

SHORT CIRCUIT AND COORDINATION STUDIES

Electrical Engineering Services



BENEFITS

Proper Systems Evaluation for Improved Protection

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

Short circuit and coordination studies help 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 these studies allow for proper protective device settings, thus helping critical 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 equipment protection with short circuit and coordination studies

As electrical distribution systems change, it's important to ensure continued protection for your equipment and employees. A short circuit and coordination study can help critical facilities avoid accidents, productivity losses, costly fines, and higher insurance costs.

A coordination study is an evaluation of a system's protective devices, such as relays, fuses, and circuit breakers, and the circuits they protect. A coordination 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 goals of these studies are 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 studies include:

- Data collection
- Power system analysis
- Report of findings including device settings
- Updated single-line diagram

Data Collection

In order to determine the appropriate types, ampere ratings, and device settings, technical staff from our technical services team will review an up-to-date single-line diagram of the electrical distribution system. Ideally, the single-line will provide equipment ratings, wire sizes, lengths, etc. If a current single-line diagram and relevant data is not available, then the 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, Vertiv™ then utilizes power systems software including SKM, ETAP, and others to assist with analysis. The computer model helps Vertiv engineers determine optimum settings for all adjustable devices, ensuring proper coordination.

Report of Findings

Following comprehensive computer-based analysis, a report of all the findings is carefully documented in an electronic and/or paper report that includes:

- 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

Updated Single-Line Diagram

Also included with the report of findings is a computer generated single-line diagram illustrating devices, equipment, system connections, and short circuit levels. This schematic supports future engineering services for performance optimization and enhanced safety, and is essential for ensuring your critical facilities are compliant with code regulations.

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 blackout of the business-critical facility.

With short circuit and coordination studies, 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.

Ordering Information

To learn more about this service and other Vertiv solutions, visit VertivCo.com or call 1-800-543-2378.