How Video Can Minimize Manufacturing Downtime While Improving Worker Safety and Process Visibility

IVC's video monitoring system gives operators and managers a more complete picture of what's happening with processes while improving safety, operator efficiency, and visibility into production activities.

Manufacturers have a big incentive to keep their operations running smoothly. Time is money. When an unexpected event happens during production, it can mean revenue lost while the problem is identified and resolved.

Challenge One: Minimize Potential Downtime

When one of the world's leading tire manufacturers built a new $1 billion facility, careful planning was undertaken to minimize potential downtime. The company's 1.5 million square-foot facility produces 12' off-road tires at a retail cost of nearly $75,000 each. Because of the complexity of the manufacturing process the initial production output was only 16 tires per day. The combination of low production output and high production cost meant any manufacturing slowdowns could impact the company's bottom line.

Challenges Two & Three: Improve Worker Safety and Process Visibility

Downtime aside, the manufacturer was also concerned about ensuring its workers' safety and giving operators and managers adequate visibility into plant processes. The machinery necessary for this type of production is massive with many dangerous and hard-to-reach areas. Ensuring worker safety around the equipment while simultaneously keeping a close eye on complex processes was critical.

The Solution: A Video System from Industrial Video & Control

To address these concerns, the manufacturer selected an Industrial Video & Control (IVC) video monitoring system. Central to this system is IVC's Longwatch camera management software which integrates seamlessly into any SCADA, MES or HMI platform.

For this application, Wondware process control software is used to manage the plant's operation. IVC's Longwatch software integrates with Wonderware to give operators and managers a more complete picture of what's happening with processes while improving safety, operator efficiency, and visibility into production activities.

IVC's Longwatch software allows operators to manage more than 400 IVC high-definition video cameras mounted to process equipment located throughout the vast manufacturing facility. The cameras were chosen for their outstanding video quality, ruggedness and flexible form factor. Specialized magnetic camera mounting brackets designed by IVC eliminate the need to drill holes into the specialized machinery and allow for simple camera repositioning. At the base of each piece of machinery, an operator has a multi-monitor display that combines video with a Wonderware process control system. Operators can view multiple areas simultaneously, con-

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IVC's Longwatch Video Historian software syncs event data with recorded video for faster, more informed decision-making.

trol cameras manually, and view process data all from a single screen on their HMI display.

Keeping an Eye on Hard-to-See Areas

On the company's production floor, rubber is processed on massive, complex machines, some reaching three stories high. A network of conveyer belts, transfer points, and dangerous cutting stations are layered throughout these areas, which are out of sight from the operator stationed on the ground floor.

IVC's Longwatch software integrates seamlessly with an operator's HMI display.

To keep a close eye on critical machine processes, operators rely on the video feeds from multiple IVC cameras displayed on their monitors. Operators are able to see processes in great detail and react quickly if a problem arises. If a jam occurs, the operator can stop the process, click on the alarm condition in the Wonderware system and immediately play back a video that includes footage from before, during, and after the alarm.

Longwatch Video Historian, a software add-on, is also being used to sync event data with recorded video for faster, more informed decision-making. Video Historian lets operators track video of operations based on different criteria (lot number, batch ID, etc.) and overlay process data directly on video images so operators can get a better understanding of what's occurring with a process.

Monitoring Precise Processes

In another production area, the IVC solution provides close up views of the tire's steel belt creation, a precise process whereby a thin steel wire is guided along the groove of a small wheel within the machine and wrapped around the tire thousands of times. The operator must have a clear view of this area to make sure the steel wire doesn't jump off the track. If this happens, hours of downtime can result. With Longwatch, crisp video and detailed information is relayed to the operator in real-time, reducing the chance of a serious slowdown in production.

Putting Worker Safety First

Some tire production areas are so dangerous that workers are not allowed near them. In one such area, a knife cutter housed inside a cage cuts large pieces of rubber into varying lengths. An operator needs to be able to inspect the entire length of each piece for abnormalities. To do this safely, a low-profile, ruggedized IVC camera is mounted inside of the cage on a vertical beam directly above the cutting area. The operator is able to see a clear view of the 6' x 2' cutting area on the video display.

Linking "Islands of Expertise"

Beyond the essential role that IVC's video solutions play with process monitoring and worker safety, video is making it possible to link distinct operational areas to create a more cohesive plant-wide operation. The tire production process requires that parts be added in a particular sequence to build the final product. Each operational area is reliant on the previous area to make sure that production stays on track.

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Video is making it possible to link distinct operational areas to create a more cohesive plant-wide operation.

However, the sheer size of the plant can create communication barriers, affecting production.

Video is helping the manufacturer overcome this challenge. Personnel in the different operational areas are able to see what's happening in other plant areas and plan accordingly. For example, if one area is experiencing a slowdown, video provides the information the other operational areas need to adjust production and maintain the most efficient schedule possible.

Longwatch as an Operator Training Tool

IVC's Longwatch software is also giving the manufacturer a powerful tool for operator training and troubleshooting. Longwatch not only records video from cameras throughout the plant, it can also record each of the operator screens over the network.

By simply pointing Longwatch to the IP address of an operator's console, everything on that operator's monitor is recorded. Mistakes, as well as properly performed procedures, can be captured for playback at a later time. Live video of the operator's monitor can be brought up on any web browser or smart phone. This provides plant managers with the ability to create "golden ticket" video clips that highlight proper procedures or, alternatively, teach operators what not to do. IVC's Longwatch software provides a new database of knowledge for best practices and procedures that can be stored or accessed anywhere.

A Complete Video Solution

While there are many tools available on the market that help companies streamline individual manufacturing processes, IVC's video systems address a range of process monitoring challenges. With Longwatch, the manufacturer is able to reduce downtime while increasing worker safety, operator efficiency and visibility into critical processes. As a result of its initial success, the manufacturer is planning to roll out video to other areas in the plant.

About IVC

Founded in 2001, Industrial Video and Control is a leading supplier of video cameras and video management software specifically designed for industrial applications. The company's IP-based video solutions are used by customers worldwide for process evaluation, remote monitoring, personnel safety, site security, and regulatory compliance. IVC's success in the market has been driven by high-quality products, cost-effective solutions, and outstanding service. Based outside Boston, MA, IVC is an ISO 9001:2008-certified company.

For More Information

To learn more about IVC's industrial video systems and how they can help your organization, contact:

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