



Reliable, Innovative, Comprehensive
Mining Solutions

**COOPER**





ONE COOPER

WHATEVER IT TAKES. WHATEVER YOU NEED. WHEREVER YOU ARE.

Cooper Industries (NYSE: CBE) is a premier global manufacturing company with seven operating divisions and thousands of well-known products that are used around the world every day. With over 100 years in the market, we understand that mining is a challenging business. Our reliable and industry-certified products, commitment to helping you create a safe environment, drive to reinvest in innovative technologies for your benefit, and global manufacturing base make us uniquely positioned to locally serve even the most remote facilities.

YOUR MINING PARTNER EVERY STEP OF THE WAY

- GLOBAL FOOTPRINT TO HELP DELIVER WHEREVER YOUR BUSINESS TAKES YOU
- A BROAD PRODUCT OFFERING TO MAXIMIZE SAFETY, COST SAVINGS, AND PRODUCTIVITY
- QUALITY, COMPREHENSIVE SOLUTIONS AND SERVICES THERE WHEN YOU NEED THEM

COOPER WORLDWIDE Global Manufacturing and Distribution Network

Our manufacturing facilities are strategically positioned globally to deliver products close to your project. We manufacture in 23 countries and sell into more than 100 countries. We inventory more than 100,000 SKUs and ensure our products meet your quality standards no matter where they are manufactured.

Our network includes more than 140 manufacturing and distribution locations

worldwide, with local technical sales and engineering teams to support your immediate needs.

Our logistics teams manage shipments to conform to your project schedule. We are there on-site during construction, commissioning, and training. Your Cooper project manager serves as your single point of contact.

40%

OF PRODUCTS SOLD
OUTSIDE U.S.

MANUFACTURED IN
23 countries

140+

LOCATIONS
WORLDWIDE

MORE THAN
100,000+ SKUs

20+

LANGUAGES COOPER
TRANSACTS IN

SOLD INTO MORE THAN
100 countries



DESIGNED FOR GLOBAL SPECIFICATIONS

Cooper offers the mining industry the most competitive, compliant product and service portfolio as a one-stop shop for end-to-end electrical and manufacturing solutions including lighting, switchgear, transformers, capacitors, circuit protection, connectivity, cable management, wireless, safety grating, and explosion-protected instrumentation, enclosures, and signaling.

We are the world's leading provider of products and services for electrical systems in harsh and hazardous environments.

Tap Our Knowledge Base

Wherever you are mining, whether you are excavating in a subsurface or surface environment, we know the codes and standards. Our products are built to meet and exceed certifications applicable to locations around the world to ensure the safety of your employees and equipment. The knowledge and expertise we leverage every day to help your operation run smoother and safer lies not in one mind but in thousands of Cooper employees. We continuously collaborate with customers to ensure that you have the services and support needed to reach optimal performance.

COUNTRY, STANDARD, AND CERTIFICATE OF CONFORMITY

ANSI	American National Standards Institute
ANZEx	Australia/New Zealand Certification
ATEX	Certification for the European Union
CCC	China Compulsory Certificate
CEPEL	Brazilian Certification
CQST	China National Quality Supervision and Test
CSA	Canadian Standards Association
FM	Factory Mutual
GB	Certification for China
GOST-R/GOST-K	Russian and Kazakhstan Certification
IEC and IECEx	International Certification
IEEE	International Technology Certification
Inmetro	Brazil's Standardization and Industrial Quality
KOSHA	Korea Certification
MSHA	Mining Safety and Health Administration
NEC®/CEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NEPSI	Asia Certification
OSHPD	Office of Statewide Health Planning and Development
UL	Underwriters Laboratories
ULC	Underwriters Laboratory of Canada



SERVICE SOLUTIONS TO DELIVER SUCCESS

Whether you're in the metal, mineral, or coal mining markets, we can help you manage costs and maintain margins, optimizing the value of your investments, including:

- Drillers and breakers
- Crushers
- Screens
- Processing areas and machinery
- Material transportation
- Handling equipment

The experienced professionals at Cooper Industries can help you make smarter investments in your business. These solutions can help you reduce cost, improve quality, and extend equipment life cycles to help ensure the safety of your employees.

Custom Service Centers

We specialize in local assembly and fast delivery of custom-engineered electrical products specifically for industrial and corrosive applications. Our service centers offer full drafting capabilities and in-house control and instrumentation experts to help you develop the optimal solution:

- Custom-built panelboards and motor control
- Switchracks
- ATEX and IEC assemblies
- Portable power products

Lighting Layout Support

From simple layouts to complete drawings, our lighting design engineers will provide precise, efficient application-focused lighting designs:

- 3D fixture placement with comparison of alternate fixtures
- Point-by-Point footcandle diagram calculations
- AutoCAD® drawings overlaying your floorplans
- Complete bill of material

Technical Knowledge Exchange and Support

The years of experience of our field and design engineers have been downloaded into technical publications, online training videos, and in-person training programs held on-site at your facility or at one of our training centers. Harsh and hazardous location training covers requirements and methods for classifying and protecting those locations.

