

Eaton's Arc Flash Limiter Conversion



Solution Overview

Arc flash hazards exist. There is no way to completely eliminate the danger. In fact, when a main breaker on the low voltage side in a secondary unit substation is absent, historically, there has been no effective way to reduce arc flash danger to protect operators and maintenance personnel during removal of low voltage feeder breakers or maintenance of energized switchgear structures.

Eaton has developed advanced technology that can be incorporated into these existing secondary unit substations. Eaton's power expert service engineers will eliminate the primary fuses, provide primary short circuit protection with vacuum breaker technology and add Eaton's Arc Flash Reduction Maintenance Switch to lower arc flash levels on the secondary bus of the switchgear. Eaton terms this conversion technology as the Arc Flash Limiter (AFL) conversion. This hybrid approach provides many benefits and great value.

Benefits

- Cost effective solution, saving tens of thousands of dollars by eliminating the need to retrofit a new main breaker section in switchgear
- Typically lowers arc flash levels to under four calories
- Provides primary short circuit protection with vacuum breaker technology in place of fuses
- Allows personnel to wear less PPE/work near energized equipment
- Reduces maintenance time and money
- Requires no additional footprint

Simple solution to a dangerous problem

The AFL concept is simple (see Diagram 1), but specific hardware and application techniques are required to make the system function properly. In many cases the proper application of Eaton's patented technologies can reduce the arc flash level at the secondary bus to less than

four calories. This allows maintenance and operations personnel to wear PPE clothing that is cooler and less bulky.

Tested to meet standards

The solution has been tested to momentary and short-time levels for metal enclosed switchgear (IEEE/ANSI C37.20.3 and C37.20.4). The AFL conversion incorporates a modern vacuum circuit breaker, fully tested as a component to IEEE/ANSI C37.09 in place of the existing current limiting fuses. IEEE/ANSI C37.59-2007 Standard was used as a guide for interface and testing in the conversion process.

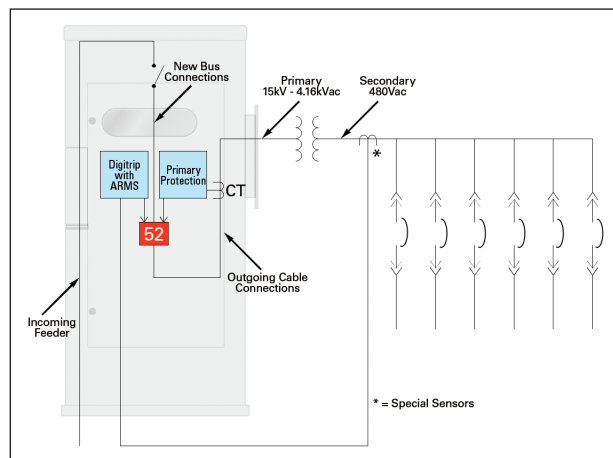
Save thousands every year

In addition to reducing arc flash levels, the AFL Conversion eliminates the need to stock spare fuses and their associated inventory and warehousing costs.

The removal of the current limiting fuses from the system also eliminates the possibility of a single-phase condition caused by one blown fuse. Single phasing can destroy downstream motors and damage associated equipment. This can save hundreds to thousands of dollars in motor repair and thousands of dollars in downtime and lost production.

The Eaton advantage

AFL conversions are performed by Eaton Electrical Services and Systems expert engineers using tested components and configurations to provide a final installation that conforms to previous tested design. This assures you that his equipment will continue to protect the attached distribution system and when the Arc flash Reduction Maintenance Switch is engaged, will provided the anticipated level of arc flash reduction.



1. Typically Unit Substation without Secondary Main Circuit Breaker



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