Mining Controls

Gilbert Electrical Systems

“Meeting the electrical needs of Mining and Industry”
The Commitment and Capabilities to Meet the Electrical Needs of the Mining Industry... Today and Tomorrow

Overview

Mining Controls (MCI) is a custom job shop situated on a 16 acre site near Beckley, WV. Our 56,000 square foot facility includes 45,000 square feet of manufacturing space and 11,000 square feet for administrative and technical staff.

Our manufacturing and service staff encompasses certified welders, electricians, transformer winders and assemblers, painters, explosion proof lighting and enclosure assemblers, and field service/test personnel. Included in the MCI engineering staff are electrical engineers and mechanical/electrical draftsmen that currently use Autocad 2009.

In-House Capabilities

We have in-house capabilities to engineer, design and build electrical equipment to customer specifications. Other MCI specialized capabilities include:

- Specification development assistance
- Experienced service personnel for on site installation and repairs
- Complete design and fabrication of welded or bolted enclosures
- Powder coat paint system for finishing new enclosures
- Wet painting if required
- Transformer and reactor design and build
- Experienced electrical assemblers for HV and control wiring
- “Quick ship” capability from extensive inventory of MSHA-certified explosion proof (XP) enclosures
- Excellent working relationship with MSHA on certifications and designs if needed

Power Distribution Equipment

MCI offers a full line of electrical products for mining including power substations, power centers, AC switchgear, rectifiers, transformers, longwall controls and ground relays.

Industrial/Utility Equipment

Gilbert Electrical Systems (GES) can analyze your system and develop an optimal solution to your unique electrical power system power factor or harmonics problem.

Transformers & Reactors

MCI manufactures dry-type and oil-filled transformers up to 5,000 kVA.

Lighting & Camera Products

MCI designs and manufactures the most complete line of mine lighting and camera systems for mobile and stationary equipment used in surface or underground mining.

Explosion Proof Enclosures

A wide variety of MSHA certified explosion proof enclosures and controls are available.
Enclosure Fabrication

The enclosure fabrication area houses shearing, bending and punch press capabilities that allow the manufacture of custom design enclosures of virtually any size that can ship via common carrier.

A new turret punch allows punching up to 1/4” metal with complex designs and shapes.

New pulse welders located throughout the manufacturing area provide the capability to weld mild steel, stainless steel and aluminum. A number of certified welders are employed by MCI. All welders have been through extensive training with Ojett, Inc., an outside consulting firm.

Powder Coating

Our powder coating facility, in operation since 2007, is one of the largest in the Eastern United States. It can handle enclosures up to 27’ long, 9’ wide and 10’ high. DuPont paint products are employed as a standard, providing virtually unlimited color finishes.

Powder coated finishes are the MCI standard. They provide a much more durable and longer lasting finish than wet painting. Wet painting is an option should it be required.

Transformers and Reactors

MCI has modern coil winding machines manned by experienced employees. In addition, there are insulation and core steel cutting machines. After the final assembly process, the transformer or reactor is varnish impregnated and oven-cured.

The final step in the process entails baking the product to provide waterproofing and additional thermal stability. Extensive testing of every unit is performed prior to shipment to assure the highest quality and reliability of the final product.

Final Assembly & Testing

Once an enclosure is completed and painted, it moves to the electrical area with its completed transformer or reactor for final assembly. Ten (10) fully equipped bays are available to perform final assembly.

Our trained electricians then mount all the components and wire the high-voltage, low-voltage and control sections of the final product.

Once completed, the final product is moved to the test area where all components are tested and overall functionality tests are performed to ensure proper performance. If PLC programming is involved the programs are loaded and tested at this time.

Explosion Proof Lighting, Cameras and Enclosures

An area of the plant is dedicated to the manufacture of MSHA certified explosion proof lighting, pump enclosures and electrical control enclosures. Camera systems, ground monitors and low-voltage cable connectors are also manufactured in this area.
Electrical Power Distribution Equipment

The MCI product line includes electrical power distribution equipment for all types of underground mining. We take great pride in the diversity of our power distribution products... from the substation distributing incoming power to the mine all the way to the mine face where the actual mineral extraction occurs. MCI is known throughout the industry for its commitment to service, quality and product reliability.

All MCI electrical power distribution equipment is custom built to customer specifications and mine conditions. Our engineering staff can provide technical expertise to small companies that don't have the personnel resources to design what they need. Also, MCI will rebuild a customer’s existing electrical equipment or offer reconditioned equipment as a low cost alternative to new equipment.

