

Nuclear Parts Operations

DHP-VR Medium-voltage Vacuum Breaker Replacement

Background

As a leading supplier of nuclear safety-related products and services, Westinghouse offers Class 1E DHP-vacuum replacement (VR) circuit breakers to meet medium-voltage breaker requirements.

Description

The DHP-VR circuit breakers are a state-of-the-art designed and tested direct roll-in replacement for DHP air-magnetic circuit breakers. With vacuum technology, the new breakers require less maintenance, are more lightweight, have fewer components and have improved reliability over the DHP air-magnetic styles. In addition, the DHP-VR breakers are electrically and mechanically interchangeable with the existing DHP breakers.

The Westinghouse DHP-VR meets nuclear safety-related, medium-voltage breaker requirements for Class 1E applications. Westinghouse also maintains the qualification for the originally installed DHP switchgear.

Benefits

Direct Roll-in Replacement

The DHP-VR is a qualified direct roll-in replacement for the DHP, thereby minimizing out-of-service time and parts normally required as part of a breaker retrofit service. It is wheel-mounted for easier handling and installation, and rolls in and out of the breaker cell like the original DHP model.

Lower Maintenance Costs

Vacuum technology reduces the maintenance associated with DHP air-magnetic circuit breakers. The vacuum technology eliminates the arc-chutes required on air-magnetic breakers making the breaker lighter, less bulky and easier to handle. Common issues associated with arc-chute components such as cracking, erosion and breakage which require periodic inspection and cleaning, are no longer a concern.

The DHP-VR's state-of-the-art current transfer system and contacts also mitigate maintenance. Improved access to the stored energy mechanism and control components also contribute to improved maintenance costs. Previously, access to the air-magnetic breakers required removing the inter-phase barrier and three arc-chutes followed by elevating the breaker chassis.

Fewer Parts

DHP-VR breakers have approximately 50 percent fewer parts than the DHP air-magnetic design. In addition to the elimination of the bulky arc-chutes and hardware, the stationary and moving contact assemblies have been replaced with a single vacuum bottle. In addition to less maintenance, the reduced spare inventory also contributes to the overall maintenance savings associated with the DHP-VR breakers.



New DHP-VR breakers are roll-in replacements for the DHP air magnetic breakers

Nuclear Qualification

The DHP-VR circuit breakers have been seismically tested and qualified in accordance with the requirements set forth in Institute of Electrical and Electronics Engineers (IEEE) 323-1983 and IEEE 344-1987. The DHP-VR seismic testing (performed in both the connected and disconnected positions) envelops the requirements of the existing DHP switchgear in nuclear-plant applications. As a result, qualification certification can be provided for the new DHP-VR breakers installed in the existing DHP switchgear, while maintaining the original certification for the entire switchgear assembly.

Deliverables

Westinghouse offers a total solution for all medium-voltage breaker requirements including safety-related parts and inventory management; breakers; breaker refurbishments; equipment qualification; field maintenance; and technical support.

Warranty and Documentation

Class 1E DHP-VR breakers are warranted and provide with a Certificate of Conformance to the purchase order requirements and a Certificate of Qualification for safety-related applications.

