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## Team Superior Competes in Road Race for Fifth Year

For the fifth consecutive year, Superior Controls mobilized a corporate running team for the 5K HealthSource Road Race held August 12, in Manchester, NH.

In a stunning upset, Rick Pierro, president of Superior Controls, bested Scott Freeman of Holmes Distributors by 1/10 of a second to finish 934th out of more than 6000 runners with a final time of 24.44. At the finish line, Rick exhaustively gasped, "I passed Scott on the final hill by

running beside several parked cars on the road. When Scott spotted me, we sprinted to the finish line."

Team Superior finished a respectable 76th out of more than 250 corporate teams. Holmes Distributors drafted three marathoners from their Portland office enabling them to finish an unbelievable 17th.

Superior Controls has already begun recruiting fast-footed runners for next year's race. Engineering and computer skills are also helpful.



Team Superior participates in the HealthSource 5K Road Race. Shown here, after the race, with rivals Holmes Distributors.

### Fun in the Sun

More than seventy-five family members enjoyed the pool at Cedardale Country Club during the annual Superior Controls Summer Picnic.





# THE SUPERIOR CONTROLLER

VOLUME 4 ISSUE 2

## "Polaroid Factory Automation Project a Success," says Goff

Superior Controls' engineers recently finished a major machine automation project which will allow the Polaroid Corporation to continuously manufacture flat 6 volt camera batteries. This fast track project was successfully completed in less than six months.

**"Superior Controls put together an ace team of experienced engineers who knew precisely what needed to be done and was able to overcome every technical obstacle."**

The new control system involved 91 synchronous drives and more than 2000 machine sensors and actuators (I/O), all of which are automatically monitored and adjusted 200 times per second.

Polaroid has been manufacturing these batteries in Waltham, MA, for many years. Five web lines are continuously and synchronously bonded together with the precise measurement of a chemical slurry inserted between the webs. The original control system, a Unix-based PDP-11/34 system in an assembly-like programming language, was obsolete and difficult to repair. Polaroid hired Superior Controls to design, program, and electrically install a replacement control system.



*Superior Controls principal engineer, Doug Brenner, during start-up of Polaroid's automated battery line.*



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*The purpose of this newsletter is to present project examples to our customers. Your comments are welcome. Write or Fax:*

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The new control system consisted of four master panels with Power distribution and eleven Allen-Bradley 17-slot ControlLogix racks, with ten distributed panels for field wiring. Four ControlLogix 5550 processors were used with three independent redundant ControlNet networks. Ethernet connections were used to network three independent and redundant FIX Dynamics packages for operator control.

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## SQL Server or How Do I Get My Batch Reports out of My MMI?

In the last year, SQL Server 7.0 has emerged as the database of choice for industrial control systems. At the same time, SQL databases have become easier to integrate into control systems.

From a controls engineering perspective, it is helpful to use a database that doesn't require going back to computer science classes. At the same time, we want to use a database that is well accepted by the IS community.

SQL Server 6.5 was considered a good database for modestly sized Windows NT servers. Access was a better choice for a desktop, while Oracle, DB2, Informix or Sybase were often better choices for larger systems. SQL Server 7.0 has covered both the Desktop and Enterprise

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## Polaroid Factory Automation . . .

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The software and hardware architecture of the new system was designed to minimize risk and to provide for smooth transition. System startup was scheduled in two major phases—over the long Memorial Day weekend and during the Polaroid summer shutdown. Superior Controls provided a team of electricians who verified and labeled each wire before startup, then completed each electrical changeover within several 20-hour days.

In order to write the new PLC program, Superior Controls' engineers became experts at understanding the old PDP-11 code. After startup was complete, it was a bittersweet moment to see the long line of pallets filled with old PDP equipment headed for recycling.

Bill Goff, principal engineer at Polaroid, stated "Superior Controls put together an ace team of



91 synchronous drives and 2000 I/O points control Polaroid's flat battery manufacturing line.

experienced engineers who knew precisely what needed to be done and was able to overcome every technical obstacle."

