Glenwood Springs Electric System

A cost-effective control and monitoring solution helps city become proactive

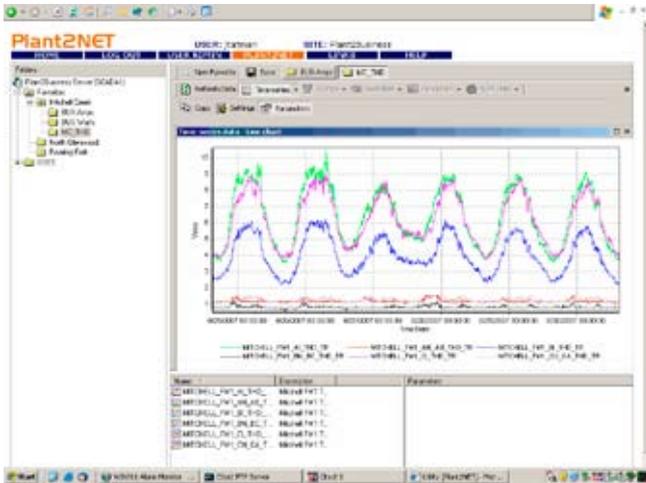Glenwood Springs, Colorado, USA

The Challenge

To install an effective monitoring and control system that would provide staff with more effective and timely information in order to ensure reliable service to their customers. All at a reasonable cost.
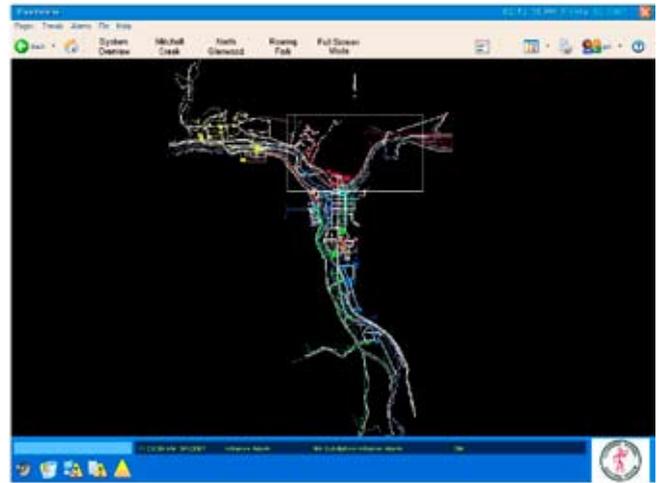
The Solution

An Ethernet-based system utilizing CitectSCADA and CitectHistorian to monitor the entire electric system from a centralized location.

The Benefits

Staff can now monitor the entire electric system from anywhere within the city and respond in a more timely fashion to alarm conditions. The system allows operators to better identify or preempt problems while also providing them with data from which to plan future system improvements.

Glenwood Springs, Colorado, is located in a beautiful valley in the Rocky Mountains, not far from the resorts of Aspen and Vail. The Glenwood Springs Electric System began in 1886 with the construction of a coal-fired, steam driven electric power plant. In 1947, the City of Glenwood Springs purchased the electric system to convert it to a municipal utility. The current system consists of three electric substations that communicate with the master stations via Ethernet over a $3 million fiber-optic network. This network has received local and regional awards for providing high-speed broadband access to local residents and businesses.

The Challenge

The City of Glenwood Springs is a progressive, high-tech customer that required a cutting-edge SCADA solution with remote monitoring, web-based viewing, and set data analysis with reporting tools that are user-friendly to both experts and occasional users. The SCADA system also needed to allow users to monitor the operation and performance of the electric system from their desktops. Other requirements included:

- Local alarms for abnormal conditions and later analysis
- Ability to monitor and record access to each substation for security purposes
- Capacity to store data for historical analysis and reporting and for use in system planning
- Built-in redundancy if a server should fail

Utilities face enormous budget pressures and even technology savvy cities like Glenwood Springs often have difficulty justifying the cost of electric utility SCADA applications to its planners.

The Solution

When considering the potential of implementing a SCADA system to their electric system, Glenwood Springs contacted the city's electrical engineering consultant, Electrical Systems Consultants, Inc.(ESC) in

CitectSCADA   **CitectHistorian**   Case Study

Screenshot of time-series data line-chart

Overview of Glenwood Springs electric system

Fort Collins, Colorado. ESC has provided engineering services to Glenwood Springs for over 20 years. They have been a valued integration partner since 2004. ESC's objectives were to design and implement a system that would provide the city with detailed information on the operation of the system, as well as critical alarms, at a reasonable cost.

ESC chose to design and implement an Ethernet-based SCADA system using the fiber-optic network resources available at all substations. The solution utilizes CitectSCADA and CitectHistorian software, WIN-911 alarming software, Control Microsystems SCADA-Pack RTUs and GE EPM9650Q Power Quality Meters. These choices were made for their functionality, open domain protocol, and cost effectiveness. CitectSCADA was selected because of its built-in redundancy, thin client capabilities and OPC support.

As a Windows-based SCADA system, CitectSCADA was built from the ground up to be a networked system capable of handling thousands of I/O points from hundreds of I/O devices. It was also designed to be a data storage system as well as an operator interface.

The CitectSCADA system was implemented to provide staff with more real-time information about the electric system, allowing them to respond quicker to situations and in some cases make changes that would prevent problems from occurring. Staff are alerted to alarm conditions from the SCADA system and if the alarms

occur after hours, the system, using WIN-911, alerts on-call staff by relaying the pertinent alarm conditions. The staff can access the system from a central dispatch computer or from a number of distributed nodes. Employees can access the system from any machine on the municipal network using the thin client capabilities available with CitectSCADA.

The CitectHistorian application provides a valuable interface for users to view data in the form of trends and reports. This interface is used primarily by management to get a concise view of the system load and historical performance. It allows each user to create customized views, trends, and reports that fit their individual needs.

Benefits

Using CitectSCADA and CitectHistorian, staff can observe the entire electric system and distinguish abnormal conditions before they impact operations. This can help prevent or at least minimize outages within the system. Historical data logged by the network provides a comprehensive view of the performance of the electric system. This data is used in determining future improvements, as well as for locating and isolating disturbances to the system, allowing for proactive correction.

By implementing the redundancy available with CitectSCADA, the SCADA master stations can be located and managed in isolation, whilst providing the city with a complete robust and reliable control system.

"The CitectSCADA system provided them with the ability to monitor the system in real time, which the city described as giving them definite peace of mind. In the past, they would have been making changes and hoping for the best. Now they can actually see the effect of the changes as they make them."

Jim Tatman,
Project Lead, ESC

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