

## Ethanol Production Control System Retrofit / Upgrade

Obsolete Control System Retrofit / Upgrade and Plant Expansion Preparation

- ✓ Ethanol/Alcohol
- ✓ Obsolete Control System Retrofit/Upgrade
- ✓ Plant Expansion Preparation

Golden Triangle Energy  
Craig, MO

Roger Hill  
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***Bachelor Controls' planning and preparation for the ethanol production control system conversion project was excellent. They clearly understood the tremendous amount of detail that was going 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.***

Charlie Martin  
Plant Manager



Bachelor Controls, Inc.

Systems Integration for Manufacturing

### Project Summary

Opened in 2001, Golden Triangle Energy Cooperative (GTEC) produces ~20 million gallons of ethanol each year. In 2007, GTEC contracted long-time partner Bachelor Controls (BCI) to retrofit its obsolete control system with a newer, more flexible system to meet future production and product expansion needs.



### Objectives / Requirements

GTEC charged BCI with retrofitting and replacing an obsolete control system with a newer, more flexible control system operating under the following parameters:

- retain all field wiring and field devices
- maintain existing control functionality operating on newer, more current hardware
- allow flexibility for day-to-day operational modifications and planned facility and product expansion needs
- ensure parts and technical support – including training – are readily available
- implement a system that has pool of skilled talent readily available to maintain/support the system

### Results / Benefits

BCI retrofitted the existing control system and replaced it in two phases – a pilot phase to test the implementation plan and device-control software modules under load, and a major implementation phase installed in only five days during a scheduled plant shut-down. The new system

- provided current technology and hardware
- reduced installation costs by leveraging all existing field wiring and field devices
- maintained control functionality, plus built in flexibility for future facility / product expansions
- installed parts that are readily available from reliable distributors located near GTEC
- featured an open architecture with increased availability of training and maintenance support resources
- minimized down-time costs by containing major installation phase to only five days during scheduled shut-down
- improved efficiency of system control operations, so GTEC can focus on production and processing issues

*We knew the magnitude of the controls conversion project would be like a 'heart transplant' for our facility. We relied on Bachelor Controls to guide us in making the most effective decisions for our control system needs. We take great comfort in knowing our control system is designed to meet our specific needs, with replacement parts available locally. I don't see how we could have done this project any other way.*

Roger Hill  
General Manager

