



Reduce
Downtime.
Increase
Safety.

Rapid Notification of
Critical Circuit Status for
Commercial & Industrial
Applications



Listen Up...Your Circuits Could be Costing You a Lot of Money...

Your facility's electrical system includes fuses and circuit breakers to protect people and equipment from over-current hazards such as short-circuits and overloads. These open-circuit events can shut down a production line or darken an entire building while maintenance locates and troubleshoots the problem and restores power. This ultimately results in costing you time and money, and can put employees and customers at risk.

The new Cooper InVision™ Downtime Reduction System improves your efficiencies by cutting the time involved in notifying, locating and restoring power in overcurrent events. This wireless, circuit monitoring – and easy to retrofit – System monitors your critical circuits with the highest reliability and safety considerations. An open-circuit event immediately triggers a phone, fax, SMS text or e-mail alert to the properly trained personnel with:

- *The exact location*
- *The replacement part number*
- *The proper Personal Protective Equipment (PPE) for safe servicing for the specific hazard level.**

Critical minutes are greatly reduced, and efficiency is improved safely, easily and reliably.

Do Your Circuits Call You When They Open?

"This is a Cooper InVision™ productivity alert. A circuit has opened.

- *Location: final assembly department electrical room 5, MCC-1, bucket 4A.*
- *Part number: LPS-RK-30SP.*
- *Arc-flash hazard alert: wear appropriate PPE suitable for hazard risk category 1, minimum of 4 calories per square centimeter."*

... With the Highest Event Transmission Reliability



* The customer is responsible for designating the PPE levels for each monitored circuit.

Optimize Your Maintenance Program to Dramatically Increase Efficiencies

Length of Downtime

Any company can benefit. A comprehensive study of facilities found that an open-circuit event resulted in an average of 41 minutes of downtime, including an average 11 minutes to notify maintenance, and 24 minutes to locate and troubleshoot the problem. Whether a large manufacturer, a multi-family housing unit, a hospital or a small retail business, you need to know where to position your maintenance force to keep your facilities running at top efficiency.

Cost of Downtime

The cost of unscheduled downtime is a continuing problem. Downtime costs can range from thousands to hundreds of thousands of dollars per site per hour. Downtime also creates life-safety issues when a large crowd or patient care are involved. In manufacturing applications, it causes disruption to an integrated supply chain and idles your workforce.

Even something as simple as an elevator can stop activity. That's lost time and productivity that can not be recovered, increasing the costs or decreasing potential revenues. Actively monitoring critical circuits to eliminate unnecessary downtime can add up to substantial savings.

Many machines that control critical processes are fusible. Research shows 90% of motors, 80% of heating and cooling equipment and 60% of presses are fusible. Anything that can help eliminate unnecessary downtime greatly adds to your productivity or customer experience.



Savings Potential is Real

	\$/Hr	\$/Min.	Circuit Openings/Year	Average Total Downtime	Yearly Downtime Cost
Without	\$60M	\$1K	10	45	\$450,000
With	\$60M	\$1K	10	16:30	\$163,000
Savings Per Year					\$287,000

How Much Does Your Downtime Cost? Use our online calculator to find out. Simply enter the requested information and you'll be presented with an estimate of your downtime savings. Just visit www.cooperbussmann.com/invision ... and see how minimizing each downtime occurrence — even by a few minutes — can add up to substantial savings.



The Safe Approach to Reducing Downtime

The Cooper InVision System protects your employees, customers & equipment.

For more than 90 years, Cooper Bussmann has been advocating and advancing workplace safety. The Cooper InVision System exemplifies this principle by:

Immediate Notification to the Proper Personnel

Accidents occur when unqualified workers attempt to service equipment. With the Cooper InVision System the proper personnel are notified immediately to service equipment that has failed, saving you time and eliminating the risk of potential injury.

Personal Protective Equipment

With the adoption of NFPA 70E by OSHA, it is required that employees wear the appropriate level of personal protective equipment when servicing equipment. The Cooper InVision System notifies maintenance with the correct level gear to wear for the specific piece of equipment that requires servicing.*

Specific Part Number

Knowing ahead of time exactly what part needs to be replaced speeds up the process, allowing the service personnel to come prepared.