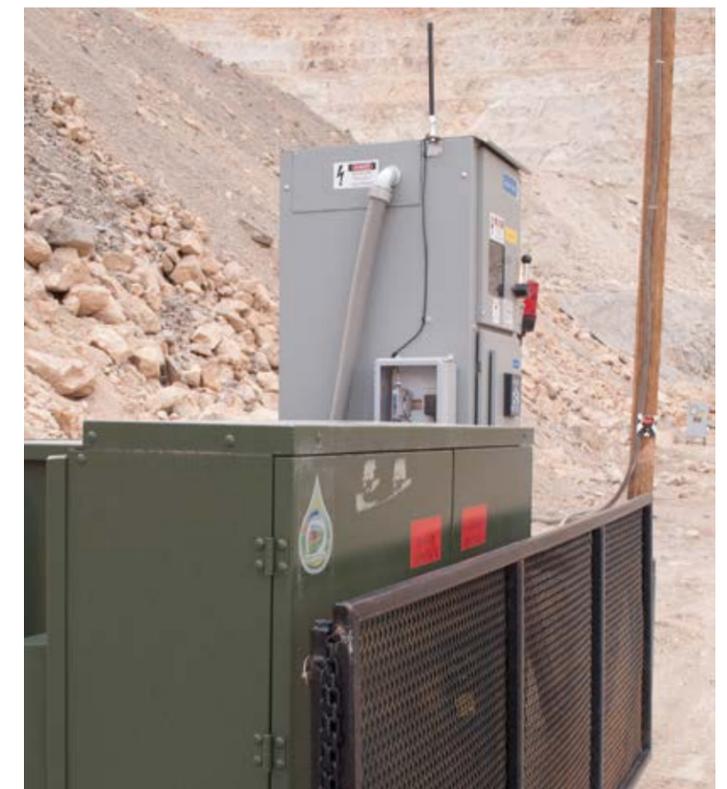
Bulk Electrical and Instrumentation Material Supplier

As one of the largest mining bulk electrical and instrument material suppliers, we can easily provide a single source for the smallest but necessary components to complete your project on time and on budget.

Other Services

We also offer:

- On-site engineering support, supervision, and training
- On-site material inspection for authenticity assurance
- Local support following project completion
- Engineering resources for design and installation support for enclosures and support systems



AT COOPER, WE UNDERSTAND MINING

We know that mining is a challenging business. To help reduce costs of downtime, you must meet critical challenges and anticipate the unexpected every day. At Cooper, we understand that equipment must perform in abusive conditions with absolutely no margin for error. Employee safety is vital—above ground, below ground, and in processing facilities.

Industrial

Areas prone to dust, dirt, grime, vibration, hard use, and abuse

Environmental Protection

Protection from windblown dust and rain, splashing and hose-directed water, and external formation of ice

High Vibration

Where equipment with high-speed moving parts may require maintenance/repairs

Corrosive Areas

From chemicals, atmospheres, and water

Space Constraints

Areas with low ceilings, tight spaces, and limited footprint potential

Corrosive Areas

From chemicals, atmospheres, and water

Class II / Group III Locations

Areas where dust-ignition proof or dust-tight equipment might be needed depending on the conditions

Class I / Group II Locations

Explosion protection for areas with flammable gases or vapors in the atmosphere

FOCUSED ON SAFETY, APPLICATION, AND EASE-OF-USE

Mining operations rely on products that are engineered to perform through extreme temperature variations and in hazardous locations where ignitable gases or combustible dusts are present. These products must be exceptionally durable, corrosion-resistant, and withstand extreme abuse as well as exposure to chemicals, water, and high-vibration areas.

For more than a century, companies have come to rely on Cooper for value they can trust to grow their business. By integrating a comprehensive line of reliable electrical and mechanical products with expert support, industry insights, and local availability, we enhance safety and productivity in the most demanding industrial and commercial environments worldwide. This philosophy is at the core of every product we develop and every solution we engineer.