The MCI line of electrical power distribution products for mining includes:

- Substations (up to 345 kV)
- Portable substations
- AC switchgear
- Motor controllers
- Belt starters
- Rectifiers
- Speciality Transformers
- Power centers
- Vacuum switch houses
- Longwall controls
Custom Built to Customer Specs and Demanding Mine Conditions

**Specialty Transformers**
MCI manufactures both dry-type and oil-filled specialty transformers up to 5000 kVA. We custom design our transformers to meet specific customer needs.

MCI transformers complement and support our mining and tunneling applications. Typical mining applications call for 5 kV to 23 kV inputs with 995V, 480V or 240V outputs. 120/240V also supplied for convenience.

**AC Switchgear**
Utilizing in-house engineering capabilities, MCI designs and manufactures high-quality low and medium-voltage metal-enclosed custom switchgear.

Our line of custom switchgear includes low and medium voltage vacuum reclosers and interrupters, and also metal-enclosed breaker assemblies.

**Supporting Products**
To more fully support its power distribution product line, MCI manufactures MSHA-certified low and medium voltage cable connectors, ground monitors, ground fault relays and capacitor trip devices.
Overview

Gilbert Electrical Systems (GES) has been a part of MCI for over twenty years. The acquisition of GES in 1989 provided MCI instant access to the industrial and utility markets for capacitor banks and harmonic filtering banks, primary products of GES.

The acquisition in 1994 of K & M Electrical Products expanded the MCI product line to include empty electrical enclosures then referred to in the industry as transclosures.

GES does business with a diverse range of utility and industrial customers. Utilities we serve range from small cooperatives to large investor-owned electric and gas utilities.

Our industrial customers typically are large manufacturers and/or big consumers of electricity interested in lowering their electrical costs through power factor correction.

Metal Enclosed Capacitor Banks

By increasing their power factor, electricity users reduce their utility bills, increase system capacity and reduce voltage drop. These are just a few of the benefits an electrical system derives from power factor correction. Additional benefits when capacitors are added to an electrical circuit include:

- Reduced power losses due to system current reduction
- Reduced kVAR losses due to system current reduction
- Improved voltage regulation when capacitors are properly switched
- Higher voltage at the load
- Additional load growth capacity through reduced kVA loading
- Reduced demand kVA loading
- Reduced system investment per kW of load supplied
Harmonic Filter Banks
GES has been analyzing, engineering, designing and manufacturing harmonic filter assemblies since 1983. The need to provide solutions to power factor and harmonic problems has been long recognized. Utilities and industrials have had to address harmonics and the associated problems they create for many years.

Harmonics create many problems on customer systems:
- Abnormal equipment heating
- Premature transformer failure
- Reduced equipment life
- Excessive capacitor fuse failures
- Capacitor problems
- Communications interference
- Excessive voltage distortion
- Transformer overheating
- Potential relay and metering problems
- General equipment problems or damage

GES has a core competency in this area. Our engineering and study group possesses the technical expertise to analyze a customer’s needs and provide a well engineered package of harmonic filter/capacitor banks from 480V to 35 kV that satisfies their system objectives.

Shunt Reactors
Shunt reactors are used to provide capacitive reactance in long runs of high-voltage cables which are lightly loaded and have a leading power factor resulting from capacitance build up.

Shunt reactors will change the power factor from leading to lagging, approximately in the range of 0.95 to 0.99.

Neutral Grounding Reactors
GES manufactures neutral grounding reactors used for low impedance grounding of high-voltage systems.

Current Limiting Reactors
GES manufactures air core and iron core reactors up to 69 kV that support the GES product line.

GES offers a line of current limiting reactors to reduce available fault current of existing switchgear to a low enough level to allow its use without having to buy new switchgear with a higher fault current rating.

Also available are a line of current limiting reactors commonly referred to as “pancake” reactors.
A Complete Line of Lighting Fixtures, Camera and Monitoring Systems

• Head Lights
  - Explosion proof
    Model 31678 MCI 50XP
    Model 35870 MCI 50
    Model 35880 T 50
  - Non-Explosion proof
    Model 35870 MCI 50
  - Model: LP Single 26 w PLT-4
    Model: LW
    With: PLT-4 fluorescent
    White, Colored, Flashing LEDs

• Area Lights
  - Explosion proof
    Model 35777 LP, LP2 & LW
    Model MCI 20
  - Non-Explosion proof
    Model MCI 20
  - Model: LP Single 26 w PLT-4
    Model: LW
    With: PLT-4 fluorescent
    White, Colored, Flashing LEDs

