernova offered NYPA the Kelman DGA 900, GE Vernova's latest generation of 9-gas + moisture analyser, providing:

- The fourth generation of GE Vernova's field proven Photo-Acoustic-Spectroscopy (PAS) technology delivering improved accuracy with lower detection limits compared to previous GE Vernova 9-gas versions
- A device that requires no consumable gas, no frequent servicing in the field and has built-in self-diagnostics and alarming capabilities
- Complete DGA analysis with automatically increasing sampling frequency triggered by the transformer status.
- Ability to sample up to once per hour and even faster (~30 min) by using the new "Rapid Mode" for critical gases
- Flexible communication options to transmit the data

SUCCESS AND OUTCOME

Following a formal competitive procurement process, NYPA awarded the contract for the transformer monitoring devices for GE Vernova's DGA 900.

Nearly 50 additional units were ordered so that all critical transformers in 16 power plants and associated substations would now be monitored. This second phase will 10x the number of datapoints captured by the data historian.

Kelman DGA 900 installed on NYPA transformer

Kelman DGA 900 installed on NYPA transformer

> " The sensor deployment program is deploying the latest sensor technologies to ensure our generation and transmission system continues to function optimally as energy markets become more dynamic
>
> **Gil C. Quiniones,**
> **President and CEO of NYPA**

For more information, visit
gevernova.com/grid-solutions

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