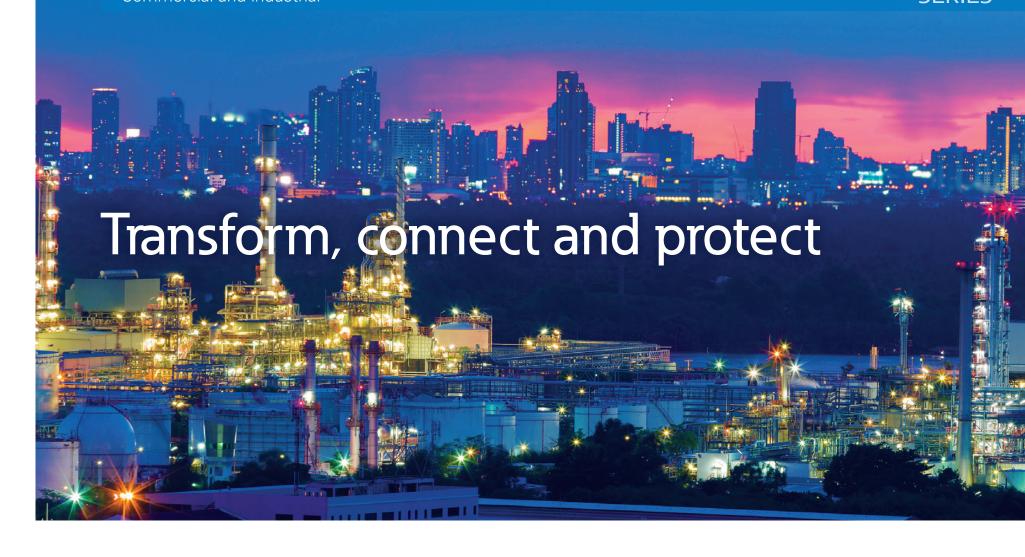
Medium-voltage electrical distribution products
Commercial and industrial

COOPER POWER SERIES







Commercial Education Mining Oil and Gas Industrial Utility Healthcare Solar Government Military Water/Wastewater Renewables Wind Data centers Construction

Products and solutions for diverse markets

Eaton provides one of the broadest medium-voltage offerings in the industry with its line of Cooper Power series products. Through ongoing innovation, we continue to develop new and creative solutions for increasingly complex application requirements. Whether your application involves a single piece of equipment or the integration of multiple pieces of equipment, controls and communication devices, Eaton can meet the challenge of your power distribution needs.

Market experience to enhance project success:

- · Utility systems integration
- · Retrofitting equipment
- Start-up and commissioning
- Troubleshooting and diagnostics
- Unique solutions for specific markets

Solutions to improve:

- Reliability
- Efficiency
- System performance
- Safety
- Sustainability

Unmatched expertise:

- Comprehensive medium-voltage system knowledge
- Engineered-to-order products
- Technical support
- · Application expertise
- After-market service

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Liquid-filled transformers

Gain improved safety, reliability and efficiency with liquid-filled transformers



Substation transformers

Eaton Cooper Power series substation transformers for commercial and industrial applications convert distribution voltages to utilization voltages and can be designed and configured to meet almost any application requirements.

The transformers are available in primary or secondary open substation with cover-mounted bushings fed from overhead lines; or primary or secondary unit substation with enclosed sidewall-mounted bushings for easy connections to primary or secondary switchgear.

Substation transformers can be used in outdoor or indoor (when filled with Envirotemp FR3 fluid) settings with optional full fluid containment pan.

They are available in 500-10,000 kVA with temperature rise of 65°C, 55/65°C, 55/75°C or 65/75°C to meet a wide range of applications.



Envirotran Indoor Power Center

Eaton Cooper Power series Indoor Power CenterTM (IPC) transformers, with full fluid containment pan included, run quieter and cooler, offer improved safety, reliability and efficiency, and have a lower cost than dry-type transformers.

IPC transformers are designed and approved for indoor or roof-mounted applications and are suitable for most commercial and industrial environments.