Finger-Safe Hardware

Protection from live parts and equipment prevents accidents. The Cooper InVision Intelligent Fuse Monitor (IFM) is an IP20 finger-safe snap-on device that helps protect your employees from potential accidents that could occur around live components.

* The customer is responsible for designating the PPE levels for each monitored circuit.

IBEW Recognition

The International Brotherhood of Electrical Workers (IBEW) has recognized the Cooper InVision System as critical to improving electrical safety and productivity.

Can You Afford to Wait?

The Cooper InVision System offers benefits available no where else:

- Reduces downtime and increases the productivity & profitability of your facility
- Easily retrofits onto existing equipment
- Identifies critical issues through trending reports and analysis
- Optimizes your maintenance & engineering resources
- Provides secure access from any web browser



"There are several key advantages of this system that will help to minimize the potential safety risks... The system also has the potential to significantly reduce the downtime resulting from circuit openings. I can tell you first-hand how critical this is for productivity in these highly-competitive times."

Edwin D. Hill, President, IBEW

Reliability for Any Environment

Reliable Wireless Mesh Technology

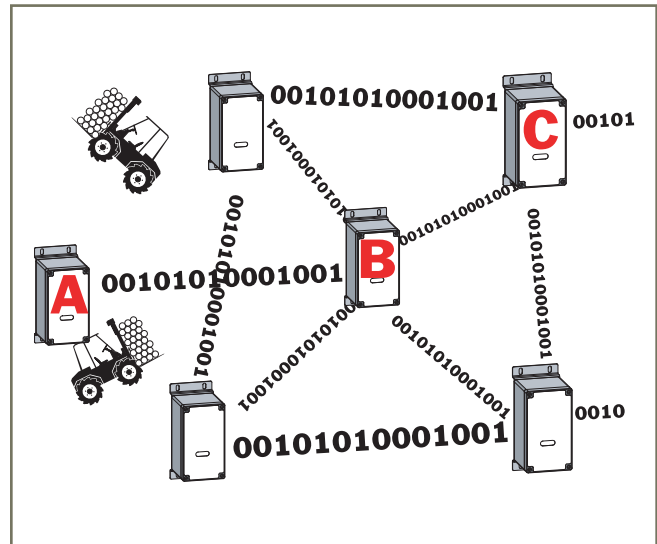
At the heart of the Cooper InVision System is a robust, self-healing, wireless mesh network. Radio communication is subject to a variety of environmental factors, interference and signal deterioration. This is why the Cooper InVision Wireless Mesh employs a variety of technologies to ensure reliable communication:

- Redundant data transmission
- Redundant path selection
- Listen-before-talk
- Data symbolization
- Data whitening
- Error detection

Wireless mesh technology is ideally suited for the dynamic, ever-changing environments found in many facilities. If the primary signal path is interrupted the self-healing topology of the Cooper InVision System automatically selects a new signal path.

Installed Cooper InVision Systems have been tested to a distance of six football fields without signal interruption. Wireless mesh networks are less expensive to install and more resistant to interruptions in the primary path of the signal allowing seamless data transfer and system integrity versus point-to-point wired and wireless systems.

The Cooper InVision System is also ideally suited for difficult to reach locations or where wired systems are impractical to install, such as towers and high ceilings that would require ladders and cherry pickers to troubleshoot any wired system failure.



With moving equipment, the self-healing topology of the Cooper InVision™ System automatically selects a new signal path if the primary path is interrupted – ensuring the greatest reliability in event data transmissions.

“The Cooper InVision System offers potential benefits to the maintenance group when it comes to finding and repairing fuse events. With the system installed and fully functional, we do expect to gain some efficiency. We are eager to adopt wireless technology across the company. The use of various wireless technologies is already being implemented from the wireless fire alarm system to the Cooper InVision circuit monitoring. We are looking at other areas of the plant to expand the system into. We found the ease of installation to be exactly what was described by the local Cooper Bussmann sales team.”

