Tech Trends: Smart Wastewater and Water Management Solutions

Author: Paul Fitzgerald
The days of work crews having to make the rounds at all hours to get accurate readings of water management machines are gone. Technologies that stem from the Internet of Things (IoT) universe that we live in have now taken their place. Well-placed sensors enable managers of municipal water systems to stay on top of situations as they develop, narrowing troubleshooting to a minimum. This has created a profound change to wastewater and water management landscapes.
Water Supply Systems are Precious and Need Reliable Technology

We are increasingly hearing of municipal water supply systems being compromised on the evening news. The quality of tap water is an ongoing issue for towns, cities and counties as they strive to maintain quality control on a precious resource. Disasters occur without advanced warning and are critical to deal with because of the attendant adverse affects on public health. Flint, Michigan’s troubles serve as an ongoing cautionary tale. It is feared that lead poisoning as a result of corroded pipes will result in brain damage for children, among other serious problems. Fortunately, municipalities do not have to be held hostage by deteriorating infrastructure that sneaks up on them thanks to IQ Web SCADA, a system that identifies problems as they occur.

Water management problems present themselves in various other forms as well. For instance, earlier this year in Toledo, Ohio, residents were advised to boil water in the aftermath of an electrical malfunction that produced uneven water pressure, potentially leading to more infrastructure and public health issues. Detection of a serious problem of this nature can be realized with the interconnectivity that comprises the main feature of the IQ Web SCADA.

Water scarcity as a result of droughts is a concern in many states during the summer months. Therefore it’s essential to be able to re-introduce and integrate wastewater (defined as water that has been used) back into water supply systems after they have been treated. In Los Angeles, public health officials were concerned last year after wastewater was infected with superbugs from area hospitals. Technology systems can be deployed to signify the presence of such infections, providing significant help in the containment phase.
Supervisory Control and Data Acquisition (otherwise know as SCADA), is the high tech means by which data is gathered up through the deployment of sensors and devices that communicate information remotely to a central computer that in turn controls the data and devices. This is a system that streamlines wastewater management because it eliminates the need to send municipal work crews to tunnels to extract readings from hard-to-get-to machines. SCADA systems offer consistency in the midst of changing regulatory environments and can become the baseline for your network infrastructure.

SCADA systems are not solely for wastewater and water management in municipal environments. They’re also ideal for industrial settings that deal with water waste as a by-product of their activities. The combination of increased efficiency and the capacity to cut into downtime is what makes SCADA an ideal fit for industry. Operators of plants see the pertinent data on the software’s display module for their convenience. If machines are producing at lessened volumes, the management team can halt everything and then resolve the situation on the spot, saving enormous amounts of time, energy and money along the way.

Features and Background of SCADA Systems:

- The most complex SCADA support systems can control multiple processes that are far scattered over long distances, especially suitable for large, sprawling cities and municipal units.
- From an operational hierarchy perspective, SCADA systems are at the top of the technology food chain, as they are able to interact with and supervise on-site devices.
- SCADA systems have the ability to catalogue and draw upon past data to provide ongoing historical analysis of devices and systems.
- RTUs (Remote Terminal Units), which are connected to sensors, are for digital data conversion purposes.
- A close inventory reveals that your internal network is found wanting. You’ll want to upgrade to prevent systemic failure.

SCADA Technology and how it is transforming Wastewater Management
Wastewater and water treatment plants have an ongoing need for this unique and thoroughly necessary hardware and software combination. With major public health implications at stake, the seemingly mundane task of keeping water supplies free from contamination and converting waste water for usage is of high importance to local governments everywhere.

The fundamental tenants of the water industry are set forth in the American Water Work’s 2016 State of the Water Industry Report. In it, the industry aims for a three-pronged approach to the way it deals with its overall mandate:

• Safeguarding Public Health. This includes ensuring safe drinking water, having enough water available for fire protection and water pollution prevention and control.
• Customer Satisfaction. This tenet consists of ensuring adequate and reliable supply, appropriate water quality and appropriate prices.
• Protect the Environment. In addition to water quality and ensuring supply, this tenet focuses on environmental sustainability, ensuring efficient use of the resource for minimal impacts.