Flexibility in design, combined with the highest quality manufacturing processes, equipment, and testing procedures, enable Eaton to provide an IPC optimized to specific, individualized requirements. Filled with EnvirotempTM FR3TM fluid, the IPC can be used almost anywhere dry-type transformers have been specified.



Smart transformers

The Eaton Cooper Power series smart transformer combines advanced primary and secondary overcurrent protection, utilizing an under-oil integral vacuum fault interrupter (VFI) with a control/protection relay, with metering, SCADA functionality, and highly flexible and powerful automation capabilities in a single integrated package—reducing downtime and boosting overall reliability.

The relay offers the flexibility and adaptability required for today's world of ever-changing requirements and can economically reduce arc-flash incident levels.

Users can configure custom communication protocols, metering, measurements, sequence of event records and control and protection logic.



VFI transformers

The Eaton Cooper Power series Vacuum Fault Interrupter (VFI) transformer, available in single-phase pad-mounted, three-phase pad-mounted and substation configurations combines a conventional distribution transformer with proven Cooper Power series VFI.

This combination provides both voltage transformation and transformer overcurrent protection in one space-saving and moneysaving package.

The substation VFI transformer not only protects the transformer, but also provides proper coordination with upstream protective devices. When a transformer fault or overload condition occurs, the VFI breaker trips and isolates the transformer.

The resettable VFI allows immediate service restoration, eliminating the added expense and downtime associated with stocking and replacing fuses. Additional safety options include visible break and grounding.



Pad-mounted transformers

Eaton Cooper Power series three-phase pad-mounted transformers are compact power centers for commercial or industrial applications. With proper design selection, they can be located near or inside buildings for greater flexibility and savings.

All Eaton Cooper Power series transformers are newly manufactured and produced expressly to meet exacting customer specifications and are designed to meet or exceed all applicable ANSI, NEMA, IEEE standards, and NEC® and CEA specifications.

Many configurations and accessories are available to meet a wide range of application demands.



Single-phase transformers

Eaton offers a complete line of Cooper Power series single-phase overhead and pad-mounted distribution transformers, ranging from 5-167kVA. Single-phase transformers are available in a variety of ratings as both conventional and protected.

All transformers meet or exceed the requirements of applicable IEEE and NEMA standards. Completely self-protected transformers have direct-connected primary arresters and either MagneXTM interrupters or secondary circuit breakers paired with internal primary voltage fuses.

These overcurrent devices eliminate the need for separately mounted overcurrent protection and reduce installation costs and the need to stock replacement fuses.

Easy specification with Envirotemp FR3 fluidfilled transformers

Eaton makes it easier to select and specify the right transformers for indoor and outdoor applications.

Transformers filled with high performance Envirotemp[™] FR3[™] fluid increase reliability, improve fire safety, extend insulation life and increase overload capacity.

Eaton Cooper Power series FM-approved, code-listed transformers are the industry's first "Listed and Labeled" liquid-filled transformers. They provide state-of-the-art fire protection while making it easy to conform and verify compliance with the National Electrical Code (NEC).

Transformers filled with Envirotemp FR3 fluid provide maximum application flexibility for both power and distribution transformers. These special properties provide unique specification opportunities.

Voltage regulators and controls

Building a strong infrastructure begins with advanced apparatus and integrated communications



Step voltage regulators

Eaton Cooper Power series 32-step voltage regulators accurately regulate voltage in 5/8% steps from 10% raise to 10% lower on distribution circuits rated 2400V (60 kV BIL) through 34,500V (200 kV BIL) for either 50 Hz or 60 Hz systems.

When used with the innovative CL-7 multiphase regulator control and complementary tap-changer technology, Eaton's Cooper Power series voltage regulators offer the first of its kind multi-phase voltage regulation. One, two or three regulators can be operated with the use of a single control.



Single-phase pad-mounted regulators

Eaton Cooper Power series pad-mounted single-phase voltage regulators provide improved safety, reliability and power quality in existing and new underground systems while reducing installation costs, requiring less land and having a smaller and less obtrusive physical profile.

Pad-mounted voltage regulators also provide all the functionality of traditional round-tank pole-mounted and substation voltage regulators, with the convenience of pad-mounting. The regulators are outdoor, oil-immersed, step-type voltage regulators that provide 10% regulation in 32 steps of approximately 5/8% each.



