

Uptime Concerns in Mission-Critical Environments Driving Circuit Breaker Testing

New and emerging trends show continued growth and evolution of the construction industry. Concerns about labor shortages make the use of modular and prefabrication practices a vital part of the contractor business. Knowing which aspects of a job to handle in-house and which to outsource is becoming critical in determining a project's success.

A recent conversation with a regional specialty contractor sheds some light on the increasing number of requests to pre-test low voltage molded case circuit breakers before installation in mission-critical environments.

When working with mission-critical facilities, 100% uptime is more than a goal; it is a necessity. Low voltage circuit breakers are an often-overlooked element of the power distribution chain. More and more data centers are requesting their circuit breakers be pre-tested before installation. Moreover, for those who don't, contractors should be recommending that they do. Installing pre-tested circuit breakers can provide reassurance that a data center's power distribution system has one less point of failure and one less risk once under load.

While circuit breakers don't fail very frequently, they do fail. The specialty contractor and its customers had experienced failures of breakers right out of the box. Once a breaker goes into service, dealing with a breaker failure is costly and time-consuming. It's always preferable to find a faulty breaker before installed and under load.

In addition to downtime, faulty circuit breakers that fail to trip in an overcurrent situation can lead to overheating, fire, and even injury to em-

ployees. On the other side, a breaker that is experiencing nuisance tripping in service is difficult to diagnose and resolve.

The contractor notes that they always exercise and inspect circuit breakers before installation. While a visual examination might show a crack in the circuit breakers molded case and exercising it may indicate a mechanical jam; only pretesting will determine overcurrent trip failure at startup.

The contractor shared some thoughts on pre-testing low voltage molded case circuit breakers to meet the increasing needs of their data center customers. For many of their customers just having peace of mind avoiding downtime, or considering the possible liability associated with a dropped load made deciding to install pre-tested circuit breakers a logical decision. When a data center experiences a breaker failure and dropped load, it is easy to show that customer the value of testing circuit breakers before installation and put under load.

The contractor had tested circuit breakers in-house before outsourcing it to PDU Cables. When asked why they outsourced their testing, the contractor saw PDU Cables circuit breaker testing as fair priced and a better value than performing it themselves. PDU Cables had the proper equipment to perform the tests, knowledge, and understanding of the circuit breaker manufacturers specifications for overcurrent trip testing. PDU Cables also didn't have any required minimum quantities which made ordering pre-tested circuit breakers easy and convenient.

NEMA AB 4-2017

For information on preventative maintenance of Molded Case Circuit Breakers, see NEMA AB 4-2017, Guidelines for Inspection and Preventive Maintenance of Molded Case Circuit Breakers Used in Commercial and Industrial Applications.

These guidelines are to be used to identify circuit breakers requiring maintenance or replacement. Good practice includes periodic circuit breaker maintenance. When a circuit breaker operates automatically, good practice dictates that the source of the overcurrent should be located, and if it is suspected that the operation was at or near the interrupting rating, the circuit breaker's condition should be checked before circuit re-energization.

While a molded case circuit breaker is designed to provide many years of reliable protection, its length of service is determined by operational duty and environment. Exposure to high temperature, high humidity, and other hostile ambient conditions can impact a circuit breakers long-term performance.

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