Products & Services
The Commitment and Capabilities to Meet the Electrical Needs of the Mining Industry... Today and Tomorrow

Overview
Elgin Power Solutions is a custom manufacturing facility situated on a 16 acre site near Beckley, WV. Our 86,000 square foot facility includes 75,000 square feet of manufacturing space and 11,000 square feet for our administrative and engineering 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 Elgin Power Solutions’ engineering staff are electrical engineers and mechanical/electrical draftsmen that use the most current Autodesk software, including 3d modeling.

Products & Services

Power Distribution Equipment
Elgin Power Solutions/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
Elgin Power Solutions/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
Elgin Power Solutions/MCI manufactures dry-type and oil-filled transformers up to 5,000 kVA

Lighting & Camera Products
Elgin Power Solutions/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.

In-House Capabilities
We have in-house capabilities to engineer, design and build electrical equipment to customer specifications. Other 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
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.

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

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 Elgin Power Solutions. 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 40’ long, 9’ wide and 11’ high. DuPont paint products are employed as a standard, providing virtually unlimited color finishes.

Powder coated finishes are the Elgin Power Solutions 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
ELGIN Power Solutions has 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 control system programming is involved the programs are loaded and tested at this time.

Explosion Proof Lighting, Cameras & 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.
Since the mid 1990’s, Elgin Power Solutions has been providing substations for various industries across North America including customers in utilities, cooperatives, renewable energies, oil & gas, and mining. Our product lines include traditional stick-built substations, mobile equipment, skid mounted equipment, and custom relay panels. Elgin Power Solutions has a dedicated staff devoted strictly to substation projects. The following sections detail our various product lines.

**Traditional Stick-Built Substations**
Elgin Power Solutions offers complete Engineering, Procurement, and Construction (EPC) packages. These turn-key packages are custom designed to meet your substation needs. Elgin’s capabilities include:

- Experience up to 230kV with design capabilities up to 345kV
- Experience at >100MVA
- Multiple industries: Oil & Gas, Renewables, Mining
- Experienced design staff
- Custom switchgear, capacitor banks, and relaying cabinets
- Substation testing and commissioning

**Skid Mounted**
Certain applications require power equipment to be placed in confined spaces or may need to be moved throughout the property during the customer’s process. Skid mounted equipment is ideal for this because the equipment can be moved with a small crane or bull dozer. This style of equipment is popular in the oil & gas and mining environments. Skid mounted electrical equipment is designed and manufactured by Elgin Power Solutions up to 69kV and 10MVA.

**Mobile**
Complete mobile substations
Mobile transformers
Mobile circuit breakers (SF6 and Vacuum)
Mobile circuit switchers
Mobile capacitor banks
Mobile switchgear
Mobile cable reels

**Relaying Enclosures**
- SEL relaying
- SEL RTAC
- GE Multilin relaying
- Allen Bradley PLC’s
- Modicon PLC’s

The product line includes:
- Complete substation with metal-enclosed switchgear secondary
- Skid mounted switchgear
- Skid mounted transformers
- Skid mounted capacitor banks
Mobile Equipment
Elgin Power Solutions offers mobile equipment for your emergency needs as well as projects that may move from one location to another. Customers include utilities, cooperatives, and the mining industry. With experience up to 230kV and 40MVA, Elgin has the experience and capability to meet your mobile requirements.

Our product lines include:

- Complete mobile substations
- Mobile transformers
- Mobile circuit breakers (SF6 and Vacuum)
- Mobile circuit switchers
- Mobile capacitor banks
- Mobile switchgear
- Mobile cable reels

Relaying Enclosures
Elgin Power Solutions provides customers with custom relaying and control enclosures for their substations and medium voltage equipment. Capabilities include standard 19” rack mounted gear or custom panel mounted enclosures. Our experienced engineers and electricians will design and build a control system that meets your protection and communications needs. Elgin Power Solutions also offers relay and control systems programming.

Elgin’s experience includes:

- SEL relaying
- SEL RTAC
- GE Multilin relaying
- Allen Bradley PLC’s
- Modicon PLC’s
Electrical Power Distribution Equipment
The Elgin Power Solutions/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. EPS/MCI is known throughout the industry for its commitment to service, quality and product reliability.

The Elgin Power Solutions/MCI line of electrical power distribution products for mining includes:

- AC switchgear
- Specialty Transformers
- Motor controllers
- Power centers
- Belt starters
- Vacuum switch houses
- Rectifiers
- Longwall controls
- VFD Drives
- Junction Boxes

All Elgin Power Solutions/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, we will rebuild a customer’s existing electrical equipment or offer reconditioned equipment as a low cost alternative to new equipment.
Custom Built to Customer Specs and Demanding Mine Conditions

Mine Duty Transformers
Elgin Power Solutions/MCI manufactures both dry-type and oil-filled specialty transformers up to 5000 kVA. We custom design our transformers to meet specific customer needs.