Multi-phase pad-mounted regulators

Eaton Cooper Power series multi-phase pad-mounted regulators provide all the benefits of single-phase regulation, but in a three-phase package, and exceeds the capabilities of the gang-operated voltage regulation used by on-load tap changers.

The multi-phase units contain two or three single-phase voltage regulators in a single tank. They can be configured for wye or delta system applications. These designs paired with the CL-7 multi-phase control offer unprecedented command of three-phase applications to ensure a highly balanced three-phase load. With three-wire uni-grounded (delta) systems, this device can actually improve the balance between the legs of the connection.



CL-7 regulator controls

Eaton Cooper Power series single- and multi-phase CL-7 regulator controls quickly integrate into almost any application. This easy-to-use intelligent control is built to easily adapt to emerging changes in technology and power systems.

Available as a single- or multi-phase device, this highly flexible control is designed with a full suite of deployment options to enhance power quality. They can be utilized in a number of operational strategies using site metrics, which include voltage and current. CL-7 voltage regulator controls are uniquely qualified to take on the voltage regulation requirements of both commercial and industrial applications.



Variable voltage transformers

Eaton Cooper Power series variable voltage transformers (VVT) offer output voltage versatility for any application. Although this solution was originally developed for oil recovery using long heater cables, it can also be applied to many other processes such as skin effect heat tracing, molten sulfur pipelines and process heaters.

By utilizing a hybrid design of voltage regulator and transformer with the patented Quik-Drive tap changer, the VVT has the capability to take standard utility input voltages and vary the secondary voltage output (varied through full range in 33 steps in under 10 seconds) to control the amount of power injection.

Voltage Regulator Support Group

Immediate solutions for customer application questions are available from our experts on the Regulator Support Team. Our expert team is dedicated to providing answers to your technical questions.

P: 866.975.7347

P: 262.896.2591 (International)

E: RES-VRSupport@Eaton.com

Contact hours:

Standard hours 8:00 am to 5:00 pm Central Standard Time.

Power capacitors and controls

Improve power factor, power flow capability, voltage support—and reduce losses



Capacitor banks

Eaton Cooper Power series capacitors improve efficiency in the power system by reducing losses from point of application to the generator, saving money and decreasing CO2 emissions. When applied as harmonic filters, capacitors also improve power quality by supporting voltage and mitigating harmonic issues.

Eaton Cooper Power series capacitors can be applied to subsystems for shunt, series, harmonic filtering, Static Var Compensator (SVC) and high-voltage, direct current (HVDC) applications.



Edison capacitor switches

The Eaton Cooper Power series singlephase Edison capacitor switch increases overall system reliability and reduces lineman time in the field. The robust operational and bushing designs, and unique terminal ring provide dependability and ease of use. The switch's consistent operating speed makes it ideal for zero voltage closing (ZVC) applications, reducing the transients generated during capacitor energization.

ZVC controlled switches can eliminate the need for current limiting reactors and pre-insertion resistors/inductors, ensuring that critical loads are minimally affected by energization transients.

The Edison family includes 15 kV and 25 kV class switches that are available for system applications up to 38 kV.

