

# VALUE PROPOSITION

## AGGREGATE INDUSTRY

### SOLUTIONS

Intelligent Motor Control and Integrated Architecture from Rockwell Automation

- PowerFlex® 700 low voltage variable frequency drives: 460V, 50hp
- Allen-Bradley® IntelliCENTER® low voltage motor control centers
- Allen-Bradley SLC™505 Controllers
- RSView® SE Software

### RESULTS

- Reduced headcount for up to US \$55,000 savings annually
- Eliminated annual operational cost of two haul trucks at US \$208,000
- Eliminated stationary control room and saved US \$40,000 in construction costs

Wireless control systems and Intelligent Motor Control help Glenn O. Hawbaker Aggregates reduce headcount and increase reliability.



*Glenn O. Hawbaker limestone quarry and processing plant in Canoe Valley, PA, used an innovative wireless control system from Rockwell Automation to meet the reliability challenges of a 10-year-contract.*

### BACKGROUND

Glenn O. Hawbaker Inc., established in 1952, and headquartered in State College, PA., is an aggregate, asphalt, and heavy construction company with gross revenue of close to US \$180 million.

At its new US \$5 million Canoe Valley limestone processing

plant, in Alexandria, PA, Hawbaker is on the leading edge of new technology with the implementation of Intelligent Motor Control using a mobile, wireless control system and network that increases production reliability and reduces human resources needed to operate the plant.



*Hawbaker uses a mobile crusher and conveyors, instead of conventional haul trucks, and a wireless control system from Rockwell Automation that eliminates the need for a permanent control room or a dedicated operator.*

## CHALLENGE

Hawbaker was challenged with constructing the new limestone mining and production plant to fulfill a 10-year contract to supply a local power plant with high-calcium carbonate pulverized limestone. The limestone is part of a clean-coal technology the power plant uses to neutralize the sulfur dioxide emissions as part of the burning process of waste coal. The limestone will contribute to a 75% reduction in smokestack emissions. Reliability and up-time were the key concerns for Hawbaker. It is required to meet the power plant's contract of 750,000 tpy (tons per year) of pulverized limestone to avoid fines and penalties. In addition, the plant is located near a residential area, where production is limited by restricted operation of 12 hours per day, five days per week. Consistent, reliable production is crucial, as there is no opportunity to make up production on weekends.

Additional considerations in determining a motor control solution

were the environmental challenges such as dust, dirt, moisture and temperature extremes, and the unique challenges of the stringent MSHA mining industry safety standards. Hawbaker also wanted to achieve its goals cost-effectively and use minimum manpower.

## SOLUTION

Hawbaker worked with local Rockwell Automation distributor Schaedler Yesco to find the best solution to meet their unique challenges.

"We came to them with our needs of high reliability and reduced headcount. They had an innovative solution using Allen-Bradley intelligent motor control and a wireless control system," said Jerry Saul, Process Control Engineer at Hawbaker. "We haven't seen that in the industry yet."

The solution included using a mobile primary crusher and conveyor, instead of conventional haul trucks. The nature of the geology at the site

requires the quarrying activity to follow the higher-calcium limestone seam. While the initial cost of a track-mounted primary crusher was significant, the long-term operational cost of running at least two haul trucks was greater at approximately US \$208,000 annually.

Keeping headcount low and using a mobile crusher were key decision-making factors behind using automation, conveyors and Intelligent Motor Control. The flexibility of the wireless EtherNet/IP™ system eliminated the need for a permanent control room and a dedicated operator, and enables any of the operators to view operational information from any location with a PDA, laptop, tablet or desktop computer.

The wireless system is connected to SLC505 controllers that coordinate

the activity in the Allen-Bradley® IntelliCENTER® low voltage Motor Control Centers (MCCs). The MCCs provide integrated hardware, software and communication through open network DeviceNet™ and eliminates the bundles of control wiring typically found in MCCs. It reduces installation time with its plug-and-play set-up, and minimizes facility downtime by quickly providing intelligent diagnostic and predictive failure information. Pre-configured IntelliCENTER software allows access to real-time data, trending, component history, wiring diagrams, user manuals and spare parts.