Elgin Power Solutions/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, Elgin Power Solutions/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, Elgin Power Solutions/MCI manufactures MSHA-certified low and medium voltage cable connectors, ground monitors, ground fault relays and capacitor trip devices.
Elgin Power Solutions / GES (Gilbert Electrical Systems) Industrial and Utility Products

Overview
Gilbert Electrical Systems (GES) was acquired in 1989 provided Elgin Power Solutions/MCI instant access to the industrial and utility markets for capacitor banks and harmonic filtering banks, primary products of GES.

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

Specialty Transformers
Today’s modern power grids are relying more heavily on Renewable Energy sources to meet their energy demands. Inverters are typically used to convert DC renewable power to AC utility power in most renewable power sources. Consequently a means to derive a neutral for a three phase four wire system is normally required by utilities. Gilbert Electrical Systems manufactures Grounding (Wye primary) and Zig-Zag transformers to fit the needs of today’s renewable energy customer. With voltage ranges of 240V to 34.5kV each transformer is custom built to specifications based on the individual system requirement. Our sales and engineering department will be happy to work with you to custom design a solution to fit your grounding needs.
Harmonic Filter Banks

Elgin Power Solutions/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

Elgin Power Solutions/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

Elgin Power Solutions/GES manufactures neutral grounding reactors used for low impedance grounding of high-voltage systems.

Current Limiting Reactors

Elgin Power Solutions/GES manufactures air core and iron core reactors up to 69 kV that support the Elgin Power Solutions/GES product line.

Elgin Power Solutions/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.
In House Testing/Services
Doble Power Factor Test
Doble Sweep Frequency Analyzer
Megger Digital Low Resistance Ohmmeter
Hi-Potential Insulation Testers
Transformer Turns Ratio (TTR)
High Current Injection Test Set
Current Transformer Tester
3Ø Relay Test Set
Various Voltage/Current Testing Instruments

Field Testing/Services
Doble Power Factor Test
Doble Sweep Frequency Analyzer
Megger Digital Low Resistance Ohmmeter
Hi-Potential Insulation Testers
Transformer Turns Ratio (TTR)
High Current Injection Test Set
Current Transformer Tester
3Ø Relay Test Set
Various Voltage/Current Testing Instruments

Testing & Commissioning Services

In House Testing & Services
Elgin Power Solutions offers a variety of equipment testing both in house and in the field. EPS uses the latest technology and equipment. The following is a list of in-house equipment and tests that we use for switchgear, capacitor banks, reactors, and transformers that we manufacture:

- Doble Power Factor Test
- Doble Sweep Frequency Analyzer
- Megger Digital Low Resistance Ohmmeter
- Hi-Potential Insulation Testers
- Transformer Turns Ratio (TTR)
- High Current Injection Test Set
- Current Transformer Tester
- 3Ø Relay Test Set
- Various Voltage/Current Testing Instruments

Field Testing & Service
Elgin Power Solutions also offers field services and testing of electrical equipment. The following is a list of equipment and tests available for your new or existing equipment:

- Doble Power Factor Test
- Doble Sweep Frequency Analyzer
- Megger Digital Low Resistance Ohmmeter
- Hi-Potential Insulation Testers
- Transformer Turns Ratio (TTR)
- High Current Injection Test Set
- Current Transformer Tester
- 3Ø Relay Test Set
- Various Voltage/Current Testing Instruments
A Leader In Explosion Proof Products

Many Enclosures Are Available
For over 32 years Elgin Power Solutions/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 122 to 130,000 cubic inches. Cable gland entrances with grommets or rope packing designs for cables are available ranging from 0.114” to 3.75” O.D.

Custom Built To Fit Your Application
With so many enclosures available, we will find an enclosure to meet most customers’ needs. Or, let Elgin Power Solutions/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.

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.
When money is tight and funds are not available to purchase new equipment, Elgin Power Solutions/ MCI can rebuild your older existing electrical mining equipment. Elgin Power Solutions also has a used equipment inventory that can be modified to meet your requirements.

