

Progress Energy Realizes Savings of \$4.0 Million With Emerson's Ovation® Controls at Roxboro

RESULTS

- \$3.0 million estimated hardware savings by reusing the existing I/O blocks
- \$1.0 million estimated labor savings by eliminating the rewiring of I/O
- Increased Unit 2 load dispatch by 3%
- Improved Unit 2 superheat by +/- 5 degrees Fahrenheit regulation during load ramps

APPLICATION

Control system upgrade on a 670 MW coal-fired unit with a balance draft CE single boiler

CUSTOMER

Progress Energy Carolinas, Roxboro Station Unit 2, located near Roxboro, North Carolina

CHALLENGE

The four-unit, 2,462 MW Roxboro Steam Plant is one of the largest power plants in the United States. As a base load facility, reliable operation of the Roxboro units is essential for dependable service to Progress Energy customers. Plant controls, originally installed between 1966 and 1980, were replaced in the 1990s with Taylor Mod 300 systems, which were data linked to a host of other PLC-based systems distributed throughout the plant. The Mod 300 systems and PLCs all used Genius® I/O blocks for 20,000 remote I/O points. In 2000, Progress Energy sought to once again upgrade the control technology at all four units with a centralized, integrated system. Replacing the existing Genius I/O with new modules was out of the question due to tight outage schedules and added costs. Challenges associated with the four-unit controls upgrade included supplying reliable and affordable redundant interfaces to the station's 2,700 Genius I/O blocks, furnishing operators with a centralized, coordinated system for improving plant operation, installing the system within a 30-day outage schedule, and providing flexibility for adding new plant controls.



“We had specific requirements for interfacing to our existing I/O. Emerson was the only vendor that provided a total solution that met not only our interface specifications but all our process control goals.”

Steve Lowery

Sr. Engineering Technical Support Specialist
Progress Energy Carolinas
Roxboro Steam Plant



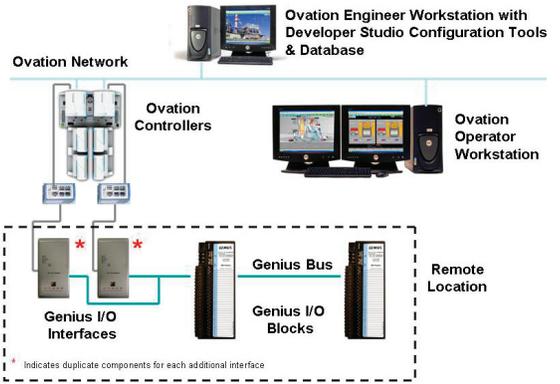
SOLUTION

After careful consideration of all proposed solutions, Progress Energy selected Emerson's Ovation® expert technology to replace the controls on all four Roxboro units. The project began with installation of Unit 2 in April 2005, and will continue with Units 1, 3, and 4 through 2009.

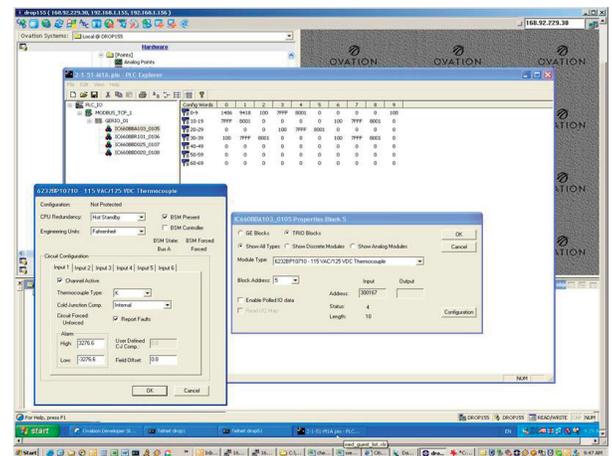
Cost-Saving Interface - Emerson was the only vendor that provided a total modernization solution, including redundant interfaces to the plant's Genius I/O blocks. Linking the existing I/O to the Ovation system saved considerable construction and startup resources, as well as startup and checkout time. Installing the new Ovation system for Unit 2 was accomplished within the strict 30-day outage, an impossible task if the I/O was to be totally replaced with new modules. The Ovation interface to the Genius I/O is a bus master for up to 29 I/O blocks that exchanges point information with the Ovation Controller. This interface provides full, seamless integration of all remote I/O with the Ovation Network. The Ovation Developer Studio incorporates an interface Explorer tool that allows complete configuration of the Genius modules once they have been initialized with communications baud rates and addresses through a hand-held device. Ovation point tags are directly assigned to a channel on a Genius I/O block, thus eliminating the need for register mapping. Prior to the upgrade, each PLC I/O block had to be individually configured by someone on site. Now with the Developer Studio integrated tools, Progress Energy saves considerable time by reconfiguring all the I/O blocks from one workstation. What previously took hours now takes only minutes through an automatic download from the Ovation system.

Coordinated Control - Ovation's coordinated control schemes have helped Unit 2 improve ramp rates by 3%, from 91% in 2004 to 94% in 2005. In addition, Ovation's tighter control strategies have helped improve superheat temperature by +/- 5 degrees Fahrenheit regulation during load ramps .

System Expansion - The old unit control systems were at maximum capacity, thus prohibiting the addition of new controls for selective catalytic reduction (SCR) and scrubber systems. Now with Ovation, Roxboro Unit 2 has been able to integrate and start-up a recently added SCR system along with the plant controls. An FGD system using FOUNDATION™ fieldbus will also seamlessly link to the Ovation controls. Combining new plant systems with Ovation technology provides Progress Energy with a cohesive view of each Roxboro unit's processes.



Redundant Ovation interfaces to the Genius I/O, as depicted above, are used in all four Roxboro unit control systems.



Explorer tools are integrated within Ovation's Developer Studio for configuring Genius I/O blocks.

