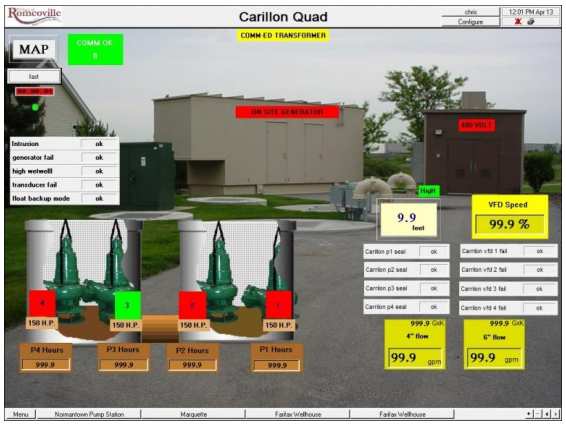
VTScada
Software for Monitoring & Control

Make Your SCADA Feel Young Again

IL utility overcomes long-term SCADA challenges by keeping HMI software current

By Christopher Little

When the Village of Romeoville underwent a major upgrade to their SCADA system, they also decided to move to the latest version of the monitoring & control software that they had used successfully for many years. This version included features designed specifically for the water/wastewater industry. In this article, a former Head of the Water Department (*) explains why the utility continues to push for the latest HMI version and how this helps them overcome many of the issues related to maintaining a long-running SCADA system.



Carillon Well House and IX (water softener) screens are commonly used for the water production side.

The Village of Romeoville, IL

Covering 15 square miles, Romeoville provides water and wastewater services to over 39,000 residents. Christopher Drey, former Water Superintendent, was with the utility for over ten years and part of the team handling the upgrade. "Our responsibilities included water quality from the point where it leaves the wells through the treatment process all the way to the water meters at each resident's home."

Monitoring & Control Hardware

The system manages over 30 remote monitoring sites including sewage lift stations, two Wastewater Treatment Plants and well houses with Water Treatment facilities. There is a Control MicroSystem® PLC at each site; which communicates, via Modbus, to the SCADA system. A significant improvement was to convert remote sites off of dedicated phone lines and onto a cellular communications network. They weighed the additional costs when compared to using trunked repeaters or some kind of radio device but it was deemed to be more reliable. The cellular provider offered a significantly reduced rate as part of Illinois' (Municipal) purchasing plan. They provided a secure setup that also handles secure communications for our local police department. The system was also upgraded with two VTScada™ servers which are simple Dell® desktops. One is the primary and the other is the backup.

Metropolitan Industries

Based in Romeoville, Metropolitan Industries has been the Village's primary integrator for over 15 years. "They have been instrumental in helping us keep our SCADA system current. It has been a collaborative effort to create the system. I don't do any actual programming myself but I was able to create all the visual screens for the Water Department."

The SCADA System

"The system was created for monitoring only," says Drey. "We don't do any control which we think is a reasonable way to run things. Romeoville was originally using an HMI software product called WEB from Trihedral, and while it would have been easier and cheaper to continue using that, we did some research and learned that Trihedral had released [a new version of the product called] VTScada. It was agreed that this new product would be a significant upgrade and we began implementation."

In 2005, the VTScada application was expanded to include the Village's two wastewater treatment plants. The Wastewater Division is responsible for collection and treatment of wastewater. The 2005 WWTP expansion included Allen-Bradley PLCs communicating over a fiber communication network."

Upgrading

"Staying current is important. When Trihedral releases a new version of VTScada on their website, we evaluate the list of new features. I am not an IT guy but I am definitely an above average computer user. It was important to us that this new version is going to help with redundancy and is also going to allow us to add operator notes to the trends screen" says Drey.

"It is very beneficial to be able to read the release notes and see what the benefits are. Most don't take that into consideration. The way I see it, we are spending a couple of thousand dollars a year for our support package and that includes new product updates" he adds. With each new version came new opportunities to solve the problems that inevitably arise in long-running SCADA systems.

Unified Components - "It's a pretty user-friendly product. One of the things I really like about it is that everything is in the one package. You have trending. You have Internet clients. You have an [alarm notification system] that can send text messages, pages [and emails] to everybody. That was a major reason to push for VTScada. Some of these other software packages have two or more software components [that have to work together]. It's bad enough to have one component that can fail let alone to have two or more."

Poling Driver - "We maintain water across four areas, each with different elevations" says Drey. "That means we compensate for four distinct pressure zones which is pretty unique." VTScada allows users to place individual sites in Fast Poll mode. "With a faster polling rate we were able to communicate with those sites more quickly which allowed us to see that the pressure was 5 lbs higher at one of our booster stations than was necessary. Before we had VTScada we were not able to see data that quickly."

Carillon Lift Station is one of biggest stations with an onsite generator. It also has 4 submersible pumps and two wet wells.

Remote Access - "Several of our people remotely connect to the system using VTScada's Internet clients." These thin-clients provide a complete runtime view of the application from online Windows® computers that do not have VTScada installed. "Our department uses Internet clients for things like checking up of the facilities and getting lists of the tasks they need to address first. I also access the system and acknowledge alarms on my Nextel Blackberry® using the [VTScada WAP Server]. One of our IT people is running WAP on their Android Galaxy Tab®. Those types of devices allow you to get to the data without waiting for Windows to boot up."

Finding Efficiencies - VTScada also includes an integrated report generator. "That is always helpful when I do my monthly reports. I have eight stations that I have to report on each month to the EPA. The time it took me to complete those reports went from a couple of hours to about 30 minutes. That's an important part of the product."

Romeoville staff also use the application to create savings for the utility by increasing efficiency. "At any given moment, we have about 4 million gallons of water in elevated storage tanks. We used to only turn over about 20% of that every time we cycled the wells. The new system allows us to poll each site every three to nine seconds so we can see all the pressure spikes and drops. Based on that information, we saw that we could turnover 50% a day by running the wells twice instead of three or four times. That also helps to reduce the number of starts and stops it takes to top up a tower. We can wait and turn the well on one time and fill it up all the way. That is where the biggest cost is. It's better for the pumps to run longer than it is to start and stop frequently. They found the same kind of thing at the lift stations. The old thought process was that every time a storm came, they would make all these changes so that those [pumps] would start and stop a lot closer together. Again, the faster poling allowed them to see more data so they became more comfortable letting the lift station fill up all the way and cycle, saving pump starts and stops. If you can save one cycle an hour, you are saving a significant amount of energy.

New Features and Technical Support - "Every year we renew all of our HMI software licenses. That entitles us to upgrade to the latest version of VTScada and all the new features that come with it. I like to see that the product is growing and changing. I am excited about the new features coming up in version 10." Trihedral has since released VTScada 11. Renewed licenses also entitle the utility to technical support from Trihedral. "Knowing that support is there makes me more comfortable about using new features and adding new things. It would be so simple to just buy it and forget about it for five or ten years. I like those feature updates."

Advice for SCADA Managers

"We have had many people from other towns come to look at our system. I tell them all the same thing. I like VTScada. I've looked at other companies but I haven't seen one that's better. No matter what software you choose, you have to know what you want from it FIRST! People get so busy that they end up hiring an engineer to tell them what they want. For example, I know that at this remote site I want intrusion alarms, temperature, and humidity. I want all the run times. I want all this information brought back to the office. If you leave it all up to someone else you will probably end up with something decent but probably more than you need or LESS than you want!"

* Chris Drey was Water Superintendent with the Village of Romeoville, IL. When this article was written. He is now the Public Works Director at the Village of Shorewood, IL.