Our comprehensive product line has helped companies at almost every turn in the mining process including:

- Material extraction—above or below ground
- Material transportation—raw or finished
- Processing
- Refining
- End product delivery
- Water/material treatment

Area Classification

	HAZARD	FLAMMABLE MATERIAL PRESENT CONTINUOUSLY	FLAMMABLE MATERIAL PRESENT INTERMITTENTLY	FLAMMABLE MATERIAL PRESENT ABNORMALLY
IEC/ATEX	Gas/Vapor	Zone 0	Zone 1	Zone 2
	Dust	Zone 20	Zone 21	Zone 22
NEC® 501	Gas/Vapor	Class I, Division 1	Class I, Division 1	Class I, Division 2
NEC® 505	Gas/Vapor	Class I, Zone 0	Class I, Zone 1	Class I, Zone 2
NEC® 502	Dust	Class II, Division 1	Class II, Division 1	Class II, Division 2
NEC® 506	Dust	Zone 20	Zone 21	Zone 22
CA CEC Sec. 18	Gas/Vapor	Class I, Zone 0	Class I, Zone 1	Class I, Zone 2
CA CEC Sec. 18	Dust	Class II, Division 1	Class II, Division 1	Class II, Division 2

IEC classification per IEC 60079-10

EU classification per EN 60079-10

US classification per ANSI/NFPA 70 National Electrical Code® (NEC®) Article 500 or Article 505

CA classification per CSAC22.1 Canadian Electrical Code (CEC Section 18 or Annex J)



Gas/Equipment Grouping

TYPICAL GAS	US (NEC® 505) CA (CEC SECTION 18) EU IEC	US (NEC® 500) CA (CEC ANNEX J)
Acetylene	Group IIC	Class I Group A
Hydrogen	(Group IIB + H ₂)	Class I Group B
Ethylene	Group IIB	Class I Group C
Propane	Group IIA	Class I Group D
Methane	Group I*	Mining*

*Not within scope of NEC®. Under jurisdiction of MSHA. Not within scope of CEC.

Ingress Protection (IP) Codes

FIRST CHARACTERISTIC NUMERAL		SECOND CHARACTERISTIC NUMERAL	
Protection against solid bodies		Protection against liquid	
0	No protection	No protection	
1	Objects greater than 50mm	Vertical (90°) dripping water	
2	Objects greater than 12mm	70° to 90° dripping water	
3	Objects greater than 2.5mm	Sprayed water	
4	Objects greater than 1mm	Splashed water	
5	Dust-protected	Water jets	
6	Dust-tight	Heavy seas	
7		Effects of immersion	
8		Indefinite immersion	

APPROXIMATE U.S. ENCLOSURE TYPE EQUIVALENT TO IP RATING*

TYPE > IP		TYPE > IP		TYPE > IP	
1	10	3S	54	6 and 6P	67
2	11	4 and 4X	55	12 and 12K	52
3	54	5	52	13	54
3R	14				

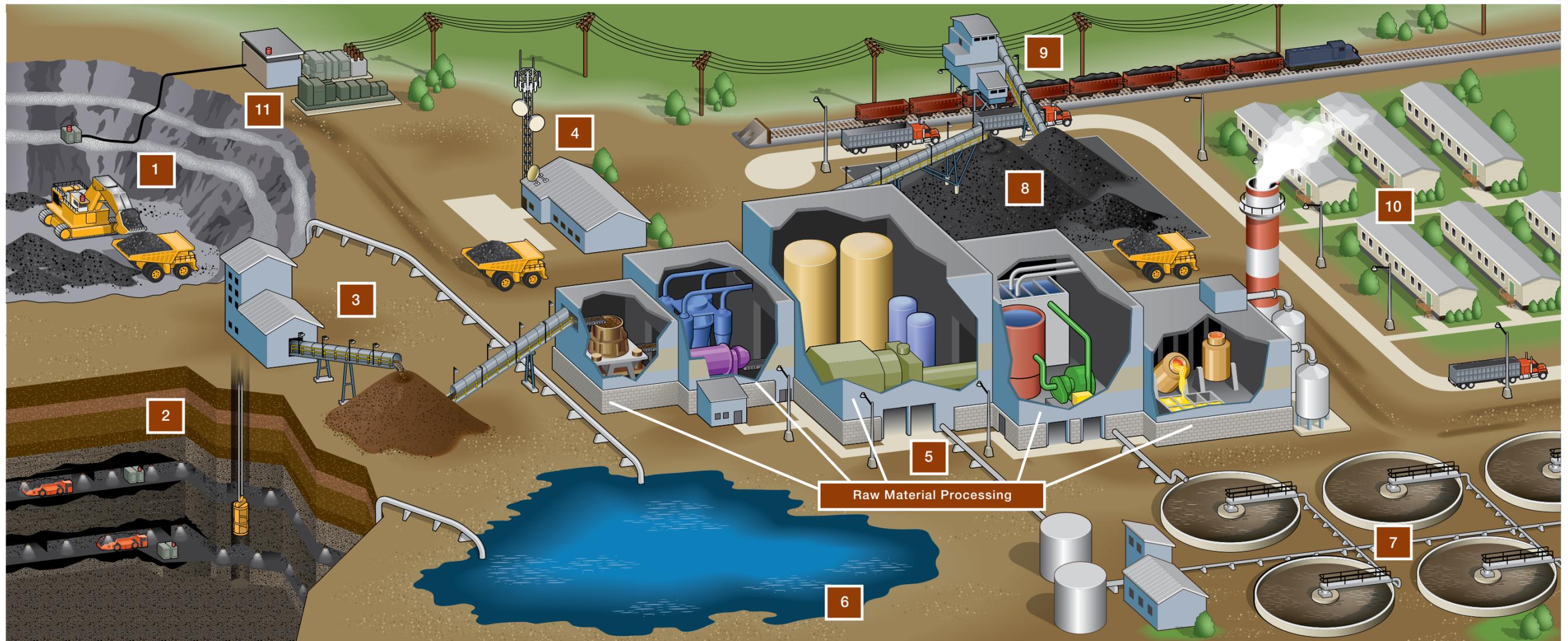
*NEMA Enclosure Type can be converted to IP code rating but IP codes cannot be converted to NEMA enclosure type.