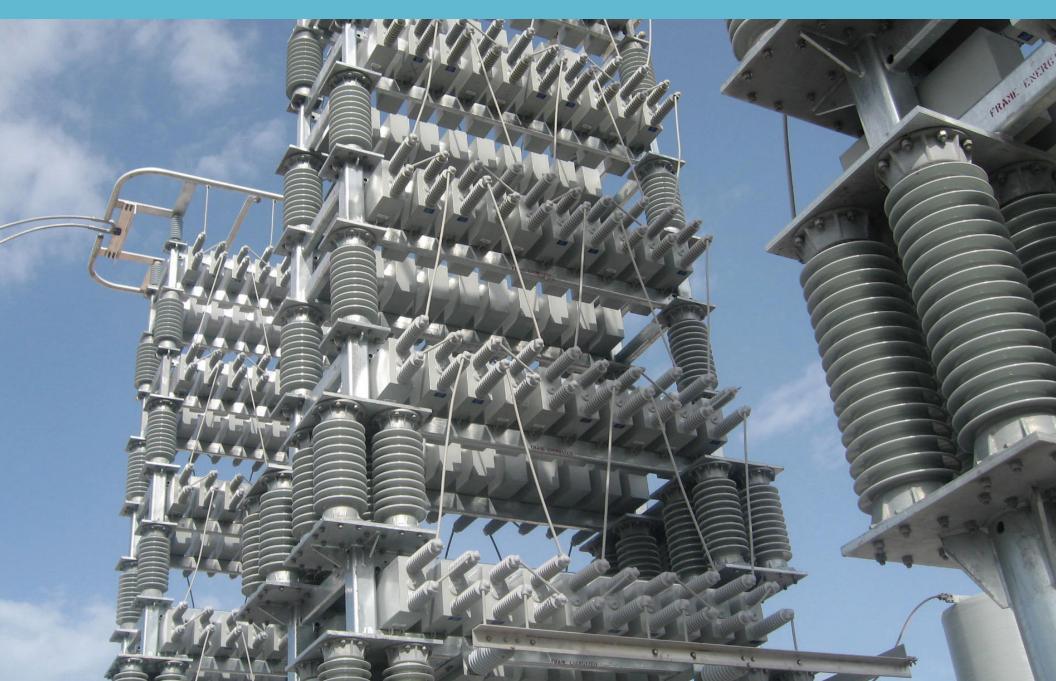


CBC-8000 capacitor bank controls

The Eaton Cooper Power series CBC-8000 capacitor bank control and two way communications maximize distribution system energy efficiency and power quality. This state-of-the-art integrated volt/VAR intelligent control is built to easily adapt to emerging power system changes.

Available as a single, stand-alone field device or an entire automation solution, the CBC-8000 capacitor bank control easily integrates with radios and radio networks.

The control is designed with a full suite of deployment options and strategies using site metrics, including voltage, VARs, current, temperature and time control configurations to enhance efficiency and power quality.



Underground distribution switchgear

Underground distribution switchgear helps to provide maximum continuity of electric service to customers



VFI switchgear

Eaton Cooper Power series vacuum fault interrupter (VFI) underground distribution switchgear provides an environmentally preferred, safer, and more reliable approach to medium-voltage switching and protection.

The switchgear provides superior overcurrent protection through the use of proven, reliable Cooper Power series vacuum interrupters. The resettable VFI allows immediate service restoration, eliminating the added expense and downtime associated with stocking and replacing fuses. Additional safety options include visible break and grounding, and external operating handles.



Smart VFI switchgear

Smart vacuum fault interrupter (VFI) switchgear combines advanced tap and loop protection with integrated sensing and control power, metering, SCADA functionality, and highly flexible and powerful automation capabilities in a single integrated package—reducing downtime and boosting overall reliability.

The Idea[™] relay offers both the physical and technical longevity required for today's world of ever-changing requirements. With the tools provided in the Idea Workbench[™] tool, a user can monitor and control practically every aspect of the relay's operation.

Users can configure communication protocols and create custom metering and measurement quantities, custom sequence of event records and custom control and protection logic using more than 400 programming signals and tools—all selectable from drag-off toolboxes.



PST switchgear

Eaton Cooper Power series pad-mounted source transfer (PST) switchgear with iST control is a compact, outdoor, self-contained system ideal for critical medium-voltage loads, including healthcare facilities and data centers, that require highly dependable power for continuous, optimum operation.

The PST switchgear with iST control provides automatic transfer between preferred and alternate sources in as little as 6 cycles, as well as fault protection for critical loads.

This reduces outages during the time it would otherwise take to return to normal power. The iST controls have a comprehensive suite of source transfer and restoration configurations, overcurrent protection, metering, and SCADA capabilities.



MOST switchgear

Eaton Cooper Power series MOST pad-mounted switchgear offers economical underground protection and switching for 15, 25 and 35 kV underground systems.

