70 Percent of Penn Racquet Sports Factory Run by Opto 22 Products

To make over 200,000 tennis balls a day at its Phoenix factory, Penn has been replacing PLCs with Opto 22 equipment since 1989. Now, 70 percent of the factory is run by equipment from Opto 22. Result: lower cost, easier maintenance, higher capability — and reliability. Most of the Opto 22 I/O modules installed in 1989 have never been replaced and are still at work.

Background

Making so many tennis balls every day is a big job. At Penn Racquet Sports in Phoenix, Arizona, it takes dedication to quality, which is supported and enhanced by Opto 22.

Originally, the Penn factory was automated with conventional (Allen-Bradley) PLCs. However, starting in 1989, the company began to switch to Opto 22. Today, about 70 percent of the company's control systems are from Opto 22. The result: cost savings, higher quality, higher reliability and greater efficiency.

Like a lot of manufacturing companies, Penn is automated with "islands of automation" throughout the plant. The automated operations are scattered among manual or mechanized processes rather than being organized in a continuous flow of automation. This is probably the most common type of automation in American industry today because companies have automated the processes where they would give the most immediate return and kept the mechanized and manual processes replaced elsewhere in the factory.

"The primary thing we're doing is polling analog instruments to define a process and then reacting, typically, with a digital function, either shutting down or adjusting," says Clint Lowe, the operations quality manager at Penn. "We are monitoring all the time and based on whether the output is correct or not we will do automatic shutdowns."

The fast correction or shutdown is important because of Penn's commitment to quality. "Quality is our number
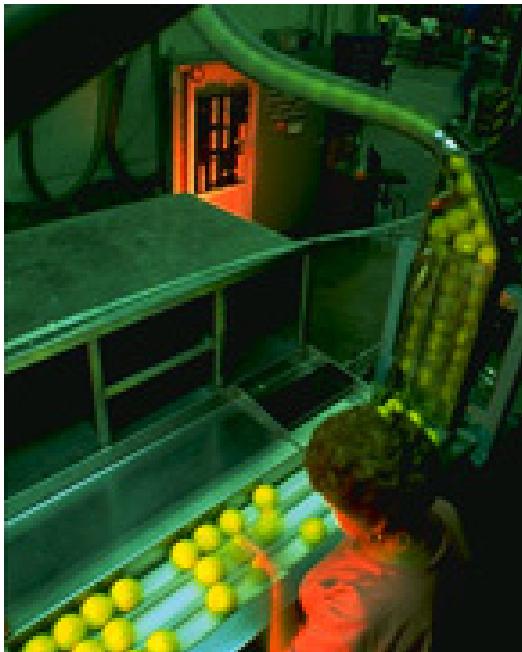
one issue," Lowe says. The faster an out-of-definition process is detected and fixed or halted, the better production is and the less waste produced. In a 200,000+ unit per day factory, that speed is a significant consideration.

There were a number of reasons for the change, including the superior modularity of the Opto 22 products, Opto 22's reputation for reliability and value.

Penn was impressed with the inherent modularity of the Opto 22 system. With the system's intelligence distributed among the controllers and the Brain Boards on the I/O racks, control was divided logically and focused where it was needed. Because Opto 22 controllers are designed with networking in mind, it is easy to tie them together. Opto 22's flowchart-based programming language makes it easy to write software that makes the best possible use of the control system, whether the operation is running on a single controller or several controllers.

"Opto 22 has lived up to that reputation. And the majority of the analogs are still in place and running," Lowe says.

Last but not least was cost. Lowe says the Opto 22 system was significantly less expensive to purchase than the equivalent PLC-based systems.

"Openness was also a consideration. We also found that if you went with Allen-Bradley, that pretty well restricted you. You basically had to stay with them," says Lowe.

Currently, Penn has about a dozen Opto 22 controllers handling about 1,000 points of I/O. The controllers are tied back to MMIs from Opto 22 and Paragon to monitor the processes graphically. The information displayed there helps Penn workers spot and diagnose problems quickly.

"We have one process that can go down for 44 different reasons. Based on the information supplied by Opto 22, we can usually narrow that down to one or two issues," Lowe says.

"That means we can get the process back up much faster. And also take it down faster when there's a problem," Lowe says.

By using the advanced capabilities of Opto 22 software, Penn is able to not only control processes as they run but also to save the data in a convenient form so managers can evaluate the processes.

With Microsoft Windows communication enabling technologies combined with Opto 22's data server software, Penn is transferring data from the controllers over the factory network into a relational database. "When it comes down to assessing how the process is running from a managerial standpoint, that data is critical."

"We have the Opto 22 equipment delivering information to a relational database in the plant so we can summarize the information being accessed in real-time."

Penn is also making extensive use of Opto 22's flowcharting language to program its system. For Lowe, one of the major benefits of the language is speed and ease of programming.

"It lets me get in there and program it and get on with my other work," he says of the language. "It's a very fast, easy-to-use tool; very logical and easy to understand."

It is also very easy to adapt the programs to changes in the process. Most of the time at Penn, these involve changes in variables rather than changes in the basic flow of control. These changes can be made by the operators from the MMI screen rather than requiring the intervention of a programmer. "Once the overall logic is there, the program is pretty much a done deal," Lowe says.

"Opto 22 control software is definitely far and above ladder logic.

"Troubleshooting on an Opto 22 flowchart screen is easier than on a ladder logic screen as well.

With all the downsizing going on, it allows you to manage the process more effectively with fewer people," he adds.

The process specifications are being tightened to produce a higher quality product and this is putting increasing demands on the control systems. "Currently, some of the Allen-Bradley [PLCs] are pretty well maxed out. We've found the more you do with them, the more you take away from them in speed. We have yet to find that kind of problem with Opto 22."

The strengths of Opto 22 hardware and software fit with the needs of the modern industrial enterprise.

Lowe also says that after its experience with Opto 22, Penn is phasing out its PLCs and has no intention of going back. "It wouldn't make sense for us to buy that kind of technology when there's better out there."
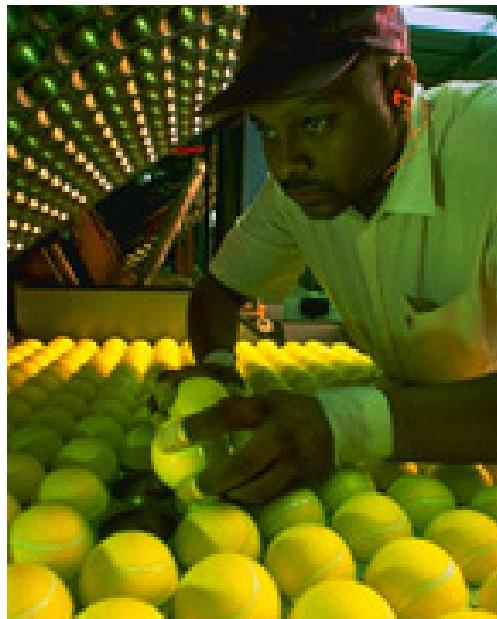
About Opto 22

Opto 22 manufactures and develops hardware and software products for applications in industrial automation, remote monitoring, and enterprise data acquisition. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's SNAP systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, or electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel. Founded in 1974 and with over 85 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability. Opto 22 products are sold through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at 800-321-OPTO or visit our Web site at www.opto22.com.

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