

Cost-Benefit Analysis of Active Arc Mitigation Technologies in LV and MV Switchgear

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Maintaining a safe work environment while minimizing operational costs and downtime caused by accidental events is the key goal of distribution switchgear users. While major failure events such as arc flash are rare, when they do occur the results can be catastrophic to both equipment and personnel and disrupt capital expenditures. There have been many advances in switchgear design and arc detection and mitigation technologies over the last two decades. These can be viewed on a spectrum of the upfront investment cost versus performance. This view ignores the differences among these technologies with respect to the disruption in operations and safety risks that they can mitigate. This is especially critical in process industries. This paper describes the technical characteristics and investment costs of all the available arc mitigation technologies. We then quantify the potential costs of operational disruptions and present an overall cost-benefit analysis for the technologies.