Keeping those objectives in mind, some of the specific situations that should trigger an investment in a new SCADA system include:

• A need to replace an aged SCADA system that was excellent in its day but should be replaced with a current version.
• If the old network is not up to snuff, risk mitigation strategy dictates the implementation of a thoroughly modern and functional SCADA system.
• By investing now, you can head-off higher costing outcomes that would stem from not upgrading. In other words, time is of the essence and investment now saves over the long term.
• Each water treatment organization has its own dynamic that includes the need for improved performance.
• Regulatory requirements are changing and old networks that need upgrading are not usually up to the task.
• A close inventory reveals that your internal network is found wanting. You’ll want to upgrade to prevent systemic failure.
The SCADA Solution You Can Rely On

Entering the picture is a way to meet the challenges that are presented in the urgent and pressing wastewater and water management field. Central to addressing operational goals and everyday problems that arise is the IQ Web SCADA from U.S. Cellular® and sensor devices that can be obtained by their partner, LEC. This combination of products is a sure-fire way to get, beyond the stagnancy that may characterize your present wastewater and water management operations.

Residual chlorine, lift station monitoring, well pump control, water tank monitoring and control, line pressure monitoring and valve monitoring and control are key components to wastewater and water management systems that benefit from having the proper technology in place. For each of these areas of operation, if something goes wrong, major public health problems can result.

Here is a breakdown of the advantages that the IQ Web SCADA brings to the table for ensuring smooth and ongoing operations for these crucial system parts:

- **Residual Chlorine.** The ability of IQ Web SCADA to send fast alarms through SMS and email to Smartphones, Tablets, etc. is key in responding to and dealing with this danger. Graphical and granular access to system data allows you to assess the performance of operations, regardless of where you’re situated. Importantly, data is provided on whether you’re compliant with regulations.

- **Lift Station Monitoring.** In addition to regulatory compliance ability and rapid communications in the event of problems, there is U.S. Cellular 3G/LTE connectivity, easy to understand deployment, analytics and data logging features.

- **Well Pump Control.** Other upsides for this aspect of wastewater and water management are creating secure tunnel access for technicians and an IQ Web SCADA interface that permits manual control when needed.

- **Water Tank Monitoring and Control, Line Pressure Monitoring and Valve Monitoring and Control.** The features listed above apply in combination. The IQ Web SCADA’s line pressure monitoring package comes equipped with solar and battery powered options and its valve monitoring also has solar capability.
Conclusion: Wastewater and Water Management Meets the IoT

The complexity associated with managing water systems for public use means that municipalities will want to access the latest and most comprehensive technology. IQ Web SCADA and LEC sensors provide full end-to-end coverage, rejecting the inefficient and costly piecemeal approach of the past. Regardless of where you are physically, you will be able to receive notification of any problems with the wastewater and water management system that you are entrusted with. That’s what makes the Internet of Things a remarkable entity: you and your network are always connected in real time, allowing for constant intelligence into your systems’ operations and potential threats.
References

1. How A Municipal Water Disaster Can Happen
   http://knoxvilletreatment.com/municipal-water-disaster-can-happen/

2. Electrical Malfunction Leads To Boil Advisory

3. Wastewater Treatment
   http://www.pollutionissues.com/Ve-Z/Wastewater-Treatment.html

4. Deadly Superbugs From Hospitals Get Stronger in Sewers and Could End Up in the Pacific Ocean

5. What Is SCADA?
   https://inductiveautomation.com/what-is-scada

6. What Is SCADA?
   http://www.dpstele.com/scada/what-is.php

7. SCADA Systems
   http://www.scadasystems.net/

8. 2016 State Of The Water Industry Report

9. Making Your Old SCADA System New Again

10. Introduction to the Public Water System Supervision Program
U.S. Cellular® offers a broad suite of solutions for your business. Finding the right technology solutions for your business can be complicated and you want to make sure you invest wisely. Let our Business Concierge Services Team help. We’ll listen to your needs, explain your options and deliver a solution that’s right for your business. You’ll get everything you need. Nothing you don’t. And you can be confident in your investment.

With a network that works coast to coast and in the Middle of Anywhere, offering the latest Smartphones, Tablets and technology—U.S. Cellular has everything your business needs to stay connected and thrive.

Call today for a free, informational consultation: 1-866-616-5587 or go to uscellular.com/business to learn more.