MOST switchgear is perfect for commercial and industrial requirements including operation in areas subject to excessive moisture, occasional flooding and blowing snow. The dead-front, oil-insulated, sealed design has a low-profile appearance and provides a wide selection of fuses, making it easily adaptable to most distribution systems.

Four switch designs are available, providing quicker and more reliable operation by combining multiple functions in one switch.



RVAC switchgear

Eaton Cooper Power series RVAC pad-mounted vacuum switchgear is designed for applications such as industrial parks and shopping malls where frequent 600 amp main-line switching and fuse protection are required.

It incorporates vacuum switching, which has an excellent field performance record, and a mechanism designed specifically for repetitive switching duty. A wide range of current-limiting fusing options provides simple, easy coordination with system requirements.

The switchgear features deadfront construction for optimum safety and is available in single- or three-phase units.



VisoVac fault interrupter

The Eaton VisoVac fault interrupter uses advanced, proven vacuum technology that provides the highest interrupting ratings in the industry. The device includes visible isolation and grounding for an all-in-one compact design—to handle the demands of pad-mounted, underground and subsurface environments.

The VisoVac fault interrupter is perfect for applications requiring robust interruption, visible isolation and grounding positions, protection and control, such as remote operation and autotransfer schemes that can be customized to address unique customer requirements.

Switchgear Support Group

Immediate solutions for customer application questions are available from our experts In the Switchgear Support Group (SSG). The SSG is dedicated to providing answers to your technical questions.

P: 800.497.5953

P: 1.414.768.8203 or 1.414.768.8208 or 1.414.768.8205

E: PSSM-SSG@Eaton.com

SSG contact hours:

Standard hours
7:00 am to 4:00 pm
Central Standard Time.

Emergency support is also available 24 hours, 7 days a week.

Reclosers and controls

Eaton holds an industryleading position in overhead distribution equipment, supported by a long history of innovation



NOVA reclosers

Eaton Cooper Power series NOVATM reclosers, designed for three-phase electrical distribution systems through 34.5 kV, are vacuum interrupting devices designed and ANSI tested as a complete system.

NOVA reclosers ensure reliable lifetime performance by combining technologies developed by Eaton including cycloaliphatic-epoxy encapsulation, high-performance vacuum interrupter, dependable lower power mechanism and microprocessor, and Eaton Cooper Power series automated control. Different configuration options are available to suit almost any application.



Form 6 controls

The Eaton Cooper Power series industry-leading Form 6 recloser control offers rapid user customization, full protection and metering. Each Form 6 control features a powerful, yet flexible, platform design to provide maximum protective functionality, standardized hardware design, and simple interactive graphical interfaces.

Eaton Cooper Power series ProView™ interface software, TCC Editor™ II tool, Idea Workbench™ tool and Oscillography Replay are innovative tools that make it easy to standardize on one protection system.



Switching and line construction

Increased reliability with rugged, long-lasting equipment



Switches

Eaton Cooper Power series switches are easy and inexpensive to install and provide reliable, trouble-free, all-weather operation. Rugged construction combined with unique features ensure year-round service in all extremes of weather. Eaton offers a complete selection of single-phase Kearney disconnect and bypass switches, available in 7.2 through 34.5 kV in 400A, 600A and 900A.

Eaton Cooper Power series three-phase M-Force switches have the only reverse loop contacts found on distribution class sidebreak switches. The reverse loop contacts utilize high current magnetic forces for added reliability and are usually reserved for higher-priced transmission switches.



Line construction materials

Eaton has a wide variety of tools and maintenance equipment including:

- Eaton Cooper Power series Kearney compression tools, cutters and accessories including hand- and poweroperated mechanical and hydraulic tools
- Kearney taps, terminals, splices, insulated handheld sticks, Fit-on tools and accessories, and support and care products
- Eaton Cooper Power series grounding and jumpering load pickup, grounding clamps, jumper set assemblies
- Eaton Cooper Power series Fit-on tools, fuse pullers, support and tension products, cover-up equipment, cutters and accessories
- Eaton Cooper Power series pole-line hardware designed to meet all applicable standards



Faulted circuit indicators

Eaton offers a wide variety of faulted circuit indicators (FCI) ranging from basic circuitry models in the delayed reset style to the more sophisticated circuitry of the test point reset and electrostatic reset types.