• Warning Enclosures
  - Explosion proof
    Model LW
    Visible Strobe & LEDs
    Model 31678 MCI 50 XP
    Visible Strobe & LEDs
    Model 33455 LP
    Audible 1-Element, 103 dB
    Model 35455
    Audible 5-Element, 150 dB
    Model 35777 LP2
    Visible/Audible
    Audible 1-Element, 103 dB
    Visible Strobe & LEDs
  - Non-Explosion proof
    Model MCI 20
  - Model: LP Single 26 w PLT-4
    Model: LW
    With: PLT-4 fluorescent
    White, Colored, Flashing LEDs

• Cameras
  - Explosion proof
    Model 34290 MCI 50 XP
    Model 34272 VFA44XP
  - Non-Explosion proof
    Model MCI 20
  - Model: LP Single 26 w PLT-4
    Model: LW
    With: PLT-4 fluorescent
    White, Colored, Flashing LEDs

• Monitors
  - Explosion proof
    Model 34551 Single 7” LCD
    Model 34500 Single 4” LCD
  - Non-Explosion proof
    Model MCI 20
  - Model: LP Single 26 w PLT-4
    Model: LW
    With: PLT-4 fluorescent
    White, Colored, Flashing LEDs

• Camera & Monitor Systems
  - Special applications
    Backup systems, rock trucks
    Shovels and Drag lines
    Plant surveillance
    Production monitoring
    Shuttle car offside
    Wireless remote monitoring
  - Explosion proof Enclosures
    Large
    Models 3090, 34360, 34551, 34900, 35223
    Small
    Models 20630, 33386, 35400
  - Non-Explosion Proof
    Model MCI 20
  - Model: LP Single 26 w PLT-4
    Model: LW
    With: PLT-4 fluorescent
    White, Colored, Flashing LEDs

• Alternator/Generator
  - Model 31090 Alternator
  - Model 31090-RB, -SRB

• Plug Breaker
  - Model 31923 Fig. 67
  - Model 32091 Fig. 64

• Low-Voltage plug & receptacles
  - Fig. 39 Fig. 64
  - Fig. 67 Fig. 84
  - Fig. 125 Fig. 107
  - Model: LP Single 26 w PLT-4
    Model: LW
    With: PLT-4 fluorescent
    White, Colored, Flashing LEDs

Wireless remote monitoring

Mine Lighting Systems

Head Lights
A full line of underground aluminum or brass XP Head Lights with/ without heavy duty grading

MSHA and ATEX Certified
Model: MSHA Certified 31678 Head Light
Model: ATEX Certified 31678-AT Head Light

Available with LED’s

Area Lights
A full line of underground aluminum or brass XP Area Lights with heavy duty grading

MSHA Certified for underground coal mining
Model: LP2 Dual 26 w PLT-4 Fluorescent fixture

UL YCFT2
Industrial Truck Accessories, Battery Powered Component

Model: 35870 MCI 50
Head Light
Surface Mount

Fixtures meet customer needs with/without lamps and pigtails

Non-Explosion Proof
Model: MCI 20
With: PLT-4 fluorescent
White, Colored, Flashing LED’s
For Coal, Hard Rock Mining
Above And Underground Applications

**Warning Enclosures**
A full line of underground steel, aluminum or brass XP Audible and Visible Warning Enclosures with heavy duty grading

**Visible Warning**
Model: LW Area Light with White Flashing, Colored Flashing LED’s
- Red, Green, Amber or Blue
- Non-Flash
- Red, Green & Amber
- Red, Green, Amber with White or Blue Flashing

**Visible Warning in XP Head Lights**

**Audible Warning**
Model 33455 1-Element,
- 103 dB
- 5-30 VAC/DC
- 30-120 VAC
- Aluminum or stainless

Model 35455 S-Element,
- 150 dB
- 5-30 VAC/DC
- 30-120 VAC
- Aluminum or stainless

**Cameras, Monitors**
A full line of Cameras and Monitors for varied underground applications

**Camera & Monitor Systems**
Property Surveillance, Production Monitoring

**Model: MSHA Certified 34290 Camera**

**Model: ATEX Certified 31678-AT1 Camera**

**Model: MSHA Certified 34270 VFA45XP Camera**

**Model: MSHA Certified 34551 Monitor**
- Single 7” Color LCD
- Dual 4” Color LCD

**Model: MSHA Certified New single 4” Color LCD Monitor Series 35400 Coming in 2010**

**Industrial & Non-Explosion Proof**

**Model: 34830 Camera**
- Black & White:
  - 400 Lines 0.1 lux
  - 600 Lines 0.0003 lux
- Color:
  - 310 Lines 10.0 lux
  - 380 Lines 0.5 lux
  - 470 Lines 0.7 lux
- 12 VDC, 120 mA

**Model: 34485 Monitor 7” Color LCD**
- Closed cab use

**Model: 33665 Monitor**
- Single 7” Color LCD
- Dual 4” Color LCD
- Open cab or underground use

**MCI can custom engineer and install complete camera and monitoring systems for many mining and mine related applications**
A Leader In
Explosion Proof Products

Many Enclosures Are Available

For over 32 years MCI has received MSHA certification for more than 85 explosion proof (XP) enclosures. These enclosures are for use in hazardous areas in underground mining.

