GRID20/20®
Optimize Energy Efficiency

ONTARIO'S SMART GRID

SUCCESS STORY

PROJECT OVERVIEW

The most vulnerable segment of Ontario's power grid is between substations and endpoint meters. This section of the larger grid translates to around 123,500 km of power lines and over 330,000 transformers.

Lightning strikes, pole damage, power theft, renewable energy sources, and overloaded transformers all place stress on the grid, leading to outages and inefficiencies. Local Distribution Companies (LDCs) are particularly susceptible to fluctuating grid conditions.

North American distribution transformer monitoring (DTM) company, GRID20/20, partnered with two Ontario LDCs to install and test an intelligent sensor system that offers an unparalleled window into the heart of the power grid.

With additional help from manufacturing and design experts, GRID20/20 has evolved its OptaNODE™ sensor and software platform into a world-class solution with plans for future deployment across Ontario and international markets.

Sponsored by Ontario's Ministry of Energy, the 21-month pilot is an important demonstration in grid reliability and a shining example of the innovative projects being funded through Ontario's Smart Grid Fund.

AT A GLANCE

Technology

OptaNODE™ intra-grid sensor and software solution

Collaborators

- Aequus Global Solutions Inc.
- Kinectrics Inc.
- Vexos

Project Partners

- EnWin Utilities
- Cambridge North Dumfries Hydro

Recognition

2015 Smart Grid Product of the Year Award
- SmartGrid.TMCnet.com

2015 Fierce Innovation Awards: Energy Edition Winner

Project Duration

21 month pilot

Fastest Installation time in industry

typically **3-9** minutes

Key Outcome

$170,000 of power theft identified from only two transformers

Instant intra-grid data availability once installed. Scalable sensor solution.

OptaNODE™ devices successfully tested in 10 countries

Ontario

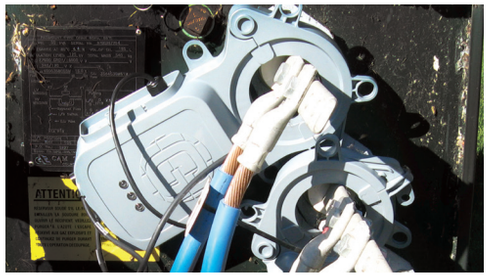
THE TECHNOLOGY

GRID20/20's OptaNODE™ intra-grid sensor solution is a reliable, versatile, and intelligent power grid monitoring system that captures highly accurate energy, voltage, current, and external temperature readings and sends them (via a network of cellular carriers or radio frequency mesh) to a secure location for interpretation by LDCs.

The information generated helps LDCs reduce operating costs by:

- Pinpointing losses (both technical & theft)
- Accelerating outage detection
- Foreseeing maintenance needs
- Embracing renewable energy
- Monitoring EV charging station impacts
- Improving reliability of power delivery to customers

GRID20/20 is the only Distribution Transformer Monitor (DTM) provider in the world that can be deployed into both Landis+Gyr's Gridstream and Itron's OpenWay Advanced Metering Infrastructure (AMI) systems. The OptaNODE™ DTM sensor also boasts the fastest installation rate in the marketplace with no need to de-energize or pierce assets.



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HOW IT WORKS

Substations and endpoint meters across Ontario have been substantially upgraded to strengthen grid monitoring capabilities. However, the entire grid segment that connects substations to endpoint meters is lacking in sufficient data awareness by LDCs. The GRID20/20 OptaNODE™ solution offers unprecedented visibility into this grid segment, changing the grid management dynamic from reactive to proactive, while embracing energy conservation practices and lowering costs for rate payers.

PROJECT OUTCOMES

The GRID20/20 pilot, which involved the installation of 128 sensors at partner LDCs in Ontario, proved that intra-grid data can be extracted in a fast and accurate manner and used proactively to identify unfavorable distribution grid conditions for remediation by LDC operators.

Following is a summary of project outcomes:

- Significant power losses identified and remediated
- Voltage levels and imbalances identified and corrected
- Electric vehicle charging stations monitored for loading impacts
- Reverse energy monitored to properly manage renewables/conservation practices
- Automatic alerts to notify LDCs of undesirable intra-grid conditions
- Under/oversized transformers identified

NEXT STEPS

LDCs across Ontario are beginning to take notice and understand the intra-grid data value provided by GRID20/20's breakthrough technology. Sensors will be incorporated via targeted niche applications in some instances, and comprehensively deployed on transformers within other LDCs. GRID20/20 has established collaborative activity with industry providers and plans to expand commercial operations into international markets such as the United States, Latin America, the Caribbean Islands, Asia Pacific, and Africa.

Powered by ONTARIO SMART GRID through a $1,607,450 investment.

For more information about Ontario's Smart Grid Fund, visit **ontario.ca/smartgrid**