Thought Leadership
White Paper

Understanding National Electrical Code (NEC)—Article 240.87 arc energy reduction for switchboards and panelboards

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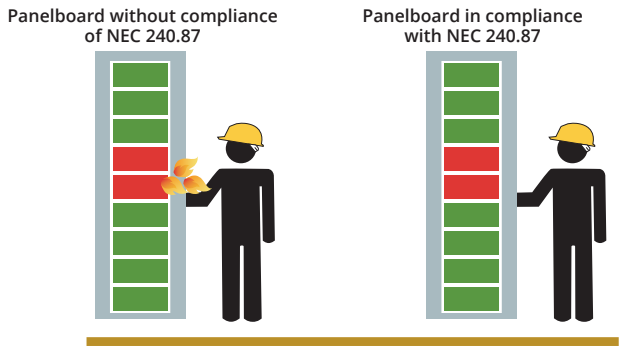
Need for arc energy reduction

There are certain conditions when maintenance personnel need to work in the live electrical equipment premises. The breakers installed inside the panelboards/switchboards may create an arc flash that may cause a potentially life-threatening hazard.

To avoid these circumstances, it is necessary to incorporate incident arc flash reduction methods into the design and installation of electrical equipment to lower the risk levels and provide safer installation for qualified electrical workers while servicing the live equipment.



What does the NEC Article 240.87 arc energy reduction rule say?

The NEC® covers arc energy reduction under NEC Article 240.87 for circuit breaker applications. NEC arc energy reduction requirements apply to circuit breaker devices of ratings 1200 A and above. Achieving compliance with NEC arc energy reduction requirements starts with a thorough understanding of arcing current levels and taking the proper steps to reduce them.

Documentation requirement

What should it demonstrate?

Document provided should demonstrate the method used to reduce the clearing time of an arc flash.

Where should it be available?

Documentation should be available to the location of the circuit breakers for those who are involved in the installation process.

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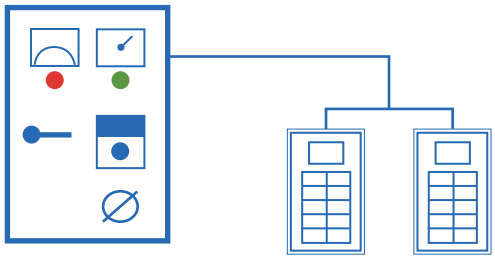
Performance testing



It is necessary to evaluate the capability of the panelboard before it creates a hazard. This will be evaluated by the performance testing. Generally, primary current injection testing is preferred to know the performance parameters of the breaker.

A written record of this testing shall be made and shall be available to the authority having jurisdiction.

For circuit breaker devices, there are seven approved methods for arc energy reduction that facilities may employ:

1. Zone selective interlocking (ZSI)
2. Differential relaying
3. Energy-reducing maintenance switching with a local-status indicator
4. Energy-reducing active arc flash mitigation system
5. An instantaneous trip setting; temporary adjustment of the instantaneous trip setting to achieve arc energy reduction is not permitted
6. An instantaneous override
7. An approved equivalent means

To learn more on arc flash study
Arc flash mitigation solution

Ask experts about arc flash safety
Arc safety contact | Arc energy | Eaton

Application summary

NEC Section 240.87 helps to ensure a safe working environment for maintenance personnel and electrical system from arc flash hazards.

To learn more, contact your local representative or visit **Eaton.com/panelboards**.

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