COMPREHENSIVE PRODUCT SOLUTIONS FOR MINING APPLICATIONS

Knowing Your Challenges Inside-Out

This illustration represents a combination of metal, mineral, and coal processes, including above ground and underground mining. The upcoming pages present an overview of our comprehensive portfolio for mining applications. The eleven product families shown here represent some of our key product offerings. For virtually any application within a mining operation, Cooper has a product solution that can help optimize safety, reliability, and productivity.

<p>1 Open Pit Quik-Loc connectors</p> 	<p>2 Underground Macey Coupling Systems</p> 	<p>3 Mine Head/Conveyor Pro Series LED</p> 	<p>4 Control Room Fuse Panel</p> 
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<p>5 Raw Material Processing Cable Tray / Safety Grating</p> 	<p>6 Tailing Ponds Wireless Monitoring</p> 	<p>7 CIL Tanks Enclosures</p> 	<p>8 Storage/Reserves Pro Series LED</p> 	<p>9 Transport AFA Conveyor Controls</p> 	<p>10 Housing/Mine Maintenance Operations Crosstour LED</p> 	<p>11 Conventional and Portable Substation Envirotran™ Transformers</p> 
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LIGHTING

Inside the mine, lighting is a 24/7 operation with no time for power interruption. We deliver complete lighting solutions designed to meet both NEC® and IEC standards at the highest quality, safety, and optical performance for both hazardous and non-hazardous areas. The lifetime of the LED luminaires can last up to seven years with no lamp maintenance and allow for large ranges in voltage drops without losing light. Our HID products are instant on/off. We combine reliability and expertise into every product, providing you with labor and maintenance savings, simplified installation, and improved productivity.

Available Lamp Types

- LED
- Fluorescent
- Induction
- HID
- Incandescent

Outdoor Harsh and Hazardous Lighting

- Floodlights/area lighting
- High-bay/mid-bay
- Targeted illumination/low mounting heights
- Signaling/obstruction lighting

Interior Harsh and Hazardous Lighting

- Vaportight ambient lighting (general illumination)
- Vaportight security lighting
- Interior high abuse lighting
- Office and accommodation lighting

Exit and Emergency Lighting

- Exit signs (LED Available)
- Emergency lighting systems (LED Available)

High Vibration Resistant Luminaires

Dust-proof Luminaires

Class II / Group III Luminaires (dust-ignition proof/dust tight)



case study



A mine in Nevada recently turned to Cooper Crouse-Hinds to reduce their high maintenance costs by retrofitting the lighting on their electric shovels. Extreme vibration and constant use resulted in their existing incandescent and fluorescent lighting systems breaking down or burning out within just days. To solve this problem, the shovels were retrofitted with 14 Vaporgard LED Luminaires. Six of these were installed underneath the shovel to provide illumination into and around the tracks. The shovels operate 24/7 and to-date there has not been a single lamp failure, significantly reducing their maintenance costs. Additionally, the Vaporgard LED luminaires provide an 85% reduction in energy consumption versus the old 200W incandescent system.

case study



After years of use, Cameco McArthur River and Cigar Lake noticed that its current lighting products not only required maintenance, but weren't as energy efficient or environmentally friendly as other options on the market. In an effort to reduce maintenance, downtime, and overall energy usage, the Cameco team began investigating new LED solutions to replace the existing HID fixtures. Their investigation led them to Cooper Lighting's line of efficient Lumark Wal-Pak LED luminaires. Combining architectural style with rugged construction, the high-performing Lumark Wal-Pak LED luminaires are designed to last up to 50,000 hours while offering up to 90% in energy and maintenance savings. Installed in various locations, including the underground mine as well as on their maintenance building, a total of more than 300 LED wall packs proved to be the ideal solution to meet Cameco's goals with a savings of approximately \$368,000 annually.

