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PRODUCER MAGAZINE

DECEMBER 2007

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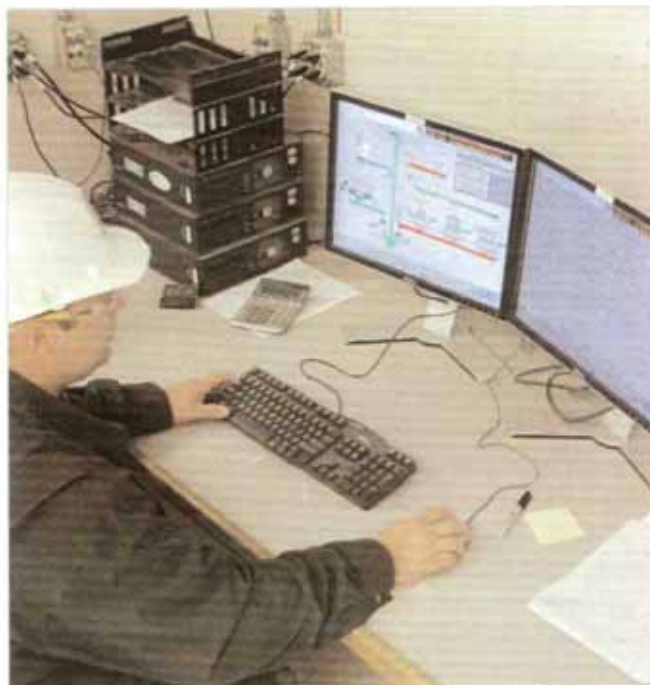
Control System Upgrade Has Plant's Future Looking 'Golden'

By Marvin Coker

Golden Triangle Energy Co-op. (GTEC), an ethanol producer in Craig, Mo., began operations in 2001. Shortly after construction was complete and plant operations were stable, GTEC proactively sought to maximize the efficiency and uptime of its processes, including identifying and hiring a local resource able to respond quickly to system problems and capable of providing reliable technical support for the plant's challenging control system.

GTEC contacted Bachelor Controls Inc. (BCI), a leading provider of control and systems integration services and a certified member of the Control System Integrators Association. Soon, BCI was the systems integrator of choice for GTEC, performing control system technical support and troubleshooting, as well as information technology network administration services. "To be successful at GTEC, we have to have the total support of those we can depend on," General Manager Roger Hill says. "Bachelor Controls has demonstrated the effort to fully understand our business and our systems, and I see them as an extension of our staff. We lean on BCI to keep our plant running."

GTEC was enjoying steady uptime and consistently out-producing its 14 MMgy nameplate capacity by 5 MMgy to 6 MMgy, but supporting the aging control system had increas-



BCI Project Manager Adam Hinton checks on the system in the GTEC control room.

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ingly become a challenge. The installed system hardware had been deemed obsolete by the manufacturer, and replacement parts were becoming difficult to find.



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Problems with the obsolete control system continued to persist and worsen. As parts failed, replacement parts were becoming more difficult to find. Some parts were available for next-day delivery, but others could only be sent in for refurbishment or repair, which required a two- or three-week turnaround and was unacceptable for keeping the system running. In desperation,

GTEC, BCI engineers and purchasing personnel even began to search online auction sites for replacement parts, just to ensure sufficient backups were in place in case any of the most critical components should fail. With every lightning storm came the threat of extended downtime and lost production.

In late 2006, with mounting control system risk and thoughts of a plant expansion in the works, something had to be done. GTEC contracted BCI to retrofit and upgrade the obsolete control system with a newer, more flexible system designed to meet future production and expansion needs.

Meeting the Challenges

Retrofitting and replacing the existing control system came with many challenges. A major goal of the project was to upgrade the system to newer, more current hardware while maintaining (and improving) the existing control functionality. The new system also needed to be flexible enough to allow for day-to-day operational modifications, as well as accommodate future expansion demands.

To avoid the problems that plagued the original control system, requirements

of the new system included ensuring that parts and technical support—including training—were readily available. Implementing a system that had a pool of skilled talent readily available to maintain and support it was also very important.

After weighing upgrade options, BCI chose to integrate Rockwell Automation's Process Automation System (PAS). Utilizing the Allen-Bradley ControlLogix Programmable Automation Controller and I/O system, along with Rockwell Software's RSView Supervisory Edition graphical interface, the system featured an open architecture with maximum flexibility for future facility and product expansions, and an increased availability of training and maintenance support resources. Selecting established, flagship product lines from Rockwell Automation ensured that all installed parts were readily available from reliable distributors located near GTEC and that both hardware and software technical support were available well into the future.

"We knew the magnitude of this project would be like a 'heart transplant' for our facility, and we relied on Bachelor Controls to guide us in making the most effective decisions for our control system needs," Hill says.



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tem before converting the rest of the plant," he says.

With the success of the pilot phase, BCI specialists and their Waldinger counterparts showed up for the major installation start-up prepared for the task, yet well aware of the enormous risk associated with overhauling and converting almost the entire plant's control system. "Bachelor Controls' planning and preparation was excellent," Martin recalls. "They clearly understood the tremendous amount of detail that was going to be required for the project and the critical importance of implementing the new system during a single, scheduled shut-down. When it came time to execute, they were poised and ready to go."

Success Achieved

The major installation phase went smoothly, taking a mere five days to complete the entire conversion. When the fifth day arrived, normal restart procedures were implemented by existing staff using the new control system, and the plant was back in full production before the end of the day. "Bachelor Controls' ability to implement such a complex conversion project start-up within the scheduled five-day

shut-down period saved us a great deal of money," Martin says. "Given typical parameters, each day of downtime beyond the scheduled shut-down period would have cost us dearly in lost production, in addition to the mechanical troubles that come with an extended shutdown period. We couldn't ask for much more and couldn't be more pleased. We definitely got our money's worth from BCI."

With the improved efficiency of system control operations, GTEC can not only focus on production and processing issues, but also leverage the new system to get customized information and adapt the system to meet changing business conditions. "We take great comfort in knowing our control system is designed to meet our specific needs, with replacement parts available locally," Hill concludes. "I don't see how we could have done this project any other way." **EP**

Marvin Coker is a senior project engineer for Bachelor Controls, Inc. and has extensive experience with control system architecture design and support for food and fuel-grade alcohol production systems. Bachelor Controls was named the 2008 Control Engineering System Integrator of the Year. Visit www.bachelorcontrols.com or call (785) 284-3482 for more information.