

Water Security Holds Back Threats

By Kelly Liu and Ling-Mei Wong 2009/11/2

Water supply utilities are critical infrastructure, encompassing reservoirs, purification plants, wastewater and storm water facilities. "Dam operators and local water and wastewater utilities have been under heightened security conditions, and are evaluating security plans and measures since the terrorist attacks of Sept. 11," said Roni Klein, VP of Sales of Video Solutions for APAC, Verint Systems.

Water is one of the most important natural resources, making water supply sites critical. A&S looks at how security guards these precious resources.

Water supply utilities are critical infrastructure, encompassing reservoirs, purification plants, wastewater and storm water facilities. "Dam operators and local water and wastewater utilities have been under heightened security conditions, and are evaluating security plans and measures since the terrorist attacks of Sept. 11," said Roni Klein, VP of Sales of Video Solutions for APAC, Verint Systems.

In the wake of the attacks, water supplies became a priority for the US Department of Homeland Security and the Environmental Protection Agency. "Water management facilities which deal with supplying drinking water, control dams and storm drainage need to get extra attention, as these would be seen as prime targets," said Jamie Finegan, VP of Business Development of Access Technology Systems.

International standards govern SCADA systems for cooperation between governments and industry, said Torsten George, VP of Marketing at ActivIdentity.

Water supply solutions have a common goal. "The basic security requirement is to deliver a remote monitoring solution that reduces vandalism and removes the threat of deliberate water contamination," said Mariann McDonagh, Senior VP of Corporate Marketing and Investor Relations for Xtralis.

It is difficult to gauge how large the water supply market is. The average water treatment plant invests about US\$50,000 to \$300,000 in security, said Johan de Bleecker, Sales Manager of Fire and Security Solutions for Belgium, Johnson Controls.



Paul Bodell, CMO of IQinVision

Threats

Water facilities supply essential needs for people, facing security threats. Physical damage is one, along with water contamination. "Contamination and destruction of the structures are the main threats that water supplies are facing today," said Paul Bodell, CMO of IQinVision.

Contamination problems include the theft of water purification chemicals and intrusion. "There are great risks with regards to dams and reservoirs being compromised and causing flooding, which in turn can result in losses of life and property damage," Finegan said.

Natural disasters can also contribute to water contamination, such as floods, bush fires or earthquakes. "Natural disasters threaten public health and the environment," Klein said.



▲ Roni Klein, VP of Sales of Video Solutions for APAC, Verint Systems

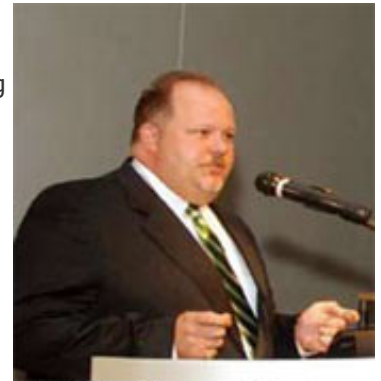
Theft is an issue, such as people stealing important information, chemicals or equipment. "Rather than broader malevolent threats by terrorists, domestic or foreign, manmade threats are generally focused on purposeful acts, such as vandalism or theft by disgruntled employees or customers," Klein said.

Other experts noted that intruders may not be malicious. "The most common threat is intruders, whether intentional or not," said Ron Austin, Business Development Director of HGH Infrared Systems. "The key is to have early detection, and the ability to assess the intruder quickly."

Solutions

A combination of security defends against threats at water supply facilities. "Security systems like video surveillance and access control are critical to address terrorist threats or vandalism," Klein said.

These sites require a central management system for patrolling, perimeter, intrusion alarms and video surveillance. "Most of these sites have perimeter fencing in strategic locations and have started to implement security cameras in various locations to monitor the targeted areas," said Wai King Wong, Country Manager for Australia and New Zealand, Axis Communications.



▲ Jamie Finegan, VP of Business Development of Access Technology Systems

"Risk reduction standards for water, wastewater and storm water systems are an essential part of protecting infrastructure from potential terrorist threats, ultimately supporting our economy and public health," Klein said.

Military water applications are at high risk for contamination, since they have limited fresh water compared to high volume dams, said Jouni Salmi, VP of Business Development for Environics, which specializes in detecting biological agents. "Smaller scale systems, like local water dams and containers, are important places and require more attention."