ELECTRICAL POWER AND DISTRIBUTION / MOTOR CONTROL

Cooper is the industry leader in critical circuit protection, power management, and electrical safety. Our electrical, wiring, control, and automation products—from fuses and fusible control panels for emergency and critical operations systems to conveyor alignment and control switches—have helped successful companies at nearly every turn in the mining process.

Panelboards

- Fusible panels
- Circuit breaker panels
- Stainless steel and galvanized steel for corrosion resistance

Switchracks

Motor Starters and Switches

- X-Switch
- AFA and AFU conveyor belt control and alignment switches
- Control stations in fiberglass and stainless steel

Circuit Protection

- Low-voltage, medium-voltage, and high-speed fuses
- Surge protective devices
- Volt current limiters

Power Conversion

- 24V to 12V 30A converters
- Low-voltage power converters
- High-voltage power conversion

Power Distribution

- Envirotran™ transformers (substation, single- and three-phase pad-mounted, and single-phase overhead)
- Power capacitors and capacitor banks
- Underground distribution switchgear
- Overhead distribution equipment
- Power distribution modules
- Surge arresters
- Envirotemp™ FR3™ dielectric fluid
- Voltage regulators
- Energy automation solutions
- Seperable connectors
- Renewable energy

Portable Power Solutions

- Custom cable assemblies
- Custom power carts and specialty products
- PV kits
- Modular Integrated Transportable Substation (MITS)

Off-Road Mining Vehicle Power Conversion and Distribution



case study



A large gold mine in Nevada is implementing a plan designed to triple their gold production over a three-year period. The mine was up against increasing environmental regulations and needed transformers to fill their power needs while keeping within these parameters. In addition, they were challenged with high-harmonic current from the mine's large Variable Frequency Drives (VFDs).

The customer immediately embraced the environmentally preferred benefits of Cooper Power Systems Envirotran™ transformers filled with Envirotemp™ FR3™ fluid—a bio-based, sustainable, natural ester dielectric coolant. Working with the mine's engineering team, Cooper Power Systems was able to resolve the high-harmonic current and poor power factor by recommending and applying a filter-type capacitor bank to the system. In addition, Cooper Power Systems provided other medium voltage equipment including station-class surge arresters and overhead switchgear.

product focus



The **Quik-Spec™ Coordination Panelboard (QSCP)** from Cooper Bussmann simplifies selective coordination in a fully fused system using published fuse ampacity ratio tables. This eliminates the lengthy and costly coordination studies required with circuit breakers. Available in 30 to 1200 amp versions, the QSCP uses a wide 1-100A fuse range to closely match fuse ampacity with loads using either the fast-acting or time-delay CUBEFuse. Further, using the CUBEFuse means that fault current events do not require the CCPB branch disconnect to be tested and recalibrated as is the code requirement for circuit breakers. With an up to a 40% smaller footprint, the QSCP can be easily configured with 1-, 2-, and 3-pole branch disconnects to meet specific electrical system needs. For use in Class I, Div. 2 hazardous environments, Cooper Bussmann can coordinate with sister division, Cooper Crouse-Hinds and provide a custom solution featuring the 30 to 400A QSCP inside an explosion-proof enclosure.

ELECTRICAL/MECHANICAL SUPPORTS AND CABLE MANAGEMENT

As the leading supplier of electrical and mechanical cable support systems, pipe supports, and walkways, our designs are suited to match varying environments and conditions. We have one of the broadest offerings of cable trays with the longest spans available in the market today. Our product solutions are suited for electrical and mechanical subsystem applications in both indoor or outdoor environments for industrial facilities, office buildings, personnel quarters, and more. We offer cost-effective alternatives that provide field flexibility and labor savings.

