



Vulcan Threaded Products

Designed for Success

Results

- Return on investment in less than one year
- Fast setup, including minimal wiring and panel space for easy installation
- Integrated high-speed network for connectivity and communication
- Improved process information
- Greater options for expansion

"The affordability and powerful features of the GE Fanuc integrated controller made it a sound investment. To accomplish the same results prior to this would have cost thousands of dollars more in equipment, engineering, and installation. With an integrated controller and operator interface, we completely revamped the Schumag for about 1/10th the cost of a brand new line. Payback on the project was within the year."

David Johnson
Plant Engineer
Vulcan Threaded
Products, Inc.

GE Fanuc Control System Leads Threaded Products Manufacturer into New Market with Old Machine

Controller revives cold drawn bar machine for a fraction of the cost of a new line

Sitting alone in the back-backyard of Vulcan Threaded Products, Inc. in Pelham, Alabama, an early edition Schumag™ in-line drawing machine, circa 1976, quietly pined for the day when it would sing the sounds of full-tilt cold drawn bar production. Routinely focused on traditional manufacturing of all-thread rod, anchor bolts, u-bolts, and other formed steel products, Vulcan had little intentions of revamping the Schumag or of investing several million dollars in a new cold drawn bar line. In fact, the company had considered the Schumag a small investment when they picked it up at an auction. It wasn't until Vulcan went looking for a plant-wide machine interface solution that it discovered that old Schumag was really an investment in the future. With the help of a new GE Fanuc integrated controller and operator interface, the Schumag led Vulcan into a whole new market as the first successful recipient of the new controller, showing a return on investment in less than a year.

Raising the Bar

Vulcan engineers were intrigued by GE Fanuc's new controller product, considering it a potential solution for plant-wide machine applications. "I spoke directly with GE Fanuc's product designers and went down my list of wishes, and the GE Fanuc controller met every one of them," says David Johnson, Vulcan plant engineer. His "wish list" included: ease of programming with the ability to set both the display and ladder logic through a single software program, stackable I/O with a four per unit maximum, the ability to use high-speed



imagination at work

counters with Vulcan encoders, networking capability between units, communication capabilities faster than traditional RS-232/-485, and affordability.

Looking for a way to put the controller to the test before committing to installation on more than 50 machines throughout the plant, Vulcan decided to select a test subject. "We chose the old Schumag because it was the toughest application we had in the plant and we realized it would be a true test of the controller's capabilities," states Johnson. Once the test subject was selected, the project was given a strict three-month startup deadline. With the help of Lynn Mitchell, GE Fanuc sales engineer, and Mike Holt of the Birmingham, Alabama Mayer Automation Group, the team immediately went to work to unite the new product with the old machine.

The Shape of Things to Come

Taking in "raw" steel wire from the line's front-end uncoiler, the Schumag draws the wire through a series of straighteners and into a shotblaster where its rusted, rough surface is smoothed. The machine then pulls the wire from the shotblaster through a die, shaping it to size accuracy within 1/1000th of an inch. Once shaped, the wire, now called cold drawn bar, is cut and polished and ready for further manufacturing in high-end products, such as motor shafts, which demand this sleeker, higher grade of steel.

"Our goal was to make the controller interactive with the Schumag," Johnson explains, "and it passed with flying colors." Schumag operators now get information in real-time, allowing them to maximize productivity, avoid downtime, and reduce waste. The controller display provides a safety status check for the operator, which can help avoid injury and damaged material both at startup and during production. The controller safety check evaluates components such as the uncoiler, straightener, shot blaster, and grippers, while also managing high-speed counters and the power supply. From the main screen, the operator can view an up-to-the-minute bar count, as well as puller feet per minute, puller amp percentage, and pinch roller amp percentage. Consecutive screens display additional information, including emergency stop status, and uncoiler, puller, and pinch drive readings.

Combining the power of fully integrated hardware and Windows®-based software, the GE Fanuc controller delivers a performance comparable to most mid-sized PLCs—but without the high cost. The controller also offers fast setup, including minimal wiring and panel space for easy installation, as well as an integrated high-speed network.

"The affordability and powerful features of the GE Fanuc controller made it a sound investment," Johnson says. "To accomplish the



same results prior to the controller would have cost thousands of dollars more in equipment, engineering, and installation. With the controller, we completely revamped the Schumag for about 1/10th the cost of a brand new line. Payback on the project was within the year."

Another controller advantage, the programming software gave Vulcan a combination of graphical ladder diagram programming with operator interface messaging to completely integrate the controller package. This allowed Vulcan to enjoy reduced development time with a straightforward approach to programming that integrates logic, messaging, and networking into a single solution operating in a Windows environment.

Tightly integrated components eliminate slow serial links and provide better interaction with the operator interface, giving Vulcan operators real-time status of shaft rotation, position of grippers that lead material through the machine, and high-speed counters. Operators can also program feed rates and size restrictions, as well as change screens.

"Getting the Schumag test project running was very important to us, and the GE Fanuc controller was absolutely critical to making it a reality," Johnson states, who noted that Vulcan is currently installing controllers on the balance of its machines. The new product Vulcan is producing on the Schumag line has enabled the company to aggressively pursue the cold drawn bar market, and, according to Johnson, "It was the controller that helped make it all possible."

The Schumag sings again!

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Additional Resources

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