Smart Services: Cooper InVision™ Downtime Reduction System

Revolutionary Wireless Technology Transforms Industrial Remote Service

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In February 2007, Cooper Bussmann, Inc., a global supplier of circuit protection devices, introduced the Cooper InVision™ Downtime Reduction System for industrial and commercial applications. Built upon revolutionary wireless mesh connectivity, developed with technology partner RF Monolithics' (RFM) subsidiary Cirronet, and Questra Corporation's Intelligent Device Management (IDM) solution, the Cooper InVision System substantially reduces downtime and increases productivity for industrial and commercial companies through continuous monitoring of fuses and circuit breakers and providing immediate reporting of open circuits caused by shorts and overloads.

Cooper Bussmann realized that downtime was a major issue faced by their industrial and commercial customers, so they set out to solve it through the Cooper InVision Downtime Reduction System. After considering both in-house development and third-party solutions, Cooper developed their own Intelligent Fuse Monitors (IFMs) and Intelligent Circuit Monitors (ICMs) — battery-powered devices that monitor circuits and transmit any change in status to the "set-and-forget" Wireless Mesh Routers.

Research cited by Cooper Bussmann shows that unscheduled downtime is a problem in almost every industry. A comprehensive study of manufacturing facilities by AMG found that, on average, an open circuit results in 41 minutes of downtime, including 11 minutes to notify maintenance and 24 minutes to solve the problem. Other recent studies by AMG, Advanced Technology Services, Inc., and the Meta Group reveal that downtime costs range from $300,000 to millions of dollars per hour per site. In addition to an idle workforce, downtime can cause disruption to an organization's integrated supply chain and the loss of work in progress.

Traditional radio and point-to-point communication systems can be unreliable in interruption-filled production environments as well as difficult and expensive to install. Working with Cirronet's wireless mesh technology guaranteed seamless data transfer at distances of up to six football fields (1,260 feet) by automatically selecting an alternate signal path if the primary path is blocked.

The Wireless Mesh Routers provide redundant, self-healing connectivity with 99.999% transmission reliability between the IFMs, ICMs, and the Gateway — a small computer that encrypts data received from the routers and sends it to a secure Command Center server using a secure Internet connection.

The Command Center displays the status of monitored circuits and enables intuitive configuration of alert escalation and trending reports. It is the Command Center that initiates instantaneous phone, e-mail, or fax alerts to maintenance staff.

Cooper Bussmann selected Questra for the backend of the InVision Downtime Reduction System. Questra's IDM technology is installed on the InVision Gateway computer to help monitor not only the IFMs and ICMs, but also the Gateway itself. This IDM application enables the Cooper InVision System to help manufacturers monitor and manage their circuit protection devices remotely, moving from a reactive to a proactive maintenance model.

With Cirronet's wireless mesh technology and Questra's IDM applications, the Cooper InVision Downtime Reduction System saves manufacturers time and money by continuously monitoring circuits and immediately notifying maintenance staff of an open circuit's exact location, the correct replacement fuse (if appropriate), and the level of personal protective equipment (PPE) required to be in compliance with OSHA regulations. In addition, the Cooper InVision System helps to identify recurring problems. The system stores open-circuit alert data from which summary reports such as Mean Time to Repair statistics and trend analyses are produced to identify underlying problems that require correction.

One Cooper Bussmann customer, a metal manufacturer, lost up to $20,000 due to downtime *each time* a circuit opened. To improve the efficiency and reliability of its processes, the manufacturer installed the Cooper InVision Downtime Reduction System on more than 80 processing units. Now, when a circuit opens, the InVision System immediately notifies an electrician by phone or email. In the first five months of operation, InVision issued more than 45 circuit-open alerts, expediting maintenance and saving the manufacturer more than $800,000 in downtime and scrap costs.

The benefits of remote service to manufacturers such as Cooper Bussmann industrial and commercial customers cannot be overstated. The Cooper InVision Downtime Reduction System streamlines maintenance operations, improves occupational safety, and identifies issues that can adversely affect power supply to process-critical systems. The InVision System provides management tools for quantifying performance and cost savings, and optimizing maintenance resources, as well as IT tools for access to, and control of, data at anytime from anywhere. Cooper Bussmann customers are using the Cooper InVision System to minimize downtime, optimize performance, and improve efficiency and productivity. Remote service offers a transformational advantage in today's hyper-competitive global marketplace.