Strut Support Systems

- Broadest strut system offering in the industry
- Solutions for virtually any electrical, mechanical, or industrial support application
- Materials and finishes for every environment including stainless steel, galvanized steel, and aluminum

Cable Ladder and Accessories

- Corrosion-resistant, hot-dipped galvanized, stainless steel, and FA Series Fiberglass (electrically conductive GRP)
- Trefoil or single cable cleats for life and facility protection

Cable Channel and Accessories

- Hot-dip galvanized or stainless steel available in ventilated and non-ventilated options

FLEXTRAY™ Wire Basket

- Field fabricated fittings help reduce installation time and increase flexibility
- Unique splicing and support options that help reduce the total installed cost over alternative methods

Pipe Hangers

- Patented technology eases pipe installation
- All products meet or exceed industry standards set for their design and application

Safety Gratings

- Slip resistant walkways for demanding environments where mud, ice, oil, and other substances can create hazardous working conditions
- Available in a wide variety of traction patterns and material types

Seismic Bracing

- TOLCO™ seismic bracing products
- UL Listed and FM Approved

Limberoller Conveyor Belt Idlers

- Troughing idlers and brackets
- Return idlers and brackets



Strut Support Systems Steel Cable Ladder Safety Gratings Walkway Pipe Hangers Safety Gratings Cable Ladder Fiberglass Cable Ladder Flextray™ Wire Basket

ENCLOSURES

Enclosures and junction boxes built and configured to meet the requirements of the most demanding IEC/NEC® hazardous areas and industrial environmental applications across the globe. Junction boxes are used in threaded rigid conduit systems in hazardous and non-hazardous areas to house terminal blocks, relays, and other electrical devices.

Junction Boxes and Enclosures

- Explosion-proof and flame-proof, Class II/Group II, metallic enclosures
- Customized entry options and control panels

Industrial-Grade Enclosures

- Types 12, 4, and 4X for junction box and equipment panel mount applications
- Type 3R, 12, and 4X wire ways for cable and wire management
- Painted steel, stainless steel, aluminum, and fiberglass constructions
- Modification services for special size, paint, holes, or pre-installed accessories

Enclosures With Components

- Explosion-proof and flame-proof, Class II / Group II, metallic or non-metallic enclosures

Instrument Housings

- Hazardous-rated, Class II / Group II, metallic or non-metallic enclosures
- Explosion protected terminal boxes

Commercial-Grade Enclosures

- Types 1 and 3R enclosures for junction box applications
- Painted and galvanized steel constructions
- Modification services for special size, paint, holes, or pre-installed accessories



Hazardous Area Enclosures Stainless Steel Enclosures Hazardous Area Junction Boxes Modification Services Flame-proof Enclosures Indoor Junction Boxes Non-hazardous Junction Boxes Non-hazardous Panel Enclosures

product focus



Metric Cable Ladder System Delivers Superior Cable Management. Cooper B-Line's Metric Cable Ladder System is a fully metric cable ladder designed with rolled steel components and a unique I-Beam design, providing one of the strongest cable management systems in the industry today. The 1.5mm thick I-Beam offers greater strength than other 2.0mm design. Also, the 2.0mm side rail is available to provide industry leading loads in 3 meter and 6 meter spans. In addition, the system features slotted rails designed to eliminate the need to drill new splice holes after cutting lengths and allows for quick and easy installation of brackets and supports.

90% of the mines in the U.S. use Cooper B-Line Heavy Duty GRIP STRUT™ Safety Grating today. Designed with slip resistance in all directions, Cooper B-Line Heavy Duty GRIP STRUT safety grating is one of the best options for walking and working surfaces where mud, ice, snow, grease, oil, or detergents can create slippery or hazardous conditions.

product focus



EJB junction boxes from Cooper Crouse-Hinds are used in threaded rigid conduit systems in hazardous areas as a junction or pull box to provide enclosures for splices and branch circuit taps for housing terminal blocks, relays, and other electrical devices. These units can be placed indoors or outdoors in damp, wet, dusty, corrosive, or hazardous locations. They are constructed to withstand exposure to frequent or heavy rain, water, spray, moisture, and humidity, such as on offshore drilling facilities.

CONNECTIVITY

Our rugged construction provides solutions for severe mining conditions, offering extensive configurations, custom capabilities, and numerous interlocking designs with safe and reliable NEC® and IEC solutions for fixed or portable power applications.

Pin and Sleeve Devices

- Hazardous and non-hazardous connectors
- Interlocking units for additional protection
- Nonmetallic units for corrosion protection
- Watertight pin and sleeve
- Wide range of pin configurations

Automation

- LynxPOWER™ passive connectors
- LynxPOWER™ network connectors

Mid-High Amperage Products

- Quik-Loc connector series
- Metallic Quik-Loc plugs and receptacles
- Round and oval heavy duty connectors
- Macey coupling systems (IEC 60079.0 and IEC 60079.1)

Complex Environment Devices

- Corrosion-resistant, severe duty, and watertight plugs & connectors

NEMA Configured Devices

- Locking devices
- Plugs and connectors

Electrical Thread Conversion Products

Includes adaptors and reducers designed for hazardous areas and industrial applications with appropriate levels of dust and water ingress protection.