▲ Torsten George, VP of Marketing at ActivIdentity

Perimeter and Access Control

Perimeter and access control systems are the first layer of protection for large water applications. They integrate physical and logical access control to identify authorized individuals.

Perimeter is mandatory for water infrastructure security. "True security requires proactive surveillance of the perimeter, reliable intrusion detection with minimal nuisance alarms and immediate alarm notifications," McDonagh said.

Facilities like water and hydropower sites are open to the public and can be vulnerable. To monitor recreational boaters, floating barriers can be used. "These floating barriers can also serve as a platform for video surveillance and intrusion detection systems in the water," said Jonathan Smith, CFO of Wave Dispersion Technologies

Perimeter solutions can work as a unified whole. "Safeguards Technology uses a combination of fencing/barriers, surveillance and fiber intrusion detection systems," said Ayal Vogel, VP of Sales and Marketing at Safeguards Technology.

For access control, management software enables flexibility. "With extended secure logical access to physical access control within the same device and credential management solution, it can prevent unauthorized access to physical water facilities," George said.

Video can strengthen physical barriers. "It's much easier to protect the entire perimeter of the water dam area, so there are a variety of technologies which can be applied, such as people patrolling the area, perimeter detection and fences with sensors on them," Bodell said.



**Wai King Wong, Country
Manager for Australia
and New Zealand, Axis
Communications**

Video

The EYEfi solution watches for natural and man-made disasters. "The camera is wireless and solar powered, so we can install our cameras on fire-watching towers or existing buildings," said Simon Langdon, MD of EYEfi. "Wireless provides more choice in terms of where to install the cameras and it's more affordable than fixed-line communications."



▲ **Mariann McDonagh,**
Senior VP of Corporate
Marketing and Investor
Relations for Xtralis

The migration to IP benefits security with video analytics, real-time streaming and wireless transmission. "Wireless video devices capture images along borders, throughout cities, on buoys and waterfronts — areas that are difficult or costly to wire," Klein said.

Network cameras must deal with bandwidth constraints for video streaming. "With IP technology, video streaming is possible over the Internet and even on 3G networks," Wong said. "This can be done with H.264 video compression that ensures high-quality images and better frame rates with lower bandwidth. Data redundancy can be achieved with local storage in the camera."

To save bandwidth, some vendors focus on selected zones. "Instead of streaming the whole image back to the customers, we only pick the area of interest to send," Bodell said.

"Video analytics provide accuracy with lower bandwidth, server and storage requirements," Klein said. "Video management software lets users manage and monitor their video surveillance system on-site, centrally or from remote locations."

System Integration

System integration requires planning for the security devices to perform as expected, primarily made up of access control and video surveillance. A holistic solution can do more, such as integrate products and save energy.

Security solutions should be flexible and future-proof. "Technology is changing every day, and Safeguards believes that every solution should be able to integrate with other products and be very cost-effective to eliminate terrorist threats," Vogel said.

The security should consider the site's needs. "We'd look at the overall solutions applicable for the facility, like sonar for deep-water applications, monitoring for water intake or video analytics for objects left behind," Vogel said.



▲ **Johan de Bleecker,**
Sales Manager of
Fire and Security Solu-
tions for Belgium,
Johnson Controls

Green equipment and energy conservation are also of concern, particularly how installations affect the surrounding environment. "For communication and power requirements for security-related devices, we'd opt for wireless and solar power," Finegan said. "It'd cut back the carbon footprint on the environment, as we're trying to integrate our equipment into the surroundings instead of changing the landscape to fit our needs."



▲ Ron Austin, Business Development Director of HGH Infrared Systems

Future Outlook

Water is precious, making the protection of water utilities vital. According to the Associated Environmental Consultants, more than 90 percent of water and wastewater utilities have integrated security into budgeting, training and manpower responsibilities. "I believe this trend will continue and increase to include all water management facilities, as it should," Finegan said.

Axis emphasized the importance of surveillance. "The need for security for these areas is increasing due to harsher weather conditions, which have resulted in ongoing issues with water supply and protection," Wong said.

Trends in IP developments and environmental awareness could change the security landscape. "The trend should move toward greener IP-based solutions being integrated into their environments, using solar power and wireless communications," Finegan said.



▲ Jonathan Smith, CFO of Wave Dispersion Technologies

The water supply market will continue to grow. "We expect water infrastructure to be one of the potential markets for electronic security in the next few years," Klein said.