

VALUE PROPOSITION

SOLUTIONS

- IntelliCENTER® Low Voltage Motor Control Center
- Two 150 HP motors for secondary grinding system
- ControlLogix®-based control system
- 24 variable frequency drives
- DeviceNet and ControlNet networks
- PanelView™ interfaces

RESULTS

- Decreased downtime from up to 20 hours per month to scheduled maintenance downtime
- Increased production flexibility and decreased programming time from one hour to under one minute per product change
- Increased grinding production rate by 20 percent
- Saved 31 cents per 1,000 bricks produced, resulting in annual savings of more than \$15,500
- Enhanced safety improvements

ACME BRICK USES NETWORKED CONTROL SYSTEM TO IMPROVE PROCESSES, SAFETY AND SAVE THOUSANDS OF DOLLARS



BACKGROUND

Acme Brick in Clarksville, Ark., produces nearly 50 million bricks each year. The company mines brown and black shale rock to create four different sizes of brick, each available in eight variations of color and texture. Shale is a clay-based rock that splits easily and is the foundation of most U.S.-produced bricks.

To produce such wide variety, Acme Brick's control system closely monitors the shale as it enters the facility and goes through the primary grinding system, where it is ground into fine particles. Additional materials are precisely measured and added to the shale before it is transferred to a storage area. The material is then moved to one of two production lines where it is extruded to the shape of a brick and transported to a dryer where 99 percent of the water is removed. The bricks are fired in a 2,000 degrees Fahrenheit kiln, cooled and sent to a packaging machine. There, the bricks are bundled and prepared for shipment.

CHALLENGE

Acme Brick's previous control system was state-of-the-art in the early 1980s, but it had clearly exceeded its functional lifespan. The hardwired

electrical system included push-button starters, a single analog PID (proportional, integral, derivative) loop, and an inflexible load control system – all contributed to the ongoing challenges in a plant producing a wide variety of products. The system was becoming increasingly unreliable, resulting in frequent, costly downtime. Troubleshooting was both complex and dangerous. The technicians accessing the control panel were required to work in close proximity with numerous live connections.

Additionally, the system's lack of reliability made it difficult for Acme Brick to accurately plan and schedule production. Engineers never knew how long the system would run before it would break down, requiring troubleshooting and maintenance.

"While many of the breakdowns were often minor, we knew a major outage was just around the corner," said Ronnie Sexton, Acme Brick plant engineer. "If that had happened, it could have destroyed a lot of the equipment and cost tens of thousands of dollars in new components. Worse yet, we would still be using old technology."

SOLUTION

Acme Brick evaluated several control system vendors before choosing Rockwell Automation. Eventually, Acme Brick decided to standardize their region-wide systems using the reliable technology of Allen-Bradley® and the support provided by Rockwell Automation.

"We could instantly get on the phone with someone from their support center. If they had an answer, we'd get

it; but if they didn't, they'd find out what the correct answer was," Sexton said.

To meet its reliability and long-term performance requirements, Acme Brick installed an entirely new control system using an Allen-Bradley IntelliCENTER motor control center, ControlLogix controller, 24 motor and variable frequency drives, and ControlNet and DeviceNet communication networks.

The control system installed in the secondary grinding room includes two grinding systems each with a 150 horsepower, three-phase motor operating at 750 RPM. The system includes 19 additional motors that operate conveyors and other systems in the grinding room, all of which are connected and controlled via DeviceNet and monitored through IntelliCENTER software.

"The old system required us to physically change the gate and do calculations to determine how much of each type of material we needed to make a product," said Sexton. "Now we can change products at the touch of a button on the Allen-Bradley PanelView terminal. What used to take an hour now takes about 30 seconds."

RESULTS

"Our goals were three-fold," said Sexton. "First, we wanted to reduce downtime, increase safety, and improve our grinding rate by 10 percent. We've realized a 20 percent increase in our grinding rate, improved operator safety, and virtually eliminated downtime."

Increased production and safety are not the only benefits the facility has experienced.

Acme Brick eliminated downtime and increased grinding production, resulting in savings of 31 cents for every 1,000 bricks produced. Producing 50 million bricks a year translates into an annual savings of \$15,500.

"The safety issue is one of the things we're happiest with," said Sexton. "The old system created hazardous troubleshooting conditions, with technicians having to test and probe and work around live wires within a confined panel space."

The system now has a higher degree of reliability so it rarely goes down, but if it does the IntelliCENTER MCC is logically organized and each component is isolated. If there is a problem, technicians are able to more quickly determine the cause and fix it under safer conditions.

The new system also saves a significant amount of floor space. The panel in the previous system was nearly 500 square feet and contained individual starters, disconnects and push-buttons with connecting wireways. The hardwired components were replaced with distributed control networks that resulted in a smaller panel.

The reduced space makes it faster and easier for plant staff to perform product changes and to conduct maintenance.

Increased production, safety, reduced space and lower costs proved to be winning results for the new networked control system Acme Brick installed. Higher profits and more brick shipments make the project even more worthwhile.

The results mentioned above are specific to Acme Brick's use of Rockwell Automation products in conjunction with other products. Specific results may vary for other customers.

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