INDUSTRIAL FITTINGS AND CABLE GLANDS

Our time-tested and innovative conduit fittings, cord connectors, and cable glands move power where you need it simply and safely in any electrical installation. We deliver solutions for both non-hazardous and hazardous areas where safety is of the utmost importance.

Conduit Outlet Bodies and Boxes

- Multiple configuration sizes and materials

Cable Glands

- Built to NEC®/IEC Standards
- Armored or non-armored
- Wide range of cable types and materials

Sealing Fittings and Compounds

- Standard sealing fittings
- Sealing fittings with drains
- Retrofit and expanded fill

Conduit Hubs

- Comprehensive range of hub sizes, materials, and ratings

Ultra High Pressure and Secondary Process Seals

- Prevents gases, liquids, and vapors from moving through conduit, cables, and conductors

Unions and Elbows

Reducers and Plugs

Couplings



product focus



Cooper Interconnect's Quik-Loc connectors are designed for high-amperage connections in harsh environments. These are field attachable connectors available in a neoprene molded body, metallic body, and our "L" Series lever action for easy assembly and disassembly. The resilient construction provides a safe, water-tight, corrosion-resistant assembly ensuring rugged, dependable service. They are available to accept a wide-range of cable sizes to fit a variety of power requirements. Typical applications include shuttle cars, conveyors, pumps, and power distribution equipment.

product focus



Macey Coupling Systems must withstand the day-to-day harshness and effects of hardrock, heavy machinery, coal dust, and wet, muddy conditions. Macey Mining products are designed, manufactured, and certified to the highest industry standards including IECEx and ANZEx. The Macey range is divided into two categories—bolted and restrained. The restrained product range is used to supply and monitor power to portable equipment such as shuttle cars, continuous miners, drill rigs (jumbo's), etc. in underground, open-cut coal, and metalliferous mines. The restrained products cover a complete range up to 425 Amps and 3300 Volts. The bolted product range is used to supply main power to a pit or to a section isolator, transformer, or other fixed installations in underground coal mines such as lighting, pumps, and lasers. In open-cut mines these couplers are used to power draglines, drills and shovels. The bolted series covers a range up to 800 Amps and 11,000 Volts. Whichever mining coupling system you require, whatever the situation, Cooper has the solution with Macey.

SIGNALS, ALARMS, AND MONITORING

Deliver the right message to the right people at the right time to help protect lives and minimize chaos in the event of an emergency. Cooper products provide protection to both personnel and property by offering emergency lighting, security, fire detection, and notification systems. Our well-known brands and products can be found in the most demanding industrial environments including open areas and process plants. Solutions are also available for more benign environments such as offices and accommodation blocks.

Notification

- Public address
- Fire systems
- Process failure alerts
- Outdoor warning systems

Escape Route Illumination

- Indoor and outdoor emergency lighting
- Central battery systems

Visual & Audible Signaling

- Beacons
- Strobes
- Call points
- Horns and speakers
- Status lights

Monitoring and Control

- CCTV systems
- Security alerts
- Condition signalling



INSTRUMENTATION, WIRELESS, AND AUTOMATION

Our products provide complete wireless monitoring, control, and networking solutions to help increase productivity and efficiency, reduce downtime and costs, and ensure safety. Our automation and connectivity solutions are reliable, secure, and perform in the rugged, complex, and long-distance applications of the mining industry. We provide wire-free economics while delivering wire-like reliability for surface and underground mining operations.

Fieldbus

- Reliable power to field instrumentation
- Data communication between control systems and the mine

Intrinsic Safety I/O

Specifically designed for harsh and hazardous of environments

- Galvanic isolators
- Zener safety barriers
- HART multiplexing equipment and annunciators
- Beacons and sounders

Intrinsically Safe Ethernet

- 5- to 18-port DIN-rail and panel mount Ethernet switches with multiple Gigabit and fibre port options
- ATEX certified for Zone 2 and UL approved for Class I, Division 2 hazardous areas

Surge Protection

OMNEX Trusted Wireless™ Remote Controls

- **Transmitters** One-way, two-way, 14, 20, and 31-function
- **Receivers** Configurable, I/O, Canbus, RS232, PLC programmability
- **Expansion Modules** Extra digital and/or proportional I/O
- **Accessories** Antennas, belly packs, cables, shoulder straps, and more

