

# ELECTRICAL BUSINESS

THE AUTHORITATIVE VOICE OF CANADA'S ELECTRICAL INDUSTRY

## Ontario utility the world's first to pilot internet based SCADA services

The advertisement features a central graphic with the text "enerVista.com" in a large, blue, italicized font. Above the text are several icons representing different utility services: "Operator eSCADA" (a person at a computer), "Engineering eExpert" (a person at a computer), "Maintenance eScheduler" (a power line tower), "Line Crew eLibrary" (a person working), "Administration eAdministrator" (a person at a computer), and "Customer eCustomer" (a house). Below the text are three icons labeled "Substation" showing different views of a power substation. A small icon of a cell phone and a paper is also visible on the left side of the graphic.

### Whitby hydro using enerVista.com to prove no substation is an island

By Denise Deveau

The engineering team at Whitby Hydro Electric commission in Whitby, Ontario calls it their magic black box. The unobtrusive, VCR-size relay certainly looks quite commonplace at first glance. In reality, the Universal Relay (UR), with its digital-based architecture and advanced peer-to-peer communications capabilities – a product from GE's Power Management division in Markham Ontario – lies at the heart of an innovative outsourcing initiative that could revolutionize utility management for small and mid-sized utilities competing in a deregulated market.

Whitby Hydro, situated east of Toronto, is the world's first utility to pilot the enerVista.com concept initially conceived by GE. The pilot site is Scugog Hydro, a three-substation utility, 12 miles north of Whitby city, that has just recently entered into an agreement with Whitby Hydro to provide services: billing, buying, maintenance, construction, and cus-

tom service. The agreement is part of Whitby Hydro's and Scugog Hydro's response to the pending deregulation of the electricity industry in Ontario.

Established in 1903, Whitby Hydro operates and maintains seven 44 kV sub-transmission circuits, 11 distribution substations, and 38 distribution feeders. The utility also provides engineering, design/build, maintenance and system analysis services for a number of private companies, as well as design and construction services for co-generation facilities. Today it services 25,000 customers, in addition to the 2,200 residents of Scugog, Ontario.

"Many utilities are simply not in a position to stand alone in a deregulated market, and are left with the alternative to sell, amalgamate, or partner with other utilities", explains Jim Lavelle, General Manager for Whitby Hydro. "The arrangement we have with Scugog Hydro provides them with access to our services and technology and, at the same time, allows them to maintain their identity and commission."

He adds that the recent launch of GE Power Management's enerVista.com

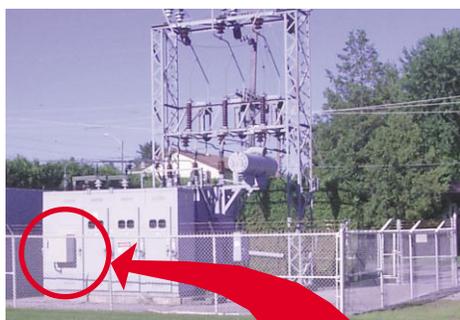
service has further expanded the possibilities of Whitby Hydro's selling proposition to Scugog and other customers at home and abroad beyond anyone's expectations. "What this new concept offers was not even possible three years ago. But recent developments in communications technology have put the pieces on the table to allow for truly cutting-edge substation monitoring and control at a fraction of the cost of setting up full-scale SCADA systems.

enerVista.com allows utilities to leverage the power of the Internet to achieve SCADA (Supervisory Control And Data Acquisition)-level capabilities. The Universal Relay, installed at the substation site is the Internet appliance that provides the communications link via modem over the medium of choice (i.e. telephone, cable, wireless, or dedicated line). Data is housed on a GE server to allow Whitby Hydro technicians around-the-clock access to the data via the Web from any location in the world.

Norris Woodruff, General Manager for GE Power Management, says this "eSCADA" concept promises to change the utility landscape in the months to come. "With the power the Web can bring to the equation, smaller regional electric co-ops and standalone utilities can effectively compete in the marketplace. It's a market that is generally ignored because they simply don't have the budgets to engage in high level automation systems, nor do they have the manpower to hire the specialists they need. Now, for a monthly fee, they can have access to the technology and the specialists at a very affordable rate and with no capital outlay. It provides around-the-clock monitoring and control without having to invest in the resources normally associated with full-scale substation automation."

Woodruff points out that Whitby Hydro's forward-thinking approach made them the ideal choice for the first pilot site. Since the Scugog site, the com-

pany has also been working with a number of other regional utilities in Canada and the U.S in other pilot applications. "Scugog not only provided substations, but a whole town to work with. In addition, the engineers at Whitby Hydro are part of a highly skilled team with a broad-based vision of what digital-based technology can bring to substation automation."



(Top) One of Scugog Hydro's three substations.

