

# ARC FLASH STUDY CASE STUDY

Pioneer Power Group was contracted to perform an arc flash study for a new building. The distribution system for the building contained a main distribution panel and multiple branches downstream containing panels and step-down transformers.

Transformer ratings and the types of breakers are both principal factors in arc flash calculations. Arc flash levels can increase or decrease depending on the size of the transformer and the types of breakers being used. Breaker settings can also impact the results of the arc flash study. If arc flash levels are too high, it may not be possible to perform live electrical work, creating a risky scenario for both equipment and personnel. OSHA requires that all electrical equipment that may require energized work be labeled with arc-flash incident energy levels. Thus, all new equipment installations require an arc flash study which provides arc flash labels detailing the incident energy in cal/cm<sup>2</sup>, PPE recommendations, and guidelines on safe working distances.

## ► CHALLENGES



When Pioneer Power Group analyzed a panel fed by an upstream thermal magnetic breaker, an arc flash result was found to be extremely dangerous – meaning that no live electrical work could be performed. The customer wanted to reduce the arc flash level to a lower category that would allow energized work to be performed in order to prevent future costly shutdowns. At this point of the project some equipment had already been installed, further complicating the situation.

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## ▶ OUR SOLUTION



Pioneer Power Group collaborated directly with the design engineer and equipment manufacturer to assess several options to address the issue. After review, the decision was made to change the thermal magnetic feeder breaker to a breaker equipped with an LSI electronic trip unit. To ensure viability of the solution, the breakers had to be tested for system coordination, physical fit in and be rated appropriately for the existing panel. Once the appropriate breakers were finalized, and a revised bill of material created, Pioneer Power Group was able to complete the study and show that the arc flash levels had been sufficiently reduced to allow for energized work with appropriate PPE.

## ▶ RESULTS



Instead of kicking the problem back to the designer, Pioneer Power Group focused on being part of the solution to deliver a system that would promote less downtime and safer conditions. The study engineer took the time to identify individual breakers that could be changed, eliminating any need to redesign the circuit branch or compromise to a higher PPE Level. By collaborating directly with stakeholders, Pioneer Power Group was able to meet the customer's request in a quick and cost-effective way.



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