The Eaton Cooper Power series S.T.A.R.™ FCI product line offers six basic types of FCIs and each unit is tailored to be the most reliable for the intended application. Each type varies by reset method and the type of system to which it connects. The S.T.A.R. FCI line also includes several faulted circuit indicators with PATHFINDER™ variable trip technology for one-size-fits-all applications.

Cable accessories

Maximum flexibility and functionality for underground distribution systems



200 Amp connectors

Eaton Cooper Power series 200 A loadbreak and deadbreak connectors and accessories connect underground cable to transformers, sectionalizing cabinets and junctions.

Designed for submersible, fully-shielded and insulated plug-in terminations, these connectors are molded using high-quality, peroxide-cured EPDM insulation for reliable field performance.

All Cooper Power series 200 A loadbreak connectors meet the electrical, mechanical, and dimensional requirements of IEEE Std 386TM-2006 standard and are fully interchangeable with other connectors currently complying with IEEE Std 386TM-2006 standard.



600/900 Amp deadbreak connectors

Eaton Cooper Power series 600/900 A connector systems for deadfront underground installations in 600/900 A main and lateral feeders provide a completely shielded, deadfront, fully submersible cable connection for high-voltage apparatus—such as transformers, switchgear and large motors.

The connectors can also be used to make splices, junctions, taps and deadends for main underground, distribution feeders. All Cooper Power series deadbreak connectors meet the electrical, mechanical and dimensional requirements of IEEE Std 386TM-2006 standard.



600 Amp Cleer loadbreak connectors

The Eaton Cooper Power series Cleer™ loadbreak connector system reduces outages by providing reliable switching under load—as reliable as traditional 200 A loadbreak connectors—while allowing other circuits to remain energized, limiting the amount of downtime and inconvenienced customers. It is the only 600 A three-phase rated loadbreak connector system in the industry.

Available in 15 kV, 25 kV and 28 kV ratings, this unique solution offers both a visible break and visible ground without having to de-energize, unbolt 600 A terminations, or move heavy cables. This system offers an efficient and reliable visible break when used for sectionalizing, splicing or in-line with vacuum switchgear.



SecTER cabinets

Eaton Cooper Power series versatile single- and three-phase SecTERTM sectionalizing terminals are designed as cable sectionalizing centers, or as permanent or temporary transformer pad covers.

They can accommodate both traditional and Eaton Cleer connectors. The cabinet features a low-profile design that provides unobtrusive installations for sectionalizing, tapping or terminating underground cable.

It also features a top-hinged diagonally cut cover and cabinet for easy single-operator opening. Multiple configurations are available.

Protective equipment

Protect equipment, people and the planet



Distribution-class arresters

The Eaton Cooper Power series UltraSIL™ polymer-housed Evolution™ distribution class surge arrester, engineered to survive the elements and protect system assets, provides proven reliability and field-tested construction.

The Evolution surge arrester eliminates the need for specialty ratings and multiple arrester types for various applications. Whether the goal is enhanced asset protection, reduced equipment failure or improved supply chain management, the Evolution surge arrester delivers.



Station-class arresters

The Eaton Cooper Power series UltraSIL™ polymer housed, station-class surge arresters improve system reliability with up to 15 percent increased margin of overvoltage protection.

The arresters provide higher cantilever strength, improved energy handling capability, increased creep distance and customization availability to provide superior equipment protection in a lightweight polymer arrester. Tested for use in the harshest environments, the arresters meet IEEE Std C62.11TM-2012 standard.



Underground elbow arresters

Eaton Cooper Power series metal oxide varistor elbows (M.O.V.E.) and parking stand arresters provide shielded deadfront arrester protection for use in pad-mounted transformers, entry cabinets, vaults, switching enclosures and other installations.

Eaton Cooper Power series arresters are designed for use with 200A loadbreak interfaces to limit overvoltages to acceptable levels, protect equipment and extend cable life.



