

Eaton Electrical Engineering Services & Systems

Switchgear modernization

Your source for improved safety and reliability



Utility



Industrial manufacturing



Water/wastewater



Healthcare

EATON

Powering Business Worldwide

Eaton's switchgear modernization offers cost-effective renovation to existing equipment, with minimal power interruptions and without total replacement. Our solutions extend the useful life of aging electrical power systems by providing safe and reliable reconditioning of existing equipment, as well as new replacement circuit breakers and other components that improve reliability and safety in existing power systems.

Achieve more.



Greater reliability



Operating cost efficiencies



Effective use of capital



Enhanced safety

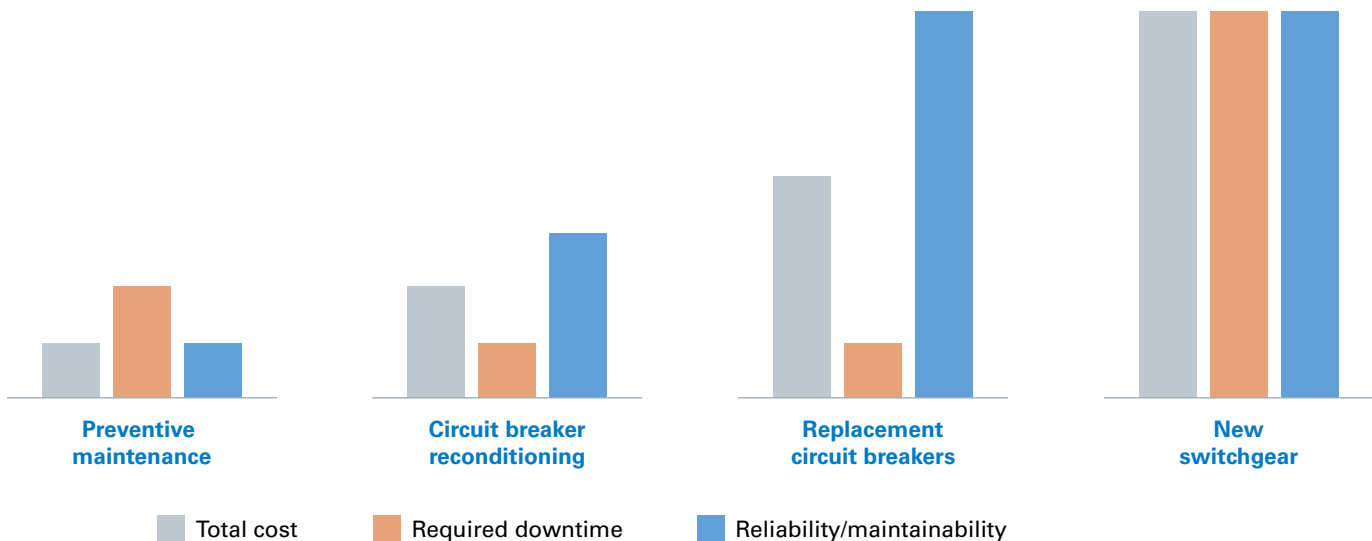


Risk mitigation

Reliable switchgear systems are vital for facility operations, but completely replacing these units can represent a significant capital investment. Upgrade to modern circuit protection to achieve dramatic operational improvement and extend the useful life of the equipment by up to 30 years.

It is important to consider modernization solutions instead of purchasing new equipment when faced with the following limitations:

- Electrical maintenance department's bandwidth or expertise
- Space available for new switchgear
- Funding for the removal of existing equipment plus the purchase and installation of new equipment
- Ability to withstand the extensive downtime required for total system replacement



Our engineers are experienced with understanding the challenges of your existing systems and identifying the ideal upgrade solution that will fit into your facility plans and budget. From preventive maintenance to replacements circuit breakers, we will stay with you through implementation to ensure you achieve the results you expect.

Replacement solutions

Safety is a primary concern in all facilities, especially when dealing with power circuit breakers. High short-circuit levels at distribution voltages have the propensity to create large electrical arc flash incidents. Eaton's modernization techniques for switchgear breakers and cell doors can add many safety features to your existing power switchgear systems.

LV and MV direct replacement breakers

Eaton has over 300 designs of MV and LV direct replacement breakers, including breaker-to-motor-starter replacements that use your existing switchgear cell. These solutions require little to no modification to your existing switchgear and minimize outage duration for installation. Eaton's direct replacement circuit breakers are not retrofitted or remanufactured, but built brand-new from the ground up—to improve your system reliability and provide technology upgrades without reused parts from original breakers.

Low-voltage designs

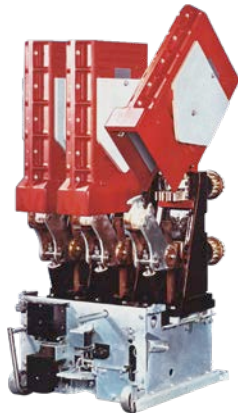
Available for vintage Westinghouse, Federal Pacific, Allis-Chalmers (Siemens-Allis), ITE (BBC, ABB) and General Electric.

