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**Alan Blanco**  
Chief of Operations  
and Distribution



## Costa Rican Power and Light Company Reduces Delays in Response Time with a Comprehensive Wonderware SCADA Software Solution

**San Jose, COSTA RICA** — An oasis of calm and ecotourism haven, Costa Rica is believed by many people to be one of the best places on earth to experience the tropics. The country's enlightened approach to conservation has ensured that its lush jungles remain home to playful monkeys, languid sloths, sleek crocodiles and an assortment of exotic birds, insects and butterflies.

Within Costa Rica's perennially green Valle Central (Central Valley) is the bustling cosmopolitan city of San José and Compañía Nacional de Fuerza y Luz (CNFL), Costa Rica's primary light and power company. With the help of Wonderware industrial applications, CNFL distributes electricity to more than 380,000 people and businesses throughout the country.

Dedicated to delivering the best service possible, CNFL began a pilot program in April 2003 to reduce response time to power failures throughout its distribution network. Looking to centralize the information processed by different substations and protection units that were installed at diverse points throughout its distribution network, CNFL added a supervisory control and data acquisition (SCADA) software solution from Wonderware, a business unit of Invensys Systems, Inc. to their control room systems.

"Clear and immediate communication throughout the system was one of the primary goals in automating and monitoring the company's power distribution network," said Alan Blanco, Chief of Operations Department & Distribution Department. "We looked for a system that would not only notify employees immediately if there were disruptions or power failures anywhere in the network, but would give us access to relevant information that could

enable operators to monitor potential problems in the system before they occurred and make informed decisions to quickly correct the situation."

After considering its options, CNFL decided on a variety of Wonderware plant intelligence products including the IndustrialSQL Server real-time plant historian and ActiveFactory data analysis and reporting clients that maximize the value of data stored in the IndustrialSQL Server historian. ActiveFactory software enables individuals at all levels of an organization to easily access plant and process data through simple point-and-click dialogs. The new automation system monitors and controls more than 15,000 data points, or tags.



**Substation La Uruca**

Also included were visualization products including InTouch human-machine interface (HMI) software and the SuiteVoyager plant information portal. InTouch HMI software provides visualization and industrial process control, and can be accessed from mobile devices, thin clients, computer nodes and over the Internet. SuiteVoyager software is a plant information portal that increases an organization's ability to access information and content anywhere at any time. Portals provide the content and information needed to make better business decisions while enabling central administration, improving efficiency and providing an immediate return on investment.

Several CNFL substations are equipped with stand-alone InTouch HMI applications. Locally, each InTouch HMI application receives data from the circuit protection units and is converted to Modbus TCP/IP before being delivered to the local I/O Server. These independent InTouch HMI applications are replicated in CNFL's main InTouch HMI node at its electrical distribution control building.

Before the installation of the Wonderware applications at CNFL, the operators of each substation had to report any failure to the control center by phone. With Wonderware, operation alarms are announced locally at the substations and simultaneously triggered at the main control center. The new system enables operators to react immediately to the problem without having to worry about informing personnel at the control center until after fixing the problem.

"Probably the most important benefit the new system accomplishes is reducing CNFL's response time to power failures in the distribution network," said Alan Blanco. "Managers and key personnel are informed within seconds when an important failure occurs.

This capability alone optimizes our response time because all related personnel are notified simultaneously, thus making our decision process more efficient."

At startup, the main SCADA system displays a menu with links to the replicas of the different substations' HMIs. Each individual SCADA section has similar windows and similar functionality. All graphics, alarms, communication status and a detailed live view of the electrical variables for each circuit can be observed in the same way that the operators of each substation see the information. The substation circuits also can be tripped or closed from the main control system after securing proper security clearance. The startup menu also has a link to a general SCADA section that includes summary information about CNFL's distribution network.

The main InTouch HMI application is connected to an alarm system that sends pages regarding critical alarms to specific people in the company. These alarm messages are sent to the mobile phones of selected personnel.

The application is available to employees throughout CNFL via Wonderware's SuiteVoyager portal. Most of CNFL's main SCADA windows are exported to XML and published on the company's Intranet site, which can be accessed through the SuiteVoyager portal. It also includes links to ActiveFactory software, which grants authorized personnel access to detailed information stored within the IndustrialSQL Server historian.

Another key benefit CNFL has realized through its Wonderware automation and monitoring system is that relevant information is now readily and easily available through its network to all authorized staff. Prior to the installation of the Wonderware solution, it was necessary for employees to request historical reports from the operators at the control center, distracting them from their regular tasks.

Today, personnel with the proper security rights can access the information stored in the IndustrialSQL Server historian from their individual workstations via CNFL's intranet regardless of their location. Taking advantage of the installed TCP/IP network that links all of the buildings, CNFL employees can now retrieve historical data using ActiveFactory software, as well as real-time data, using the SuiteVoyager portal. Thanks in part to this benefit, customer complaints regarding damages caused by electrical interruptions can be confirmed immediately. This saves valuable time and money by avoiding false or mistaken grievances.

In addition, monthly payments to outside electricity-generation companies can now be predicted and confirmed in seconds. Analysis of CNFL's own electrical production, compared to monthly purchases from other companies, has enabled CNFL to optimize and reduce expenses caused by unnecessary acquisitions.

"Having the necessary data at our disposal in real time to study the occurrences of power interruptions, CNFL has been able to identify weak points in its distribution network," states Alan Blanco. "This capability has significantly enhanced CNFL's ability to target and optimize its investments and ultimately improve customer service to all who depend on us for their electrical power needs."

Through the successful implementation of its new open system, CNFL has achieved its goal of significantly improving communication throughout the company. Running smoothly on a Wonderware SCADA Solution, the company's system is now able to deliver relevant information into the right hands in real time, enabling CNFL to keep the power distribution grid online and failure-free.

## Solution Overview

**Industry:** Power Delivery

**Software:**

- InTouch human-machine interface software
- IndustrialSQL Server real-time plant historian
- ActiveFactory reporting and analysis clients
- SuiteVoyager real-time plant portal software

**Hardware:**

- Fujitsu/Siemens Primergy F250 servers with dual Intel Xeon processors running at 1.8 GHz and featuring 1GB ECC SDRAM, with redundant hard drives and power supplies



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