Industrial Wireless

- **I/O** Small-to-large-count single and bidirectional modules
- **Expansion I/O** RS485 and Modbus slave I/O modules
- **Gateways** Wireless masters and PLC-specific protocol conversion modules
- **Serial Modem** RS232/485
- **Ethernet** 900MHz/2.4/5.8GHz modems and industrial 802.11 access points
- **Cellular** 3G GSM/HSPA and CDMA/EV-DO multicarrier cellular broadband routers
- **Accessories** Antennas, coaxial cables, power supplies, surge protectors, battery packs, and more



case study



Fortescue Metals Group's Solomon Project involved development of a new mining province in Western Australia. Cooper supplied fire control panels networked with fiber-optics and a full graphical package for the 1500 man portable accommodation, kitchens, and communal areas for fly-in and fly-out workers. Due to Cooper's unique addressable panel capabilities, the client was provided with an engineered solution, saving both installation time and material cost. The control equipment is a combined fire alarm control panel and graphical interface that provides detailed, precise information of any event that occurs on the site. This will allow the emergency response team to take immediate action in the quickest possible manner.

product focus



The new **Cooper Bussmann 915U-2 Wireless Mesh Networking I/O and Gateway** is the industry's first 20-mile range self-seeking, self-healing mesh radio. It is ideal for monitoring multi-kilometer conveyor systems for operation and safety, providing alarm and status data from dragline excavators, level monitoring and pump control at tailing ponds and wastewater facilities, and even safety critical automated collection of mine slope wall data for storage and analysis. The multiple I/O node extends communications to sensors and actuators in local, remote, or difficult-to-reach locations. Designed with a long-range, license-free 900MHz wireless transceiver, it can provide IP-based mesh networking across sprawling mine sites.

THE COOPER ADVANTAGE

Choose Cooper—with more than 175 years of quality and experience—as your one source for global, innovative, and comprehensive mining solutions.

- One of the largest single source electrical, mechanical, and instrument bulk material offering. Standardize and save.
- Global technical EPC support to help ensure project-wide standardization, safety, and maintenance.
- 3D modeled products, lighting design, and CCTV system design for reduced engineering time, and site standardization.
- Global operations to support your on-site project needs, OEM supply, and aftermarket service.
- Efficient, on-time supply chain helps deliver cost reductions while maintaining Cooper quality.
- On-site installation support and training to facilitate safe and consistent installations and start-ups.
- Globally Connected EBS (Enterprise Business System) via SAP helps provide standardization, traceability, accurate business records, and cost reductions.



Thousands of Products. Hundreds of Solutions. **One Cooper.**

Cooper Australia

Manufacturing
 205-209 Woodpark Road
 Smithfield NSW 2164
 Australia
 Tel: +61 (2) 8787 2777
 Fax: +61 (2) 9609 2342

Cooper Technology Centre
 Level 2, Quad 2
 8 Parkview Drive
 Sydney Olympic Park NSW 2127
 Australia
 Tel: +61 (2) 8787 2777
 Fax: +61 (2) 9609 2342
www.cooperindustries.com

Cooper Latin America

R. Placido Vieira, 79
 Santo Amaro, Sao Paulo, Brazil
 Tel: +55 (11) 5641 3451
 Fax: +55 (11) 5641 2127

Cooper B-Line

509 West Monroe Street
 Highland, IL 62249
 Tel: (800) 851-7415
 Fax: (618) 654-1917
www.cooperbline.com

Cooper Bussmann

114 Old State Road
 St. Louis, MO 63021
 Tel: (636) 394-2877
 Fax: (866) 715-0769
www.cooperbussmann.com

Cooper Crouse-Hinds

Wolf & Seventh North Streets
 Syracuse, NY 13221
 Tel: (866) 764-5454
 Fax: (315) 477-5179
www.crouse-hinds.com

Cooper Lighting

Customer First Center
 1121 Highway 74 South
 Peachtree City, GA 30269
 Tel: (770) 486-4800
 Fax: (770) 486-4801
www.cooperlighting.com

Cooper Power Systems

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 Waukesha, WI 53188
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 Fax: (262) 691-9330
www.cooperpower.com

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Jephson Court, Tancred Close
 Royal Leamington Spa
 Warwickshire CV31 3RZ
 United Kingdom
 Tel: +44 1926-439200
 Tel: (800) 631-2148
www.cooper-safety.com

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203 Cooper Circle
 Peachtree City, GA 30269
 Tel: (866) 944-0043
 Fax: (800) 329-3055
www.cooperwiringdevices.com



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Cooper US, Inc.
 600 Travis, Ste. 5600
 Houston, TX 77002-1001
 P: 713-209-8400
www.cooperindustries.com

