

Short Circuit and Coordination Study

Electrical Engineering Services

Benefits

Proper Systems Evaluation for Improved Protection

The electrical distribution system is critical to your entire operation. Its reliability is challenged every time an expansion, reconfiguration, additional load, or upgrade takes place.

A short circuit and coordination study helps manage these complexities by ensuring that the protective device closest to an overload or short-circuit condition is the one that operates to quickly isolate a failure.

The results of this study allow for proper protective device settings, thus helping facilities maintain a safe, reliable, and efficient electrical distribution system.

Benefits

- Minimize system downtime and nuisance device operations
- Avoid equipment damage or failure through increased system protection
- Isolate faulty circuits without loss of power to other parts of the system
- Identify corrective action for under-protected equipment
- Ensure safety of personnel



Ensure minimum service interruption and improved equipment protection with a short circuit and coordination study

As electrical distribution systems change, it's important to ensure continued protection for your equipment and employees. The engineering team at Electrical Reliability Services (ERS) is experienced in performing a short circuit and coordination study and will make recommendations that ultimately help you maximize productivity, reduce the risk of accident, and avoid costly fines, and higher insurance rates.

A short circuit and coordination study is an evaluation of a system's protective devices, such as relays, fuses, and circuit breakers, and the circuits they protect. This study determines how long equipment can sustain operation without damage or failure by comparing the operating levels and times of protective devices to the withstand levels and times.

The goal of a short circuit and coordination study is to provide power transformers, switchgear, substations, motor control centers, panelboards, and other electrical equipment with required protection while selecting appropriate types, ampere ratings, and device settings to ensure minimum service interruption under overload and short-circuit conditions.

Our short circuit and coordination study includes:

- Data collection
- Power system analysis
- Report of findings

Data Collection

In order to determine the appropriate types, ampere ratings and device settings, ERS engineers will review an up-to-date single-line diagram of the electrical distribution system. Ideally, the single-line diagram will provide equipment ratings, wire sizes, lengths, etc. If a current single-line diagram and relevant data are not available, then an engineer will need to collect this data to perform the study. The data collection process is an ideal time to update the single-line diagram because all pertinent information will be accumulated.

Power System Analysis

Once data is collected on the electrical distribution system, ERS then utilizes specialized computer hardware and software to assist with the analysis of power system problems. The computer model helps our engineers determine optimum settings for all adjustable devices, ensuring proper coordination.

Report of Findings

Following a comprehensive computer-based analysis, a report of all the findings is carefully created, including:

- Clear tabular printouts of the suggested settings for all adjustable devices
- Time-current curves of the protective devices illustrating the resulting protection and their coordination
- Computer generated single-line diagram illustrating devices, equipment, system connections, and short circuit levels

Summary

If circuit breakers or other protective devices are set too low, they may trip unnecessarily causing critical loads to be dropped. Set too high and the protective device closest to a failure may not trip, causing another device further upstream to trip. This can result in an outage to a much larger part of the electrical distribution system and possibly a complete facility blackout.

With a short circuit and coordination study, you get a better understanding of how your often-changing electrical distribution system currently operates. The coordination and settings of protective devices are thoroughly analyzed, and based on the findings, you are able to improve protection for equipment, personnel, and your business as a whole.

Next Level Reliability

Rely on the experts at ERS to manage the complexities of your protection and controls system. Our engineers have the expertise to conduct a full-range of engineering studies, perform power system analysis, report on findings, and make recommendations, that will ensure a safe, reliable, and efficient electrical distribution system.

Ordering Information

To learn more about ERS' Short Circuit and Coordination Study Services, please contact us at 1 877- 468-6384 or visit ERS.vertiv.com.