The enclosures range in sizes from 184 to 130,000 cubic inches. We do cable gland entrances with grommets or rope packing designs for cables ranging from 0.114” to 3.75” O.D.

Typical Applications

Our enclosures are used in a variety of underground mining applications including explosion proof pump starters, continuous miners, shuttle cars, haulage systems, scoops, roof bolters and longwall controls.

Custom Built To Fit Your Application

With so many enclosures available, we will find an enclosure to meet most customers’ needs. Or, let MCI custom build an XP enclosure to your exacting specifications. No one does it better!

We provide not only high quality XP products but also exceptional value and dedicated customer service. Our team is ready to provide solutions for your needs. We can provide you with assistance or manage all aspects of MSHA approvals and certifications.
Contact Information

Mark Walker  
President  
Email: mark.walker@elginindustries.com

Randall Hurst  
Vice President  
Email: randall.hurst@elginindustries.com

Bill Welsh  
Controller  
Email: bill.welsh@elginindustries.com

Joe Voloski  
Purchasing Manager  
Email: joe.voloski@elginindustries.com

Jack Miles  
Sales Engineer - Mining  
Email: jack.miles@elginindustries.com

Steve Torrico  
Outside Sales - Mining  
Email: steve.torrico@elginindustries.com

Larry Rowley  
Lighting & Camera  
Products Manager  
Email: larry.rowley@elginindustries.com

Bill Acord  
Sales Manager - Gilbert Electrical  
Email: bill.acord@elginindustries.com

Daniel Bowling  
Sales Engineer  
Email: daniel.bowling@elginindustries.com

Mark Akers  
XP Enclosures Manager  
Email: mark.akers@elginindustries.com

Jim Goble  
Manager of Engineering - Mining  
Email: jim.goble@elginindustries.com

Dave Smith  
Manager of Engineering - Gilbert Electrical  
Email: dave.smith@elginindustries.com

Mark Zutaut  
Transformer & Reactor Engineer  
Email: mark.zutaut@elginindustries.com

Eric Beggs  
Substation Sales Engineer  
Email: eric.beggs@elginindustries.com

Steve Cross  
Service Manager  
Email: steve.cross@elginindustries.com

Dan Shifflett  
Inside Sales  
Email: dan.shifflett@elginindustries.com

Ray Via  
Inside Sales  
Email: ray.via@elginindustries.com
Products and Services

Power Distribution Equipment
- Power Substations
  Stationary, portable, mobile
- Power Centers
  AC, DC, combination
- AC Switchgear
  Surface
  Underground
- Motor Controllers
  Conventional
  PLC/Computer
- Rectifiers
  Haulage or production
- Transformers
  Dry type
  Liquid filled
- Reactors
  Dry type
  Liquid cooled
- Longwall controls
  Open type
  MSHA XP Type
- Components
  Personnel safety
  LV cable connectors
  Replacement parts

HV and LV Electrical Equipment
- HV Capacitor Banks
- Metal Enclosed Automatic Voltage Regulators
- Metering cabinets, metal enclosed
- Junction enclosures, LV and MV, up to 6000 A
- Specialty Enclosures for HV, MV Applications
- Capacitor Controls
- Engineering Services

Transformers and Reactors
- Transformers
  Dry-type and oil filled transformers up to 5000 kVA
- HV, MV, LV Reactors
  Shunt reactors, oil filled, single phase or three phase pad mount, dead front, up to 34.5 kV
  Current limiting air core reactors, 0.48 kV to 69 kV

Mine Lighting Systems
- Head lights
  Explosion proof
  Non-explosion proof
- Area lights
  Explosion proof
  Non-explosion proof
- Cameras
  Explosion proof
  Non-explosion proof
- LCD Monitors
  Explosion proof
  Non-explosion proof
- Special applications
- Camera & Monitor Systems
- Alternator/generator explosion proof
- Explosion proof enclosures
  Large, small
  Audible signal
- LV plugs and receptacle

MSHA Certified Explosion Proof Enclosures

Mining Controls LLC
214 Industrial Park Road
Beaver, WV 25813
Phone: 304-252-6243
Email: mci@elginindustries.com
ges@elginindustries.com

www.elginindustries.com