Achieving big returns by automating rural water systems

By Troy A. Hertog

It is not only big cities or large water districts that can take advantage of today's supervisory control and data acquisition (SCADA) systems. Smaller communities or water districts can often benefit more from a reliable automation system than their larger counterparts.

Ironically, larger communities tend to dedicate people to monitoring and controlling an almost fully automated water system. In contrast, smaller communities use their staff more diversely to run a water system that is minimally automated (if at all).

Minimal automation and growing demands of aging equipment often result in stretching available resources to the point where not everything that needs to be done gets done. This is especially true for small communities that have manually operated plants.

Benefits of automation

Many smaller communities and water districts are finding that automating their systems improves the reliability and quality of the water they deliver to their customers. It also frees up their personnel to perform other duties.

Real-time monitoring provides quicker notification of problems before they are noticed by water customers. And depending on its capabilities, the automation system can be a useful tool in the maintenance and prevention of problems associated with failing or failed equipment. This allows more up time and continuity in the quality and reliability of the product.

If done properly, automation is usually a wise investment that will pay for itself in a relatively short time. The types of automation and technologies that may be employed vary widely, each having its own advantages and disadvantages.

Factors to consider

It is important to select the proper technology for your system. When automating a system, think about what needs to be done today. Ascertain critical and other desired functions, and make sure protective systems are in place to prevent equipment/system damage when equipment is operated without supervision.

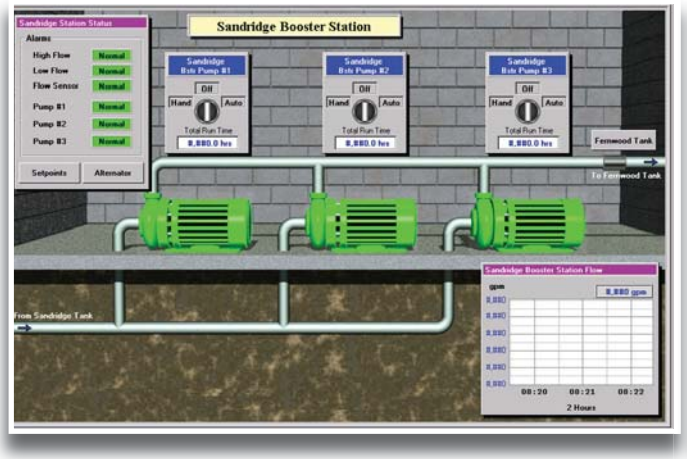
The control panel should be sized to accommodate needed equipment for easy access and provide clear identification of components and termination points.

Also consider future expansions and new regulations, projecting at least five years down the road. Assess the existing technology/automation you currently have and determine if any of it can be reused. Identify your technology comfort level, the desired system access/notification, and any necessary training and spare parts.

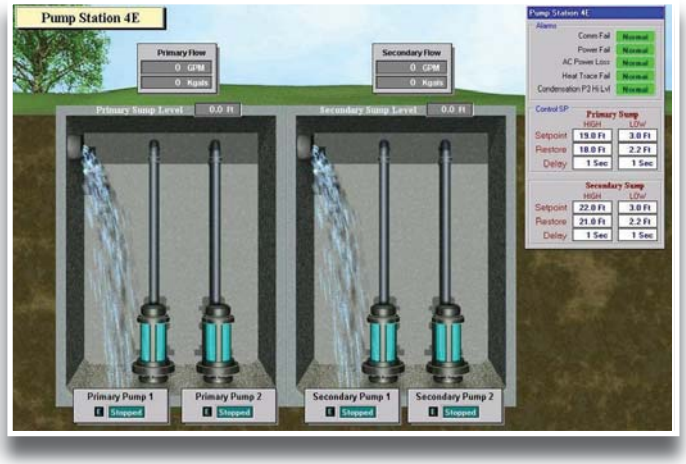
Many rural water districts inadvertently accumulate various technologies that provide a basic level of control/monitoring for different water system components, wells, booster pumps, filters, holding ponds, lagoons, tanks, flow meters, etc. Over the years, districts add to, modify, or otherwise update their systems. Unless careful consideration is given to the designs, there is usually little or no continuity in the type of installed equipment. This lack of continuity can be difficult for operators and, over the life of the equipment, will add to the cost of operating a system.

Communities with a hodgepodge of equipment and limited finances would find it beneficial to sit down, at some point, and create a technology/system road map. This road map would address the considerations mentioned above and develop a strategy for creating continuity in the system. Because of the flexibility of today's automation systems, existing equipment can sometimes be easily accommodated and economically integrated into the new system. However, care must be taken not to incorporate existing equipment that is unreliable.

It is best to use a technology made for water and wastewater applications that is also based on an open and scalable architecture. Open architectures allow the best chance to interface with existing and new technologies and increase automation system life. Scalable architecture allows a system design that can perform the functions needed today, with the ability to be scaled up to a much larger and more capable system that does not need to switch to or integrate different technologies to accom-



Adding an integrated trend screen representing system process to the site graphic gives quick visibility to the actual process performance and allows quicker diagnosis of system problems.



Critical aspects of this dual duplex lift station are shown clearly and provide operators with status and user-adjustable setpoints for complete monitoring and control.

modate higher levels of automation.

Automation products that are made for water and wastewater are more user-friendly, easier to operate and often have built-in diagnostics that reduce the level of technical expertise needed to troubleshoot the equipment.

Automation can benefit every user. There are several ways a community can bring reliable, cost-effective automation to its system. Regardless of the system selected, it is important to seek a company/automation partner that has expertise and significant experience in providing automation of water systems. Often the technology aspect is less important than the application knowledge that is necessary to realize the full value of automating a system.

Troy A. Hertog is with Siemens Water Technologies. E-mail: troy.hertog@siemens.com