As Jerry put it, "IntelliCENTER is one-stop shopping for motor control hardware and software."

As the 'brains' of the system, IntelliCENTER works with other

Allen-Bradley system-integrated components within the MCC.

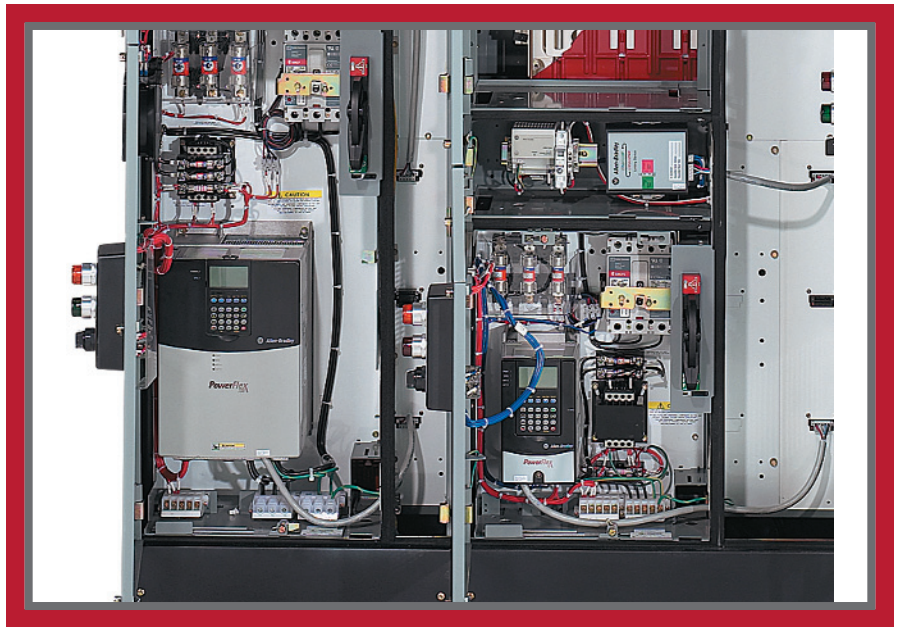
The Allen-Bradley PowerFlex® 700 460V variable speed drives provide cost-effective motor control to run the crusher at optimum speed depending on the load. SMC-Dialog Plus soft starters controlling the primary and secondary Hazemag Crushers include modular communication capabilities, motor starting capabilities, advanced protection and diagnostics in a compact unit that minimizes heat generation. These devices communicate with IntelliCENTER.

RSView® SE software allows operators to supervise the operation through the integrated architecture platform. It enables users to move the platform or change the setup of the plant or the shovel operator to move the crusher from any location.

## RESULTS

May 2004, the track-mounted conveyor was in place and the secondary plant was running with a five-member crew. Due to the wireless control system, manpower is reduced by one to two people, eliminating annual costs of approximately US \$55,000 in salaries.

Elimination of a stationary control room also saved construction costs of about US \$40,000. The wireless hardware and control systems allow operators to monitor equipment, troubleshoot and gather information



*The PowerFlex 700 AC Drive offers outstanding performance in a general purpose drive that is easier to use than any other drive in its class.*

on the process. For instance, if the primary crusher is not running choked, the operator can quickly adjust the feed. Wireless control also makes training easier, saves time, and has better alarming capabilities and warnings.

"In the past two years we've been in operation we've met our supply demands and achieved our anticipated sales margins," said Jerry. "We've maintained and operated the plant without a dedicated control room operator. We're fully automated, so we can start up in the morning and turn our back on it without worry."

The consistency and reliability of the operation to meet the needs of the power plant was the basis of Hawbaker receiving the 10-year

contract. Intelligent Motor Control and Integrated architecture from Rockwell Automation helped Hawbaker achieve its goals and save over US \$263,000 annually and US \$40,000 in up-front costs.

"We invested a lot of time and resources into making this plant productive and profitable," says Jerry. "Now that we've gone through this big learning curve with this plant, we're prepared to use wireless control systems in future new plants."

*The results mentioned above are specific to Glenn O. Hawbaker Company's use of Rockwell Automation products in conjunction with other products. Specific results may vary for other customers.*

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