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Remote Monitoring Systems: How they can help you save money

by

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By protecting its facilities, inventory, and other physical assets, nearly any company in any industry—even a private homeowner—can reap the benefits of a remote monitoring system. Whether expressed in real dollars or the less-tangible peace of mind, remote monitoring systems help significantly affect the bottom line.

While individual systems and inclusive features vary by manufacturer, the basic cost advantages can be broken down into three key areas—protecting materials, equipment, and systems; reducing labor costs; and lowering infrastructure expenses.

Protecting Materials, Equipment, and Systems

The applications of remote monitoring systems demand flexibility, whether to keep a watchful eye on a home, monitor the ventilation system for a poultry farm, or control critical information for a large industrial application. The need for flexibility is why an increasing number of features continue to be developed throughout the industry.

Features like alarm notification with multiple dial-out options—fax, e-mail, alphanumeric paging, and voice—can be the make or break benefit for decision makers. Newly developed features like wireless alarm notification, Web-enabled software, and control programs also enhance a system's performance.

One company that uses a remote monitoring system to protect the equipment of others is *Systems Electrical Services Corporation*. A leading process-control service provider in Denver, Colorado, Systems Electrical provides electronic monitoring services of critical laboratory conditions for hospitals, universities, and pharmaceutical companies. To remotely monitor its customers' demanding applications, Systems Electrical turned to Sensaphone, Inc. of Aston, PA, manufacturers of high-performance monitoring, control and alarm systems.

The Sensaphone family of programmable remote-monitoring solutions includes features such as autodialing capabilities, Web-enabling software, wireless communication, data logging, and more. The unit is designed to remotely monitor and report on conditions that include indoor/outdoor temperatures, humidity, tank levels, tank temperature, pressure, flow rates, flooding, HVAC controllers, power failures; and can be customized to measure other conditions.

Utilizing Sensaphone equipment, Systems Electrical monitors a medical laboratory's liquid nitrogen levels in several cryogenic freezers. In some of the freezers, a sensor monitors the actual level of the liquid; and in other freezers, a sensor monitors differential pressure—which is a direct result of the liquid level.

The system implementation has paid dividends.

"In this laboratory, someone had left the freezer door open—just a crack—before leaving on Friday," said Ralph Hopfenberg, President of Systems Electrical Services. "This could have been a major disaster, since no one would have been back in the lab until Monday."

Detecting the change in temperature, Sensaphone, with its autodialing technology, called up to 48 pre-programmed numbers to alert Systems Electrical's facility operators and laboratory technicians to the situation. The system used the laboratory's ordinary phone lines to deliver personalized, digital voice messages. Reaction time was swift.

"As soon as the temperature reached the 5° Fahrenheit alarm point, the system immediately dialed out to the pre-programmed numbers; the drugs being tested were saved.

"This one incident saved that lab $20-30,000," Hopfenberg estimates.

Reducing Labor Costs

More and more companies are turning away from high-maintenance monitoring systems that require off-site visits to monitor critical functions first-hand. Gone too is the need to hire employees to manually monitor systems from a centralized location on a 24-hour basis. Instead, remote systems featuring control programming and wireless autodialing capabilities help free valuable manpower hours.

Such staffing issues were among the main reasons that PAS Technologies of San Juan, Puerto Rico, recommended a Web-enabled remote monitoring system to the Puerto Rico Water Company. The Sensaphone SCADA 3000 advanced remote monitoring system replaced the water company's 70-plus existing remote terminal units (RTUs). The SCADA 3000 features a 32-bit software program and critical built-in amenities, including real-time screen building, program editors, alarm functions, and a communications manager. It can automatically build a Web page reporting on all critical functions that can be viewed over the Internet at any time from anywhere in the world.

Before installing the SCADA 3000 system, each of the water company's RTUs was placed at highly visible distribution tanks throughout the San Juan metropolitan area, requiring frequent on-site inspections. Once operable, the powerful new remote monitoring system saved the water company thousands of dollars in annual maintenance and manpower costs.