Close-up of the UR-panel installed in the substation (right)



"With web-based access, the capabilities can reach far beyond simple monitoring and control," explains Kevin Whitehead, Engineering Supervisor at Whitby Hydro. "Since the UR interfaces like a PC, we can develop virtually any application that the Internet has to offer, from data acquisition and control to remote paging to visual monitoring using web-cams. The set-up also provides the ability to provide remote operations for circuit load transfers and switching applications," he amplifies. "You can also set it up to send alarms to a pager or cell phone. Once you set up the limits, you can have alarms on anything."

Setting up the system is a relatively straightforward task that can be accomplished in a matter of days. For each substation, a UR is housed in a weather-tight box with a cable or phone modem, and is mounted external to the switchgear. Once installed, it collects and stores information from the substation equipment and devices for the engineers to interrogate from a central site, their laptops, or any other PC device.

The first of the three Scugog sites was designed, installed, and up and running within a matter of four weeks, with the others quickly following suit. Overall, initial installation for the three substations took six weeks. Unlike conventional SCADA, no programming was required – only simple, menu-driven configuration. As the team members become more versed in the application, they expect installations will be performed in as little as one-to-two days.

"Implementing a SCADA system that could deliver similar functionality as this set-up would have taken months and months of work and would have been complex and specifically tailored for the utility. It would also have taken vast quantities of money, which is simply not available to small utilities," says Whitehead. "Having the communications links over the Web, and data acquisition hosted by an outside vendor, is an amazing breakthrough. In this way, we know we can always have the most up to date equipment at a reduced capital cost, and expand our capabilities to a wider market. We can now monitor projects half a world away."

Whitehead reports that the simplicity of the installation and communications link has led to a number of new applications beyond the current roster. "We're developing new applications as we go," he says. "The limitations are only at the station end, not on the equipment. From the equipment standpoint, all you have to do is mount the enclosure and you can set it up to do anything you want. Anything that can be done over the Internet can be applied to this system with minimal effort."

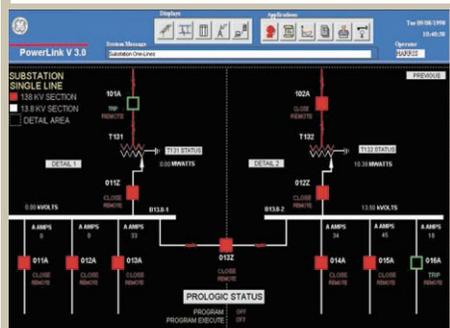
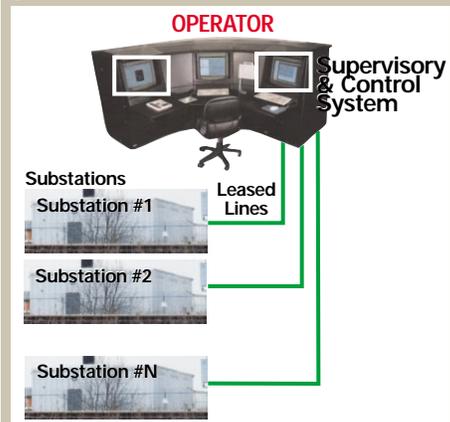
Some of the plans in the works and currently being tested at GE Power Management include advanced alarm functions with remote paging, remote switching, and on-screen perimeter surveillance.

Beyond the Scugog site, Whitehead says Whitby Hydro is using the solution to bring onto the system two downtown substations that they were unable to link to the Whitby SCADA system. "For utilities such as Whitby Hydro, it's not unusual to have different distribution voltages which supply the town," says Whitehead. "We have two stations supplying a 4.16 kV line that are not on SCADA. Once the Scugog installation is completed, we plan to have new UR units installed in these two stations so we can bring them up to the level of our other sites."

As the utility sets its sights further afield, Whitehead says, there is no question that the ability to offer advanced monitoring and control functions at a fraction of the cost, complexity, and time of more conventional systems will prove a valuable asset. "We just keep coming up with new applications for this. There's really no limit as to what we can do for utilities in Canada, and around the world. We feel that with this kind of capability and flexibility, even though we are a mid-sized utility, we can truly compete on a global scale." *EB - Reprinted by permission*

## SCADA

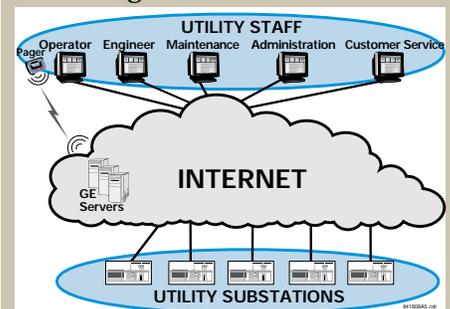
A typical power system has multiple substations and a regional operating centre that monitors each site. Dedicated communications circuits (typically leased telephone lines) link to the control centre where an operator can view the network and analyze information using customer-programmed screens.



Substation status displayed in control room.

## enerVista.com over Internet

Information from each substation is delivered over the Internet using a communications link (cable, telephone, or wireless). Data and status can be accessed from a central server using any Web browser with user-configured screens.



24/7 monitoring of all stations from anywhere to quickly determine fault cause and location.