

Windows-Based Program Simplifies Complex Water System

Problem:

Controlling the day-to-day details of a water filtration system was labor-intensive and heavily paper-based. Technicians had to make manual changes and then enter the changes back into the system.

Solution:

Implementation of a user-friendly Windows NT-based control system that enables users to bring up on-screen pictures of each site, making complex processes accessible to almost any employee familiar with Windows.

Payoff:

Running on Windows NT resulted in work speed increasing by more than 30%, without any loss of accuracy and eliminating the possibility of human error.

Behind the simple act of turning on a faucet lie the workings of a complex industry: pumps click on and off, tank levels rise and fall, and valves open and shut. All this happens 24 hours a day, often with minute adjustments, and nearly all of it happens automatically. With so many variables to keep track of, maintaining control and having a bird's-eye view of the system at all times is critical.

Until recently, engineers for the Covington Water District in Washington state had been accustomed to receiving pieces of information about plant activity from its programmable logic controller (PLC) and lacked any means of getting a true overview.

Controlling the day-to-day details of Covington's water filtration was labor-intensive and heavily paper-based: Technicians printed out the information, made changes to it, and entered the changes back into the system. "We were just using the T-CAM, an entirely numerical system," says Robert Sloboden, telemetry technician at Covington. "It could take us as long as five minutes to download new information each time we went from one site set-point to another."

Even then, based on the screen, only the most experienced employees, who understood the numerical information about settling, tank levels, and backwash

schedules, could understand and operate the system.

All that changed at the beginning of 1997 when Covington began running Siemens's WinCC control system on Microsoft Windows NT. After Covington upgraded from Windows 95 to Windows NT, says Sloboden, everything clicked. With WinCC running on Windows NT, work speed has increased by more than 30% without any loss of accuracy. "In fact," says Sloboden, "the new arrangement removes the human error that existed before."

Until last year, because only specialists understood the Covington system, only they could make adjustments to it. The T-CAM screen showed numerical values for the movement of water, but based on the figures, few employees knew the water's destination or its action once it arrived. But WinCC's user-friendly visual representation, which enables users to bring up on-screen pictures of each site, makes these complex processes accessible to almost any employee familiar with Windows.

"That's probably its biggest advantage," says Sloboden. "People who have never run the system before can learn to operate it in just a couple of hours."

One of the major tasks for Covington engineers is monitoring and changing "set points" for the various parts of the system. Set points are levels at which, for example, a pump filling a tank must turn off or when a pump must turn back on to refill a draining tank. WinCC has a unit that accesses this information and allows nonspecialists to load changes easily into the PLC.

Sloboden now radios in information to the main office and guides employees through functions that were once highly technical, such as setting alarm operations and changing set points.

In the summer, when water usage peaks, the Covington facility finds it harder than usual to keep up with demand, and the water level can drop. But even in this high-pressure situation, Sloboden can now easily monitor and control tank levels from a distance.

Using the WinCC application, he is able to change the system's set points from the location by observing the changes and radioing back to his office. Last summer, in fact, he was able to talk a nontechnical office staff member through

the process of redoing the set points. According to Sloboden, the staff member simply used the mouse to move an arrow onto the relevant setpoint on the screen, and clicked.

"This happens constantly," explains Sloboden. "We're asking them to turn on or shut off a pump for us, as opposed to the past, when we'd have to do everything ourselves."

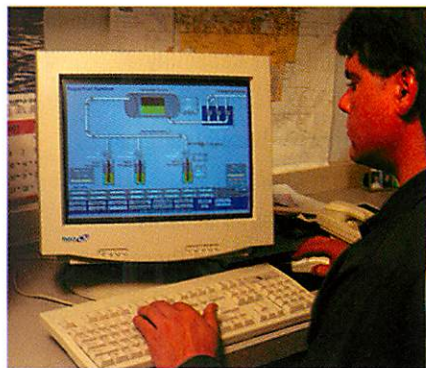
WinCC also gives Covington engineers on-screen graphing capability, which enables them to monitor the facility's trends in pumping, tank, and aquifer levels, among many other features crucial to its performance.

The application's overview page, which greets users when they first access the system, provides engineers information on everything from tank levels to pressure.

Sloboden particularly likes the new system's capability to block alarms. If an employee arrives in the middle of the night to address, say, a high-chlorine alarm, he or she can simply access the "Alarm" page of the application and click an "X" over the triggered alarm to stop it from ringing. Under the previous system, an employee was stuck with a ringing alarm until a specialist came to turn it off.

A customized part of WinCC also assists Covington with its water recycling program by allowing for settling time, then pumping the clean water back into the system. Prior to using WinCC, Covington simply drained as much as 20,000 gal. of water a day into the sewer.

While Sloboden is quick to point out that the earlier T-Cam system still functions as part of the overall operation, the combination of WinCC and Windows is the future of the water industry in the Covington district. "This is definitely the next logical step for us," he concludes. □

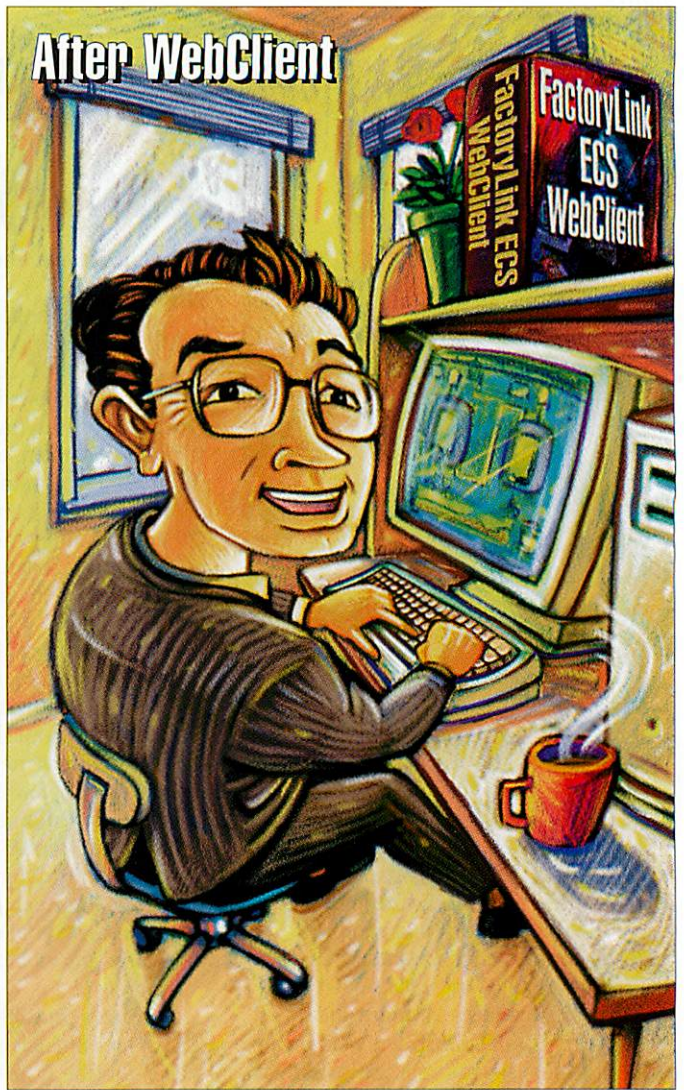


by **Marty Weil**
staff writer

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