

Molded-Case Circuit Breakers

Background

As the original equipment designer and supplier of Molded-Case Circuit Breakers (MCCB), Westinghouse retains critical design information that allows for a unique understanding of customers' requirements in order to provide a like-for-like replacement when addressing product obsolescence or replacement.

Westinghouse offers the Classic, Series G, and Series C MCCBs.

The Westinghouse molded-case breakers are also used as replacements for existing and obsolete GE and ITE/Gould breakers when a traditional mechanical trip unit is required. In addition, Westinghouse also supplies form, fit, and functional replacement of obsolete Westinghouse breakers. In many cases a bolt-on retrofit solution is available, requiring no modification to the original structure and thus, reducing installation time. This makes Westinghouse the industry leader in supplying molded-case circuit breakers, obsolescence and replacement solutions for both original equipment and other manufacturer designs.

Description

Westinghouse MCCBs provide traditional thermal and/or magnetic overload protection, in addition to electronic trip units that provide an enhanced degree of coordination and reliability for both Class 1E safety-related and non-safety applications. Westinghouse provides molded-case circuit breakers that are configured and tested to meet plant-specific original order specifications.

Westinghouse molded-case circuit breakers are designed for use in systems up to 600 VAC and 250 VDC with continuous current ranges from 10 Amps to 800 Amps. Special ratings are available upon request. Applications include enclosed panels, motor control centers, and distribution centers.



Westinghouse molded-case circuit breakers are available in a range of sizes and suitable for any application.

Benefits

Westinghouse maintains the qualifications for all MCCBs through dedication, testing, and review of design changes and industry operating experience.

- Seismic sensitivity is addressed through design change reviews and periodic seismic testing performed at Westinghouse's in-house seismic test lab.
- Westinghouse provides MCCBs for harsh environmental conditions that undergo thermal/radiation aging, HELB/LOCA, and electro-magnetic compatibility qualification testing at a Westinghouse facility per IEEE 323-1974.
- Westinghouse MCCBs are manufactured and tested to Westinghouse specifications with materials that are modified to fit the application.



Westinghouse samples material with the latest design documents to determine environmental adequacy.



Westinghouse maintains in-house test equipment to ensure proper functionality through periodic testing.

The Classic and Series C MCCB's were originally designed by Westinghouse. The Series G was developed in early 2000 and contains a digital trip unit with options. All Westinghouse MCCB's are Class IE certified to IEEE standards.

MCCBs supplied to Westinghouse's utility customers have enhanced internal components specific to Westinghouse that either meet or exceed the quality of the original design and operating requirements. These components include redesigned arc runners, arc plates, and main contacts. Unique materials are used for harsh environmental conditions beyond what is supplied commercially.

Westinghouse continues to maintain strong technical ties to the current manufacturer with access to design drawings and manufacturing information. If a breaker would become obsolete and a direct replacement is unavailable, Westinghouse can provide a replacement component and the technical data to verify proper functionality, including the qualification of the replacement breaker.

Deliverables

Westinghouse customers receive performance data in the form of a test report with each breaker. Safety-related breakers include an Equipment Qualification Data Sheet that summarizes the seismic and environmental criteria to which the breaker has been qualified. This allows for a quick comparison to any application. The latest revision of the Time Current Curve can be provided upon request.

Westinghouse can provide replacement plans that coordinate with outage schedules, reducing

plant inventory and decreasing the overall cost of a replacement plan.

Experience

Westinghouse has over 40 years of experience in design, test, and construction of molded-case circuit breakers and has successfully delivered replacement molded-case breakers to both PWR and BWR nuclear power plants. Westinghouse replacement breakers are tested through our rigorous 10 CFR 50 Appendix B quality assurance program.

Design, construction, and completion of the next generation of Westinghouse PWRs has provided a unique opportunity to test and qualify an additional range of molded case breaker solutions.

- Westinghouse has developed and qualified electronic trip technology for the **AP1000[®]** units that can be applied to existing plants.
- Electronic trip units have an enhanced degree of coordination and selectivity over traditional trip units, and do not have the same susceptibility to trip points changing over time.
- The selection has been qualified for use in Class 1-E safety-related applications to IEEE-1021-2004 and IEEE 7-4.3.2-2010.
- Electronic trip units are unaffected by temperatures changes and can be used to replace obsolete ambient compensating units.



Electronic trip units provide higher degree of selectivity and repeatability

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