## SQL Server . . .

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ends of the spectrum, while adding ease of use, performance, and high end tools. SQL Server 7.0 has won numerous industry awards, and is presently being adopted and supported by many software providers.

Features of SQL Server 7.0 include:

- Scalability from a PC to multiprocessor clusters with a single codebase
- Automated database tuning and "Dynamic Self-Management," with the ability to override parameters as needed
- Transaction processing
- Integration with Microsoft Office and Visual Studio (including Visual Basic)
- Multiple-site management with a broad range of replication options for synchronizing databases
- Integrated Online Analytical Processing (OLAP) Services that provide reporting, analysis, and modeling features to OLAP clients
- Data Transformation Services (DTS) for importing, exporting, and otherwise "transforming" data
- Integration with Microsoft Repository

Superior Controls has used SQL Server as a simple data collection database and as the core database for a complex database intensive project. In the first case, we simply write to the database and provide tools for ad-hoc reporting. In the more complex case, every piece of equipment used in a process is tracked in the database, and every step of the process

is initiated by an operator who scans his or her badge before proceeding.

In control systems, SQL Server is often integrated with SCADA systems. In the old days (just a couple of years ago), we moved data in and out of SCADA systems with DDE access and with SCADA specific real-time data access tools (such as EDA for FIX). Two recent developments have supported much tighter integration. First, during the last several years, SCADA vendors have added SQL capabilities directly to their products. Secondly, the tight integration of VBA to SCADA systems means that Visual Basic database access techniques including ADO can be used directly within the SCADA software.

While a database isn't appropriate for every system, more and more are being used. Increasingly, systems generate or are dependent upon database data, while at the same time it is becoming easier to integrate databases into control applications.

Of course, every new positive trend has a downside. One potential downside of using SQL Server 7.0 is that *everyone* will want access to data. For one control system we implemented a firewall and provided access to one PC outside the firewall. That system creates dynamic Active Server Pages so that anyone on the corporate network can view a real-time system status with Internet Explorer.

Another option for network isolation and security is to use SQL Server 7.0 replication capabilities to maintain separate control system and corporate access databases. But that's a project for another day.

## THE PEOPLE WHO ARE SUPERIOR CONTROLS

# Superior Controls Welcomes Six Professionals



*Sean Hoffman*

**Sean Hoffman** is a seasoned electrical engineer with more than 15 years of automation and controls experience. As chief electrical engineer for the past six years for a major machine tool manufacturer, Sean was responsible for the design and implementation of PLC and motion control based systems. Sean also has worked as an independent consultant as well as with a systems integrator firm.



*Oleg Dobrusin*

**Oleg Dobrusin** is a talented electrical engineer with 12 years of industrial controls experience. Oleg joins Superior Controls from the conveyor and automated packaging industry where he acquired extensive and varied PLC and MMI experience.



*Mark Poulicakos*

**Mark Poulicakos** is a skilled chemical engineer with extensive automation experience in the chemical industry. Mark recently spent four years designing and implementing chemical control systems throughout the country for a major chemical manufacturer.



*Chris Hogan*

**Chris Hogan** is another talented engineer with a background in industrial electronic technology and several years of automation experience in the packaging machinery industry. Chris's experience includes a variety of PLC and MMI configuration and implementation.



*Jonathan Jay*

**Jonathan Jay** is a successful chemical engineer who spent the past three years automating extrusion lines in the plastics industry while completing his degree program. Jonathan's background includes PLC, MMI, and Visual Basic experience.

**Wentao Wang** was recently awarded an MS degree in Chemical Engineering from the University of Massachusetts. Wentao's thesis was titled, "Neural Network Based Strategies for a 2 CSTR-in-Series System." While earning his degree, Wentao worked the past three years as a polymer chemist for a biomedical manufacturer.



*Wentao Wang*