Jim Albert, Project Engineer, Genzyme



Cooper InVision: The Proactive Approach to Reduc

What the Cooper InVision™ System does:

When a circuit opens, your maintenance staff is notified by phone, SMS text paging, e-mail or fax of:

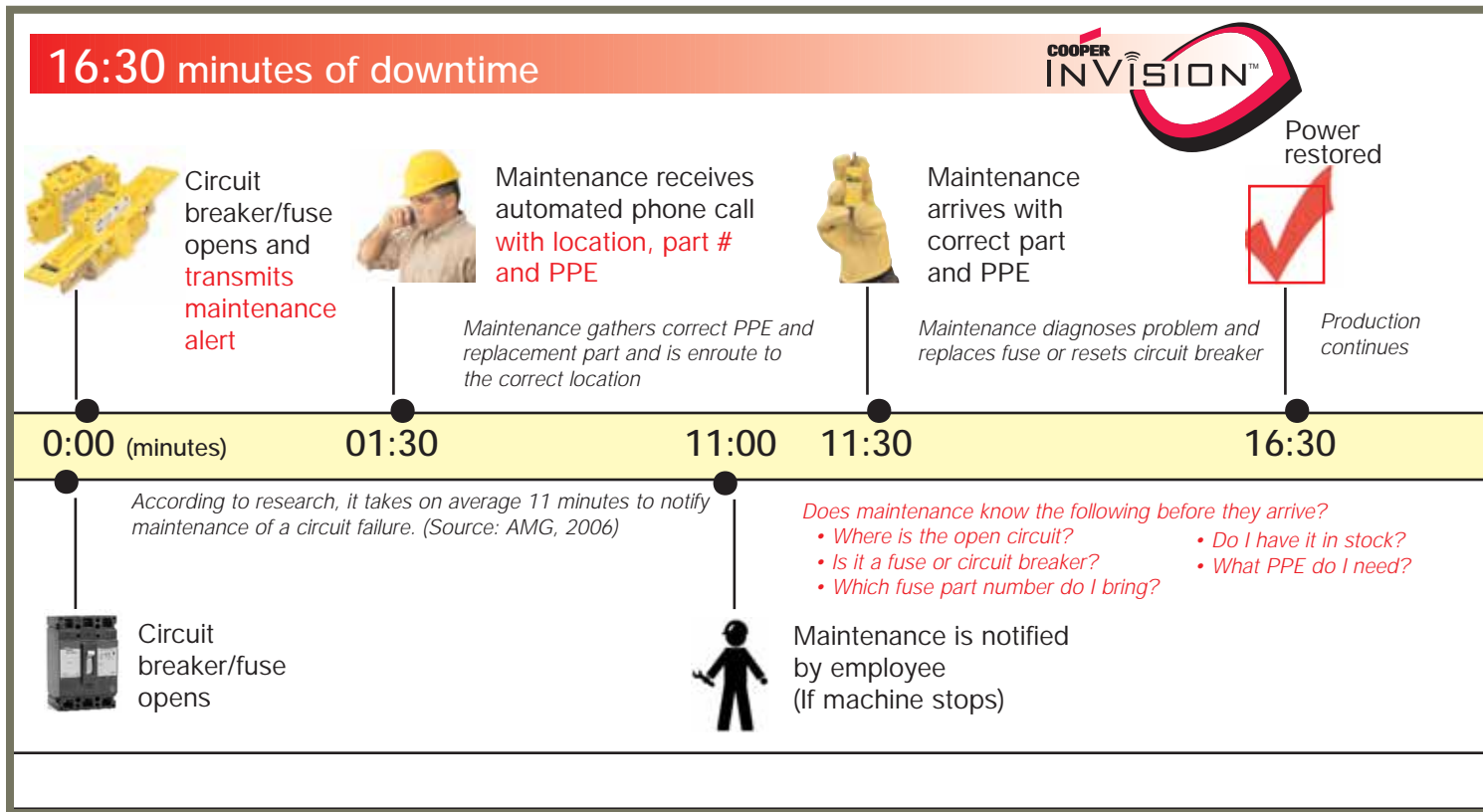
- The circuit's exact location
- The correct replacement fuse to bring
- The appropriate level of Personal Protective Equipment (PPE)*

The Cooper InVision Command Center enables you to:

- Quantify and manage downtime through Mean-Time-to-Repair (MTTR) statistics
- Analyze open circuit activity to discover potential underlying electrical problems that may require remedial action

* The customer is responsible for designating the PPE levels for each monitored circuit.

