GREEN TECHNOLOGY ACCELERATOR CENTER

CASE STUDY

NYSP2I Performs Evaluation of Micatu's GridView™ Voltage and Current Sensors

Located in Horseheads, New York, Micatu, Inc. (Micatu) was established in 2011 to provide next generation optical sensors along with Engineering, Manufacturing and OEM Professional Services. One of Micatu's key products is the GridView™ Advanced Monitoring System. This system is a highly accurate, optical-based sensor solution for condition monitoring of power distribution systems, power transformers and power generation equipment.

Challenge

Micatu requested New York State Pollution Prevention Institute (NYSP2I) to evaluate the performance of Micatu's GridView™ system using Clarkson University's High Power Laboratory and the reference equipment within that facility. Micatu's GridView™ sensors are designed for the standard commercial market, therefore Micatu requested NYSP2I to evaluate the empirical accuracy of their GridView™sensors relative to the IEC 62052 Class 0.5 standard.

Solution

NYSP2I's engineers worked closely with Clarkson University to evaluate the GridView™ sensor performance, focused on three areas: Sensor accuracy, Impulse voltage sensitivity, and Grid power transmission efficiency improvements. NYSP2I also calculated the associated NYS environmental impact with reductions in CO_2, NOx and SO_2.

Results

NYSP2I's work resulted in key findings relative to the potential performance improvements and environmental impacts of Micatu's GridView™ sensors.

GridView™ MV Sensor

GridView™ Steady state accuracy and impulse testing:

- The results of steady state, static testing, indicate that the average GridView™ system error was as follows when field representative load conditions were applied:
  - > Voltage Measurement Accuracy: +/- 0.11%
  - > Current Measurement Accuracy: +/- 0.042%
- Micatu's GridView™ sensor and IEC 61000 Class A meter demonstrated the following results relative to published IEC 62052 Distribution Class 0.5 sensor specifications and standards:
  - > 4.6X improvement in voltage accuracy
  - > 11.8X improvement in current accuracy

CHALLENGE

- Micatu requested NYSP2I to evaluate the empirical accuracy of their GridView™ sensors relative to the IEC 62052 Class 0.5 standard

SOLUTION

- NYSP2I's engineers worked closely with Clarkson University to evaluate the GridView™ sensor performance in 3 areas:
  - > Steady State Accuracy
  - > Impulse Voltage Sensitivity
  - > Grid efficiency and Green House Gas (GHG) emissions

RESULTS

- NYSP2I's work resulted in key findings relative to the potential performance improvements and environmental impacts of Micatu's GridView™ sensors
- Micatu's GridView™ Steady State Accuracy:
  - > Voltage Measurement Accuracy: +/- 0.11%
  - > Current Measurement Accuracy: +/- 0.042%
- GridView™ sensor accuracy improvement: vs. published IEC 62052 Distribution Class 0.5 sensor specifications
  - > 4.6X improvement in voltage accuracy
  - > 11.8X improvement in current accuracy
- Estimated improvement in NYS Environmental impact (annual reductions):
  - > 254,000 metric tons of CO2
  - > 273 metric tons of NOx
  - > 168 metric tons of SO2
- NYS CO2 green house gas reduction equates to:
  - > $9.4 million in annual savings

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- GridView™ flashover voltage ranged from 223 – 226 kV, with no impact on the withstand voltage

Energy efficiency and environmental impact:

- NYSP2I estimates that reducing NYS transmission and distribution losses from 5.36% to 4.58% with GridView™ sensors (resistive line calculation) has the potential to save the following emissions annually:
  - > 254,000 metric tons of CO2
  - > 273 metric tons of NOx
  - > 168 metric tons of SO2

- This reduction in CO2 green house gas equates to $9.4 million in savings annually, based on 2016 EPA CO2 cost estimate of $37 per metric ton

TESTIMONIAL

"Micatu engaged the resources of NYSP2I, Clarkson University and the Rochester Institute of Technology team to provide us with a wholly independent empirical review of our "all optical" sensor for medium voltage (MV) and current measurements. Finding a "world class" organization with the technical skills and measurement capabilities to provide an accurate, non biased, non-affiliated review of our "GridView™" sensor performance against a reference standard, was a challenge that the NYS2PI was able to achieve. As a result, Micatu is well on its way to helping utilities become more efficient and to reduce GHG emissions."

- Michael Oshetski, CEO
Micatu, Inc.

NYSP2I PARTNERS

R·I·T Rensselaer University at Buffalo The State University of New York Clarkson University

New York Manufacturing Extension Partnership

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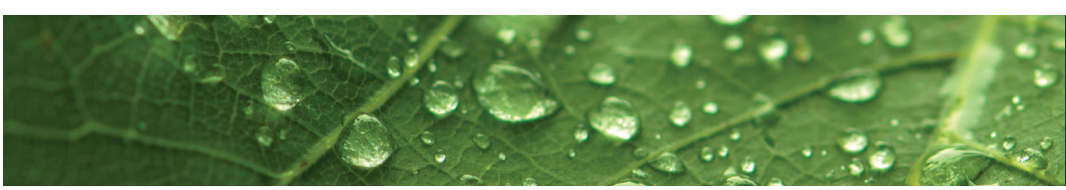

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