Rebuild Process
- Unit can be picked up at your site or delivered to us by your choice of freight carrier.
- Unit shall be fully inspected & tested prior to any disassembly.
- Existing components shall be repaired, cleaned, modified & tested.
- Enclosures are fully cleaned inside & outside, repaired as needed, modified for additional equipment to be placed into and painted (if required)
- New enclosures can be fabricated if damage of existing equipment is beyond repair.
- Unit shall be assembled to fully meet the customer's expectations.
- Unit shall be thoroughly tested before shipment back to your location.

Surface Equipment
- Portable Skid Mounted Substations
- Switch Houses
- Junction Boxes and Enclosures
- Variable Frequency Drives
- Harmonic Filtering Equipment
- Capacitor Banks
- Camera Systems and Lighting for Haulage Equipment
Surface Equipment

Elgin Power Solutions/MCI offers a complete line of electrical equipment to meet the needs of above ground and open pit mining applications. Whether it be power distribution equipment for your equipment needs or power factor correction equipment to manage your power we are poised to meet all of your electrical requirement needs. Our dedicated sales and engineering staff are eager to evaluate and meet your engineering design and equipment needs to provide a smooth running system for our customers.

The Elgin Power Solutions/MCI line of surface equipment includes:

• Portable Skid Mounted Substations
• Switch Houses
• Junction Boxes and Enclosures
• Variable Frequency Drives
• Harmonic Filtering Equipment
• Capacitor Banks
• Camera Systems and Lighting for Haulage Equipment

Let us work with your staff to meet all of your electrical needs with a sturdy engineered product built to last.
Elgin Lighting Products

The most complete camera and lighting systems for underground mining. Elgin products are the most durable of its kind designed specifically for the harsh environments found in underground mining worldwide.

**Headlights**

Model MCI 50 XP and MCI 50 EX headlight assemblies certified for both MSHA and ATEx/IECEEx applications. Both units are constructed from a cast aluminum or bronze material. Both units are rated at 10.8 W of LED power 12 to 24 VAC/DC both are rated at IP66/68.

Model 36340, 36760 and 36761 headlight assemblies certified both MSHA, ATEx/IECEEx and UL Class 1 Division 1 applications. The units are constructed from a cast aluminum or bronze material. The units are rated at 41.4 W of LED power 12 to 24 VAC/DC and are rated at IP66/68.

Model MCI 50, T 50 and R 50 headlight assemblies are rated for general industrial and mining applications all three units are constructed from a heavy diecast aluminum, with tempered 8 mm thick glass lenses all units rated IP66 all three units rated at 10.8 W of LED power 10 to 50 V DC.

Model T 200 headlight assembly is rated for general industrial and mining applications constructed from heavy diecast aluminum with tempered 8 mm thick glass lens this unit is rated IP66. 41.4 W of LED power 12 to 24 VAC/DC and 120 VAC.

**Camera and Monitor Assemblies**

All of the above certified headlight assemblies are available as complete camera assemblies. These camera assemblies can be supplied with black and white, standard color and high definition 1080 P cameras. Also infrared systems can be supplied along with the camera assemblies all with MSHA and ATEx/IECEEx certifications. Monitors are also available in 4” or 7” with power ratings 12 or 24 V DC 800mA.
Area light Assemblies
Model 35777 LP and LP2 MSHA certified area lights are constructed from heavy cast aluminum and bronze housings with heavy 20 mm guard assemblies and 13 mm thick mounting base. The LP is rated at 14.6 W LED 120 V AC and the LP 2 is rated at 29.2 W LED 120 V AC the assembly is equipped with heavy duty polycarbonate lenses available in clear, amber or white frosted. Both units are available with LED signaling and flashing strobes.

Industrial/Mining Area Light Assemblies
Model 37040 is a small compact area light made from heavy diecast aluminum and tempered glass globe, the unit is rated at 14.6 W of LED power 120/240 V AC. Available with clear, amber, green, red or blue globes. (Soon to be certified as UL Class I Division 2)

Model 37050 is a compact area light made from heavy diecast aluminum and large tempered glass globe the unit is rated at 25 Watts of LED power 120/277 and 277/480 volts AC this unit will work in applications replacing 175 watt HID light fixtures. The LED lamp used in this enclosure is also available to upgrade existing HID fixtures. (Soon to be certified as UL Class I Division 2)

Model 36830 tunnel light assembly this is a small compact high output LED linear light fixture rated at 40 W 120 V AC with a 10 foot cable and driver assembly. The unit is completely watertight IP68 and will work in all applications were space is at a premium.

Summary
Elgin lighting products are designed to meet all your underground mining and industrial applications please contact a certified dealer or Elgin power solutions directly for any questions regarding applications and system designs.
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 XPType
- 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 LV, 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
  Grounding Transformers
  Neutral Grounding Reactors

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