How the System Saves You Time and Money



Intelligent Fuse Monitors (IFMs) and Intelligent Circuit Monitors (ICMs) are battery-powered devices that monitor circuits and transmit any change in status to the Routers.

*Batteries will last over 4.5 years under normal conditions



The install-and-forget **Wireless Mesh Routers** provide reliable, redundant, self-healing connectivity between the system's IFMs/ICMs and the Gateway.

ing Downtime

Utilizing proven technology, this highly advanced circuit monitoring system is:

Safe:

- World class encryption protocol
- Automatic security updates
- Finger-safe hardware
- Password control and access to your data

Simple:

- Retrofittable on existing equipment in seconds
- Accessible from any web browser, anytime
- No software to configure, support or upgrade

Reliable:

- 99.999% transmission reliability
- Field tested and proven to withstand harsh environments
- UL Listed
- Monitor thousands of circuits per network
- Built-in escalation features
- Self-healing network



“Back Up & Running”

21:00



Maintenance arrives to locate and diagnose the event

According to research it takes on average 24 minutes to locate and troubleshoot an open circuit. (Source: AMG, 2006)

45:00



Power restored (if maintenance has the correct part number with them)



The **Gateway** encrypts data received from the Routers, and sends it to our secure Command Center servers via the Internet using secure web connection.



The **Command Center** is an Internet-based application that displays the status of monitored circuits, allows easy configuration of alert escalation and trending reports, and initiates the open circuit alert.



Critical Circuit Data: Secure Yet Easily Accessible for Predictive Maintenance

Web-based for Data Access & Control from Anywhere

The Cooper InVision Command Center gives you complete control over your data, including the ability to restrict access. From any Flash-enabled web browser, you can log in, create users, change passwords, and set permissions and access restrictions.

Passwords & Permissions

Access to the Cooper InVision Command Center is controlled by your Administrator. The Administrator decides who is granted access by creating "users" and assigning "roles" that control the extent a user can interact with the System. Your Administrator has full control over all aspects of the Command Center.

EtherNet/IP Compatible

The Cooper InVision Downtime Reduction System is compliance certified from the Open DeviceNet Vendors Association (ODVA), and can deliver data on fuse and circuit breaker activity to any device that is able to receive and process EtherNet/IP communication, such as a PLC. This data can be used for any purpose you choose, such as displaying fault status on a Human Machine Interface (HMI).

Cooper InVision Command Center

Analyze the health of your electrical system. The Cooper InVision Downtime Reduction System helps you identify recurring problems – problems you might not know even exist. The System stores open circuit alert data from which summary reports and trend analysis can be made to identify problem circuits that require remedial action. Assess your downtime performance through:

- **Mean-Time-to-Repair (MTTR)**

This report allows you to investigate and quantify the actual amount of time (and time savings the Cooper InVision System provides) from the moment a circuit opens until power is restored and the IFM/ICM is reset.

- **Mean-Time-to-Acknowledgment (MTTA)**

These reports give you the ability to quantify the actual amount of time from the moment a circuit opens until a service technician acknowledges the alarm.

- **Trending Reports**

Trend reporting enables long-term analysis of open circuit activity to identify circuits with excessive openings. This is a key indicator of an underlying power distribution or power quality problem that may require repair or additional diagnostic work.

"Although we have other monitoring technology in place, the fact that the Cooper InVision System calls our team and provides specific details helps us eliminate time spent diagnosing what caused the equipment to stop, and where the control panels are located. The history reports help us see how many interruptions some of our equipment is really experiencing. In many cases we know there are some issues with a particular machine, but the reports help us quantify how severe situations really are over time."

