

Taking motor control center safety to a new level



Motor control centers (MCCs) are worked on when energized more than any other electrical equipment to reduce downtime of critical equipment or processes. Whether working with doors open or closed, MCC maintenance can be dangerous, and inserting and extracting live units can put workers in potentially hazardous situations where an arc flash event could occur.



The danger of arc flash hazards

An arc flash event is a dangerous condition associated with the explosive release of energy caused by an electrical arc due to either a phase-to-ground or phase-to-phase fault. This fault can result from many factors, including dropped tools, accidental contact with electrical systems, buildup of conductive dust, corrosion and improper work procedures. An arc flash event releases a tremendous amount of energy in the form of thermal heat, toxic fumes, pressure waves, blinding light, sound waves and explosions that can result in serious injury, including critical burns, collapsed lungs, loss of vision, ruptured eardrums, puncture wounds and even death. Throughout the world, arc flash events threaten personnel safety, and companies face lost man-hours, lawsuits, fines, equipment damage, facility downtime and lost production.

Make your operation safer with Eaton's FlashGard® arc-resistant MCC. Eaton's approach to MCC operational safety is about adding elements to help prevent arc flash events, reduce their severity and redirect them if they occur. The FlashGard arc-resistant MCC helps you do all three.

- 1 Arc-prevention:
FlashGard technology**
- 2 Reduce severity: Arcflash
Reduction Maintenance System™**
- 3 Containment: Type 2
arc-resistant construction**

Applicable codes and standards

National Fire Protection Agency (NFPA®) Article 70E identifies safe practices for personnel to follow while working on energized electrical equipment. The purpose of NFPA 70E is to provide guidelines to limit injury. Both the National Electrical Code® (NEC®) and the Occupational Safety & Health Administration (OSHA) reference the NFPA 70E standard in their arc flash documentation. A sound electrical safety program is key. NFPA 70 Article 340.7 states that an employer is responsible for providing training and supervision by qualified personnel to:

- Explain the nature of the hazard
- Develop strategies to minimize hazards
- Provide methods to avoid and protect against hazards
- Convey the necessity of reporting any hazardous incidents

Eaton understands these responsibilities. Continuing the legacy of its leadership in arc flash safety products, the FlashGard arc-resistant MCC has taken safety for MCCs to a new level.

Three-level safety approach

Eaton's award-winning FlashGard arc-prevention technology is built into a robust Type 2 arc-resistant construction, creating an unprecedented level of personnel safety for MCCs. The FlashGard arc-resistant MCC, when coupled with the Arcflash Reduction Maintenance System, offers three levels of operational safety.

Arc-prevention: FlashGard technology

Each FlashGard MCC uses the patented RotoTract™ retracting stab technology that provides stab isolation, stab position indication and unit interlock features. The RotoTract contains interlocks designed to prevent users from opening unit doors or operating disconnects until stabs are properly connected to or disconnected from the vertical bus. When a unit is removed, shutters isolate the structure's vertical bus and the unit's stabs. Accessories such as VoltageVision™ and Motorguard™ are available in FlashGard MCCs to inform users of unsafe voltage presence and motor insulation conditions, respectively. The optional remote racking accessory can advance and retract the bus stabs from a distance of up to 25 feet, allowing the operator to be outside of the arc flash boundary.

Reduce severity: Arcflash Reduction Maintenance System

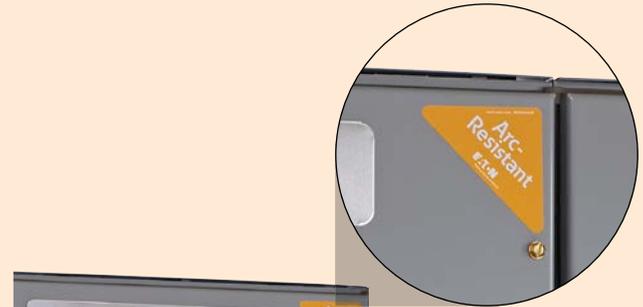
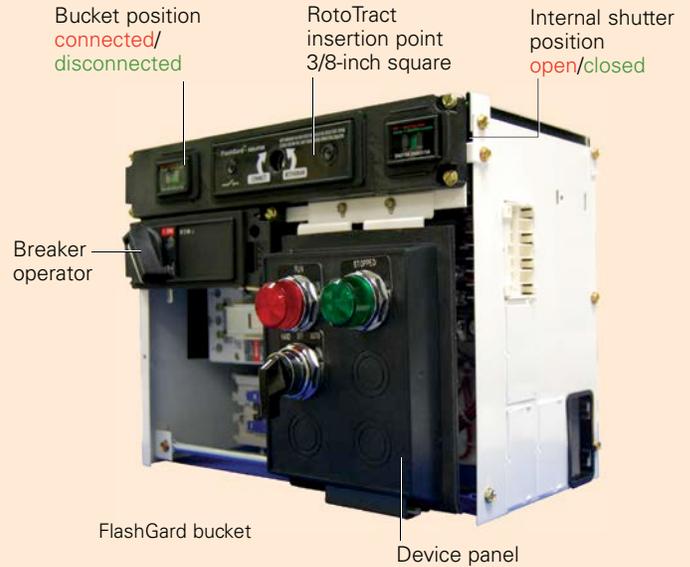
Arc-preventive MCC designs can also be used in conjunction with an Arcflash Reduction Maintenance System to reduce the amount of energy available to produce an arc flash. Less energy means less danger and less damage should an arc event occur. An Arcflash Reduction Maintenance System is an optional plug-in module that can be applied to the main breaker; it permits the operator to add an instantaneous trip setting to temporarily reduce the breaker's normal trip threshold during maintenance.

If the breaker is in this setting, it will open much quicker when an arc fault occurs. Clearing the fault faster and limiting its impact on downstream circuits means the Arcflash Reduction Maintenance System can greatly reduce the level of energy available during an arc flash event.

Containment: Type 2 arc-resistant construction

The door and structure of the MCC use the design of Eaton's Freedom arc-resistant MCC. The assembly has a Type 2 accessibility rating with arc-resistant features on its front, back and sides. The doors, side sheets and back sheets are made using 12-gauge steel versus the 14-gauge industry standard. Isolation barriers between adjacent structures help to isolate blast energy within the MCC. In addition, 4-inch sections are added to the first and last structures of the lineup to increase the through-air spacing between the end of the horizontal bus assembly and the MCC side-sheet, reducing the likelihood for a potential fault to dead metal if an electrical arc spreads along the horizontal bus. Door latches and hinges have been further strengthened to allow pressure-relief of internal energy that is released during an arc-fault event. The assembly has been tested and verified per IEEE guideline C37.20.7, IEC/TR 61641, and CSA standard 22.2 No. 0.22-11.

The unique product combination offers protection for personnel during all stages of MCC maintenance by the inclusion of features that work to help prevent an arc flash from occurring and to contain arc blast energy if an arc flash event occurs.



Arc-resistant label

For more information, please visit:
Eaton.com/FlashGardAR

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