Medium-voltage designs

Available for Westinghouse, General Electric, Allis-Chalmers, ITE, Federal Pacific Electric and McGraw Edison. Ground and Test (G&T) devices are also available.



Original circuit breaker



Original circuit breaker



Eaton LV-AR direct replacement circuit breaker



Eaton MV-VR direct replacement circuit breaker

Vertical to horizontal conversion (VHC-Series+)



A reduction in maintenance and an increase in safety can be achieved for your GE Magne-Blast® metal-clad switchgear with this reversible vertical-to-horizontal conversion. This conversion requires no cutting or drilling of your original vertical cell structure and does not violate the original metal-clad integrity.

LV and MV breaker-to-motor starter replacements

Breaker to vacuum starter replacements offer an efficient and cost-effective solution for your systems that apply power circuit breakers as motor starters. This application is especially common in electric power generation and process industries. These replacements will extend load switching life and reduce your long-term maintenance costs.

Custom PLC and control panels

From custom automation and control to protective relaying, metering and control systems, Eaton can integrate new technology into your existing power distribution equipment. Whether it is a unique design or complex system, we can deliver an individualized solution from concept to fabrication and installation.

LV and MV retrofill solutions

Eaton's retrofill conversion includes replacement of your existing circuit breaker and compartment components. It is an ideal alternative when a direct replacement is not available. Each cell and copper bus connection is custom-designed to provide you with Eaton's newest breaker technology.



Retrofill before and after

Replacement switchgear doors



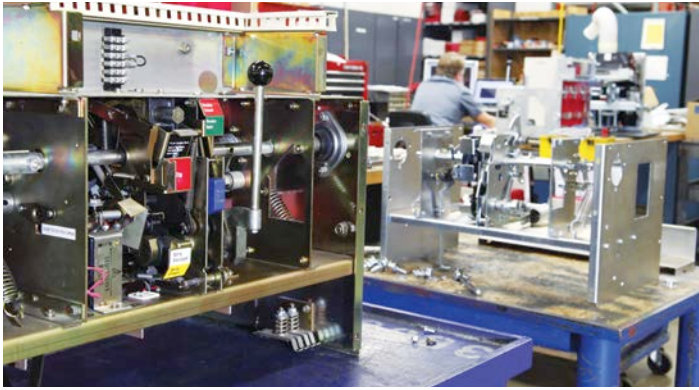
Existing relaying and metering that once required many individual electro-mechanical devices can now be simplified by updating

your electrical system with custom replacement switchgear doors outfitted with state-of-the-art relays, meters and controls. Any vintage or manufacturers' equipment can be accommodated and tailored to meet your needs.

Note: Eaton breaker replacements and retrofills meet the requirements of IEEE Std C37.59-2018.

Reconditioning services

Sometimes you're not aware of underlying electrical or mechanical issues until after equipment failure. Eaton offers several levels of reconditioning services to extend the useful life of existing power circuit breakers and keep your electrical system running smoothly—resolving reliability issues before they disrupt your operation. Our services can be performed on LV and MV power circuit breakers from any manufacturer and vintage.



LV and MV breaker reconditioning and remanufacturing

All of Eaton's regional power breaker reconditioning centers offer multiple levels of circuit breaker reconditioning services, from preventive maintenance to our top-of-the-line Class 1 reconditioning.

Circuit breaker enhancements

Over the years, component and material changes have been introduced to enhance the performance of new power circuit breakers. Eaton has developed premium solutions for your existing DS/DSII, VCP-W and MV-VR power circuit breakers so they can perform beyond expectations.

Beyond circuit breakers

Eaton offers a variety of innovative products and turnkey options that provide enhanced personnel safety and added protection of your valuable equipment.

Remote racking solutions

Remote racking allows your personnel to maintain a safe distance from the equipment during insertion or removal of circuit breakers. Eaton's unique remote racking system is capable of racking numerous manufacturers' models of low- and medium-voltage power circuit breakers.

Custom snubber systems for transient voltage suppression

Eaton's snubber systems are the right solution if you are experiencing high frequency transients and want to protect your transformer. Our snubber components are precisely specified for your unique application to provide superior surge suppression. Individualized snubber systems can be enhanced with protective features, including voltage indication, continuity verification and fusing with blown fuse indicators.

Hybrid high resistance grounding systems

Freestanding high resistance ground units offer ground fault detection and control of transient overvoltage during a single-phase to ground fault if you have an ungrounded system. This solution minimizes the possibility of insulation failure in your motors, transformers, power cables and electronic equipment.



About Eaton's Electrical Engineering Services & Systems

Eaton's Electrical Engineering Services & Systems is one of the largest and most experienced industrial service organizations in North America. With more than 1500 highly trained professionals in 60 engineering service locations throughout the U.S. and Canada, Eaton's Electrical Engineering Services & Systems has complete local, national and international capabilities to provide a full range of electrical, civil and mechanical equipment services.

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