Eric Hernandez, Maintenance Manager, The Goodyear Tire & Rubber Company

Cooper InVision Services

To help you from initial startup through staff training and system expansion, Cooper InVision Support Services ensure complete system operation and support. These include:

- Site Assessment
- Initial System Set up
- System Monitoring: 24/7 Sensor monitoring and notification
- Battery Replacement Notification: Automatic notification when batteries need to be replaced
- Hardware Warranty: Repair or replacement of System components during the first year of service
- Software Updates: Security and software updates automatically executed by Cooper Bussmann
- System Expansion Support: Tech support available 24/7 for any expansion questions
- Wireless Mesh Testing: Continuous testing to verify reliable signal strength that could be affected by component failure or alterations to plant floor configuration
- Reporting: Ability to generate more than 20 reports

to analyze the electrical system health with tech support available to assist

- Data Storage: Local on-site server not necessary. Cooper Bussmann stores and archives the information for you
- Data Security: Data protected in hardened data center
- Customer Training: Cooper Bussmann provides novice-through-advanced training either online or onsite

Help Desk

- North American-based 24/7 technical support is available to assist with initial setup, troubleshooting and ongoing support
- Cooper Bussmann personnel are available for onsite visits
- All Cooper InVision documentation is available online in PDF form.
- Questions may be e-mailed to invisiontech@cooperindustries.com or call us at 866-436-7881



"I spoke to the electrician who received the call; he thinks this is the greatest thing since sliced bread. He knows what furnace has opened a fuse, what fuse to bring and it's no longer an emergency situation. This is eliminating a huge issue for us and allows us to react to the problem in real time."

Joe Porter, Facility Maintenance Manager, Cooper Crouse-Hinds

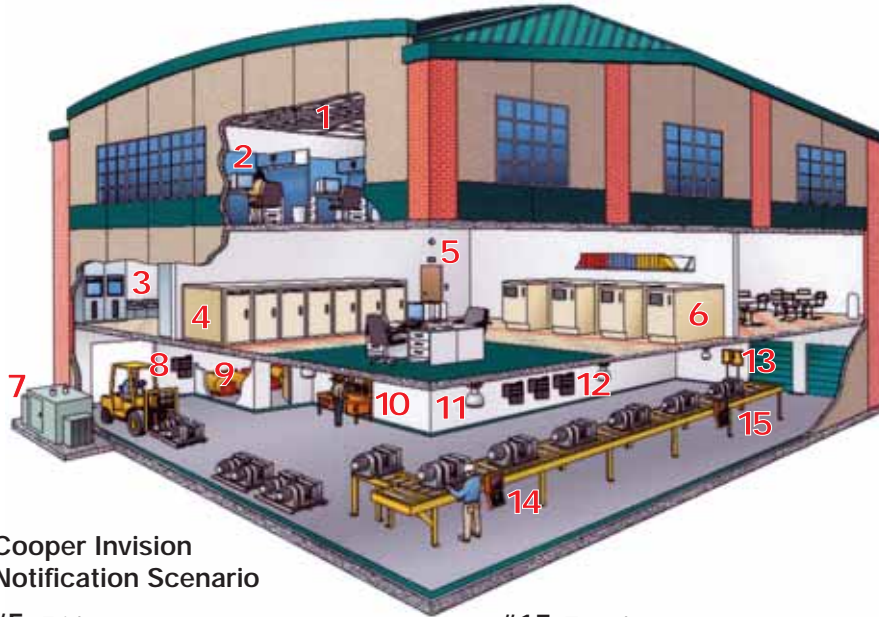


The Proactive Way to Safely Service Facilities

Cooper InVision Allows for Safer, Smarter Maintenance Deployment Decisions 24/7/365.

Industrial Applications

1. Interior Lighting
2. Computer Power
3. Switchboards
4. Motor Control Center
5. Emergency Lighting
6. UPS Backup Power Supplies
7. Transformer/Emergency Generator
8. Forklift Battery Charging Station
9. HVAC Chillers/Blowers
10. Welding Circuits
11. Plant Lighting
12. Distribution Panels
13. Disconnect Switches
14. Programmable Logic Circuits
15. Conveyor System



Cooper Invision Notification Scenario

#5 Friday, 7:18pm

Location: Quality Control Department, Emergency Lighting Panel #7

Fuse part #: LP-CC-15

Arc-flash hazard alert: Wear appropriate PPE suitable for hazard risk category zero, minimum of two calories per square centimeter.

#15 Tuesday, 8:24am

Location: Production Area, Conveyor line

Fuse part #: LPJ100SP

Arc-flash hazard alert: Wear appropriate PPE suitable for hazard risk category one, minimum of four calories per square centimeter.