Fusing equipment

Eaton Cooper Power series overhead distribution fusing products include standard and current-limiting cutouts, a variety of fuse links, backup current-limiting fuses and ELFTM full-range current-limiting dropout fuses. Enclosure-mounted fuses include full-range current-limiting fuses and a variety of fuse mounts.

Underground systems are commonly fused with an Eaton Cooper Power series Bay-O-Net fuse in series with an ELSP backup oil-submersible, current-limiting fuse or a full-range ELS fuse. Pad-mounted switchgear protection is available with the ELSG full-range fuse.

The Eaton Cooper Power series MagneX[™] interrupter is an overcurrent protective device that protects distribution transformers from damaging overloads and secondary faults.

Engineering services

A comprehensive portfolio of services tailored for every stage of a power system's life cycle



Engineering services

Keeping power systems safe, efficient, reliable and up-to-date, Eaton's Electrical Engineering Services & Systems team is one of the largest and most experienced service organizations in North America. With more than 1,500 highly trained professionals in 60 engineering service locations throughout the U.S. and Canada, Eaton's Electrical Engineering Services & Systems team has local, national and international capabilities to provide a full range of electrical, civil and mechanical equipment services. This broad range of service capabilities has established us as a leader in the engineering service industry. Available services include:

- · Engineering and consulting
- Equipment modernization
- Turnkey services including embedded engineers
- Microgrid systems and controls
- Pre/post-crisis response expertise and services
- · Preventative maintenance and field support

Transformer retrofill service

Conserve important assets by retrofilling equipment with insulation-life extending Envirotemp™ FR3™ fluid. Retrofilling transformers with Envirotemp FR3 fluid is a turnkey process. Eaton can manage all aspects of the process, from quote to completion. Equipment can be shipped to Eaton for the procedure or on-site service can be provided. Transformers filled with Envirotemp FR3 fluid offer:

- Extended life
- Expanded capacity
- Reduced fire and environmental risk
- ROI <2 years

The right products for any market

	Solar/ Renewables	Data centers	Oil and Gas	Commercial	Industrial	Government/ Military
Liquid-filled transformers						
Substation transformers	•	•	•	•	•	•
Envirotran Indoor Power Centers		•	•	•	•	•
Smart transformers	•	•	•	•	•	•
VFI transformers	•	•	•	•	•	•
Pad-mounted transformers	•	•	•	•	•	•
Single-phase transformers			•	•	•	•
Voltage regulators and controls						
Step voltage regulators			•		•	•
Single-phase pad-mounted regulators			•		•	•
Multi-phase pad-mounted regulators			•		•	•
CL-7 regulator controls			•		•	
Variable voltage transformers (VVT)			•			
Power capacitors and controls						
Capacitor banks	•		•	•	•	•
Edison capacitor switches	•		•	•	•	•
CBC-8000 capacitor bank controls	•		•	•	•	•
Underground distribution switchgear						
VFI switchgear	•		•	•	•	•
Smart VFI switchgear	•		•	•	•	•
PST switchgear		•	•	•	•	•
MOST switchgear			•	•	•	•
RVAC switchgear			•	•	•	•
VisoVac fault interrupter		•	•	•	•	•

	Solar/ Renewables	Data centers	Oil and Gas	Commercial	Industrial	Government/ Military
Reclosers and controls						
NOVA reclosers	•		•	•	•	•
Form 6 controls	•		•	•	•	•
Switching and line construction						
Switches	•	•	•	•	•	•
Line construction materials	•		•	•	•	•
Faulted circuit indicators (FCI)	•	•	•	•	•	•
Cable accessories						
200 A connectors	•	•	•	•	•	•
600/900 A deadbreak connectors	•	•	•	•	•	•
600 A Cleer loadbreak connectors	•	•	•	•	•	•
SecTER cabinets	•	•	•	•	•	•
Protective equipment						
Distribution-class arresters	•	•	•	•	•	•
Station-class arresters	•	•	•	•	•	•
Underground elbow arresters	•	•	•	•	•	•
Fusing equipment	•	•	•	•	•	•
Engineering services	•					
Engineering services	•	•	•	•	•	•
Transformer retrofill service	•	•	•	•	•	•

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Eaton Power Systems Division

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