

## Permanent Reduction of Arc Flash Energy to Safe Limit on Line Side of 480 Volt Switchgear Incomer Breaker

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**Abstract :** A recognized engineering challenge is related to personnel protection from fatal arc flash incident energy in the line side of the 480-volt switchgear incomer breakers during maintenance activities. The incident energy is typically high due to slow fault clearance, and it can be higher than the available personnel protective equipment (PPE) ratings. A fault in this section of the switchgear is cleared by breakers or fuses in the upstream higher voltage system (4160 Volt or higher). The current reflection in the higher voltage upstream system for a fault in the 480-volt switchgear is low, the clearance time is slower, and the inversely proportional incident energy is hence higher. The installation of overcurrent protection at a 480-volt system upstream of the incomer breaker will operate fast enough and trips the upstream higher voltage breaker when a fault develops at the incomer breaker. Therefore, fault current reduction as reflected in the upstream higher voltage system is eliminated. Since the fast overcurrent protection is permanently installed, it is always functional, does not require human interventions, and eliminates exposure to human errors. It is installed at the maintenance activities location, and its operations can be locally monitored by craftsmen during maintenance activities.

**Keywords :** arc flash, mitigation, maintenance switch, energy level

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