Commercial Applications

1. Interior Lighting
2. HVAC Blowers
3. Computer Power
4. Branch Circuits
5. Emergency Lighting
6. Load Centers
7. Disconnect/Distribution Panels
8. HVAC/Chillers
9. Switchboards/Motor Control Centers
10. UPS Backup Power Supplies
11. Elevator Control Centers
12. Transformer/Emergency Generator



Cooper Invision Notification Scenario

#6 Monday, 10:45am

Location: Office Area, Load Center #2
This is a circuit breaker.

Arc-flash hazard alert: Wear appropriate PPE suitable for hazard risk category zero, minimum of two calories per square centimeter.

#9 Sunday, 2:36am

Location: Electrical Room #1, switchboard A

Fuse part #: KRP-C-800SP

Arc-flash hazard alert: Wear appropriate PPE suitable for hazard risk category three, minimum of twenty five calories per square centimeter.

Decrease Your Downtime While Increasing Your Bottom Line

Cooper Bussmann provides you the opportunity to take advantage of all the benefits of the Cooper InVision System without the challenges of capital expenditure approvals. Our unique financing program can be tailored to your specific needs. With a simple, cost-effective, flexible finance tool, you can have the Cooper InVision System installed as a cost-justified monthly expense rather than having to overcome asset budget hurdles.

Leasing Options Free-Up Working Capital

Approving capital expenditures in today's marketplace can be challenging. That's why Cooper Bussmann created a simple, cost-effective, flexible finance tool to help you overcome budget hurdles. Contact sales for additional information.

Benefits of Leasing Versus Buying

- Flexibility to advance as new technologies emerge
- Operational expense verses depreciable asset is easier to appropriate
- Get more right now verses what budgets would allow
- Faster approval process allows for rapid payback by reducing downtime now
- Conserve cash and hedge against inflation
- Potential "write-off" tax advantages verses asset depreciation schedules

The Proof is in the Pilot!

Tailored short-term plans will prove the business case for you as you add up the cost-savings when your next circuit opens. Installing a small pilot program gives you the immediate hands-on knowledge and ability to add up the cost savings specific to your facility.

ROI Before You Buy – Try a Pilot

- Gain a thorough understanding of the benefits, and realize actual savings and return on your investment. This test drive will validate your expenses with hard data and actual experiences first-hand
- Detailed reports enable in-depth evaluation of your specific performance, maintenance, and efficiency gain
- Easy to expand – installation of additional sensors is extremely easy since wireless mesh and gateway are already installed

Contact Cooper InVision sales for additional information.





Cooper Bussmann: Leading Industry in Downtime Reduction, Workplace Safety & Code Compliance Solutions

Cooper InVision™ Sales & Technical Support

- Sales Phone: 866-436-7870
- Sales e-mail:
invisionsales@cooperindustries.com
- Technical Support Phone:
866-436-7881
- Technical Support e-mail:
invisiotech@cooperindustries.com

Application Engineering

Technical assistance is available to all customers. Staffed by degreed engineers, this application support is available Monday-Friday, 8:00 a.m. – 5:00 p.m. Central Time. Contact:

- Phone: 636-527-1270
- Fax: 636-527-1607
- E-mail: fusetech@cooperindustries.com
- Live Chat: www.cooperbussmann.com

Online Resources

Visit www.cooperbussmann.com/invision for:

- Latest news
- System demonstration
- Security demonstration
- Alert message sample
- Frequently asked questions
- Component data sheets
- Downtime reduction cost savings calculator

Customer Satisfaction Team

Available to answer questions regarding Cooper Bussmann® products & services Monday-Friday, 8:00 a.m. – 4:30 p.m. for all US time zones. Contact:

- Phone: 636-527-3877
- Toll-free fax: 800-544-2570
- E-mail: busscustsat@cooperindustries.com

Services

Cooper Bussmann® Services team provides engineering expertise in electrical system reviews, electrical safety training & component testing for Agency compliance. Contact:

- Phone: 636-207-3294
- E-mail: services@cooperindustries.com

C3 – the Enhanced, Online Cooper Customer Center

Provides real time product availability, net pricing, order status & shipment tracking across six Cooper divisions: B-line, Bussmann, Crouse-Hinds, Lighting, Power Systems & Wiring Devices. Available at:

- www.cooperc3.com
- 877-995-5955 for log-in assistance