



***"Bow's technology and domain knowledge in the area of substation integration combined with PI's capabilities as an integration platform have the potential to yield tremendous gains in allowing us to share critical asset information throughout the organization. The first step toward reliability centered maintenance is obtaining and distributing asset information in real time."***

**Franz Kropp**  
Hydro Ottawa

## **Reliability Centered Maintenance at Hydro Ottawa**

Hydro Ottawa is the second largest municipal electricity distribution company in the province of Ontario, Canada. The utility delivers electricity to more than 278,000 residential and business customers in the city of Ottawa and surrounding area. In early 2006, Hydro undertook to investigate how substation automation and integration technologies could optimize their internal asset management plan and assist in their move toward Reliability Centered Maintenance (RCM) for major substation assets. The first step in realizing this goal was to acquire and correlate data with respect to the service conditions of substation equipment. Using Bow Networks' substation integration technology and OpenHouse Engineering Data Warehouse, based on OSIsoft's RtPM™, a complete solution was deployed that correlates and presents information from relays, remote terminal units, transformer and circuit breaker monitoring equipment. This information provides utility personnel with data from which they can make informed decisions on asset utilization and maintenance.

### **Project Overview**

Hydro Ottawa embarked on the Substation Automation System (SAS) project to create a substation automation methodology that would provide data that would allow the utility to derive more timely information on the service condition of its major substation assets. The objectives for this SAS project were to:

- Provide a central substation integration platform to facilitate data collection and normalization across a broad range of device types.
- Achieve productivity gains by employing centrally managed systems that provide remote connectivity from the desktop.
- Provide secure remote access to all substation relays, remote terminal units and transformer monitoring devices for the purposes of monitoring, configuration and management.
- Leverage existing corporate security systems and communications infrastructure.
- Deploy a system that are could be scaled across Hydro's service territory.

### **The Solution**

By fall of 2006, Bow and Hydro had implemented the solution based on these principal components:

- Bow Networks' OpenHouse™ Engineering Data Warehouse Server, providing a consolidated view of asset conditions.
- Bow Networks' eLAN Substation Communications Server (SCS), providing data collection and visualization within the station. The eLAN SCS supports all protocol interfaces to relays and RTUs while providing a persistent connection to the OpenHouse server.

Visualization within the station is based on the eLAN Web Interface, providing real-time and historical data presentation through a standard web browser.

- Bow Networks' IED Anywhere 2™, providing secure remote access to station IEDs.

### OpenHouse Engineering Data Warehouse

Based on OSIsoft's PI™ and Microsoft's Sharepoint™ services, Bow Networks' OpenHouse Engineering Data Warehouse is a family of modules addressing the long term storage, analysis, and visualization of substation and feeder data. Combined with Bow's professional services, OpenHouse provides a comprehensive platform for data archiving and decision support. Its two principal applications include:

- Asset information management
- SCADA historian

OpenHouse works seamlessly with Bow Networks' eLAN SCS. Any data points within an eLAN server may be easily mapped through to OpenHouse. In addition, the use of the native PI interface to the Telvent SCADA system has made it possible to provide historian capabilities to the existing Hydro system.

### OpenHouse Web Portal

The web portal provides access to all stored and calculated data using a standard web browser. Using RTWebParts from OSIsoft and Microsoft's Sharepoint services, various web components are assembled to provide a specific type of information display, such as:

- Tabular data display - data values, events and datasets and summaries at a specified point in time from any time series data source in tabular form
- Trending - displays an interactive trend graph, updated in real time
- Substation and asset tree structure
- Baseline services provide support for configuring and querying data from sources beyond PI, such as relational databases and web services

A number of standard web portal pages are provided with OpenHouse. Bow worked with Hydro's engineers to tailor the presentation and reports to meet their unique requirements. Future modifications will be made by either Bow support staff or Hydro's internal personnel.

### **Powerful Partners: Bow and OSIsoft**

Hydro Ottawa represents a utility at the forefront of using modern substation automation technology, secure remote access techniques, data warehousing and web-based user presentation technology, in implementing a next generation asset decision support system. This system will ultimately provide the data and visualization necessary to drive Hydro Ottawa's reliability centered maintenance program, made possible through the partnered efforts of Bow Networks and OSIsoft.

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