"The Sensaphone SCADA 3000 solved a number of problems for us and the water company," said Alfredo Agelviz, General Manager of *PAS Technologies*, a SCADA 3000 distributor in Puerto Rico. "First, the original RTUs came in many different parts and were located in numerous places; now, we're able to remotely monitor different devices—all from one comprehensive control unit—without the increased time and expense of maintaining a central station. Second, the installation of the Sensaphone SCADA system was not complicated and did not require special mounting. It was very compact and integrated into only one package, so we were able to quickly provide our customer with a reliable solution."

Lowering Infrastructure Expenses

The introduction of wireless capabilities through radio telemetry has altered the monitoring and control industry forever. Wireless technology frees users from the costly and disruptive installation of an infrastructure system—particularly telephone lines.

For example, a municipality may require intelligent control and monitoring at multiple wells and pumping stations within a radius of several miles. The control logic at one location may depend on level or flow conditions at facilities several miles away. Using wireless radio telemetry at each location and a host computer, the municipality can centralize the control and monitoring process to achieve the desired goals.

A telephone line connected to the host computer provides alarm dial-out capability. In addition, the host computer can be configured to produce Web pages that display the status of each unit. By simply checking a few Web pages, plant managers can get current status of each location and be assured that everything is operating correctly.

The combined effect is less infrastructure-related costs.

Another example is the use of the SCADA 3000 by *Architectural and Community Planning, Inc.*, of Ontario, Canada, which utilized the system in its Eco-Nomad, a portable utilities infrastructure that integrates water treatment, septic, and power systems.

This "infrastructure in a box" can attach to any

Purchasing a Remote Monitoring System

The advantages of a remote-monitoring system are clear, but now what?

When it comes to decide what type of system to purchase, whether for a new installation or an upgrade, several issues must be considered.

- Examine the system's features. Does it include auto-dialing? If so, is the number of programmable dial-out telephone numbers sufficient?
- Can it provide data logging of critical functions? Many companies that require monitoring systems look for the data-logging feature to reference historical data from particular systems. Being able to trace an event back to its cause provides information so preventive measures can be taken the next time.
- Does it come complete with all necessary software and peripherals? Or, are you required to purchase additional software and accessories to meet your needs? These potential expenses need to be built into your budget if that is the road you opt to take.
- Can the system grow to meet your needs? What are the expandable limits of the system and how does it fit with your planned use now and in the future?
- Does it offer a Web-enabling feature? Several new remote-monitoring systems, including the Sensaphone 2000 and the Sensaphone SCADA 3000, are available with Web-enabling software. This new feature allows alarm and critical data point information to be automatically formatted into a Web page and periodically uploaded to a specific, designated Web site. The Web page(s) can be viewed from anywhere in the world at any time via the Internet (a sample Web page can be viewed at www.sensaphone.com/webdemo).

residential or industrial edifice, an important feature for communities in hard-to-reach locations. Within an 8′ x 8′ x 20′ container, it provides potable water storage and purification, biological wastewater treatment, water and space heating, and electricity. Plus, it combines already proven technologies, such as a co-generator, which produces heat and power simultaneously.

The SCADA 3000 automatically logs and monitors the tank level, temperature, and flow rate for the septic and potable water tanks of the Eco-Nomad, as well as the outside temperature, biofilter temperature, and engine run signal. In the event of water overflow, power failure, or fire, the system issues a security alarm with dial-out capabilities that immediately alerts emergency personnel via phone, fax, pager, and e-mail from anywhere, at any time.

The SCADA 3000 system's flexibility, with its 16 universal inputs and eight relay outlets and ability to expand up to 144 input/output (I/O) points simply by adding expansion modules, made it the only choice for Udo Staschik, President of *Architectural and Community Planning, Inc.* "What the Sensaphone SCADA 3000 really offers is the peace of mind that comes from being able to verify your facility's safety and efficiency without having to move from your office desk," Staschik explained.

Whatever the application, wherever you plan to use it, keep in mind the value of a remote monitoring system to your company's bottom line and your peace of mind.

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