

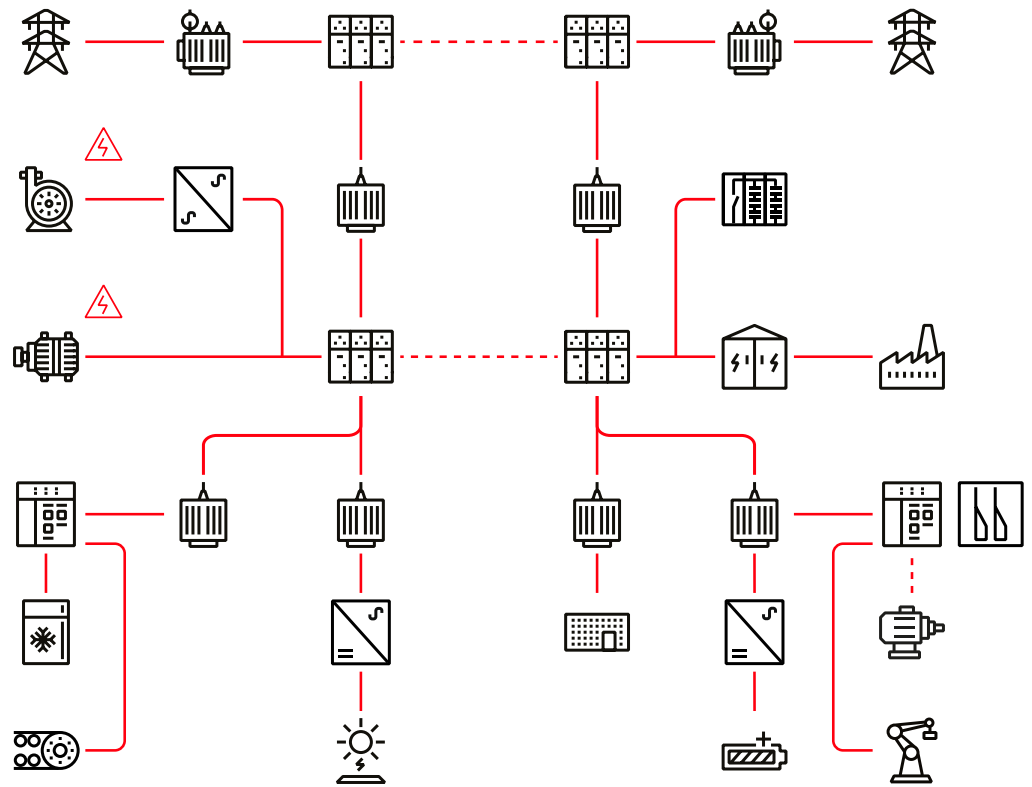


Power System Studies

Motor Starting

What is a motor starting study?

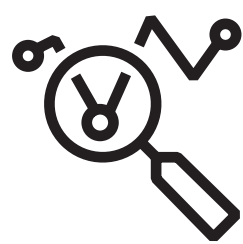
A motor starting study is an analysis conducted to assess an impact of starting large electric motors on a power system. It is similar to a load flow study and focuses on ensuring that there is adequate voltage to start the motor.



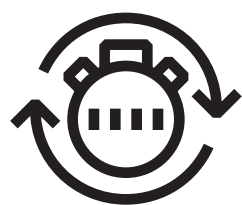
Motor starting study is



Essential to determine if the system can deliver the **appropriate amount of voltage** to start the motor.



Employed to assess the **overall strain on the power system** resulting from current spikes during the startup.



Helpful for **prolonging the lifespan** of equipment and **reducing maintenance** and replacement costs.

When is a motor starting study needed?



Design

A motor starting study needs to be performed when a power system is originally designed.



Changes

A motor starting study needs to be performed whenever any changes are made to the system (including changes to equipment, configuration, or settings) to ensure proper motor starting and system integrity.

Why motor starting study is necessary?

It is essential for enhancing the safety, reliability, and performance of electrical systems. Failing to perform them can lead to injuries, equipment damage, system failure, or loss of property.

It's important to evaluate the system, in terms of motor starting, at regular intervals and make necessary updates to keep it safe, reliable, and efficient.

What data is required from site owners?

During the motor starting study, you will need to provide information on:

- Motors and generators
- Motor name plate and motor starting curves
- Protective devices (circuit breakers, fuses, relays, etc.)
- Switches, fuses, disconnects, relays, reclosers, contactors, and breakers
- System grounding
- Transformers, current transformers, reactors, and capacitors
- Equipment (i.e. switch boards, automatic transfer switches, motor control centers, etc.)
- Protective device settings and coordination data
- Existing safety practices and procedures



Note that short circuit studies and protection coordination studies are prerequisites for motor starting studies.

What are the steps of the motor starting study?

You have scheduled a motor starting study. What should you expect?

1

Data collection

ABB collects data that is necessary to determine the optimum settings which provide the best protection to the customer's system. This information is gathered during a field visit and sourced from manufacturers. It includes:

- Collection of the present settings of motors/generators, protective device information, and other equipment specifications and settings.
- Manufacturer's data about the motor/generator characteristics.



2

Analysis

ABB analyzes the data. This includes:

- Assessing potential faults and short circuits that could occur within the motor or generator system and determining the correct protection settings and coordination to mitigate these faults.
- Evaluating protection against overloads, thermal damage, and ground faults.
- Short circuit study to determine the fault currents and their magnitudes at different points in the system.
- Protection coordination study to ensure that protective devices are coordinated correctly to isolate only the affected part of the system in case of a fault.

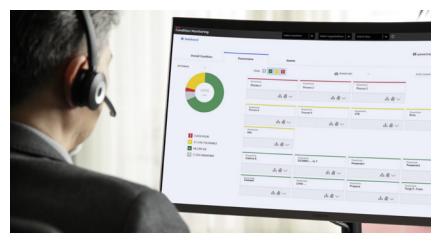


3

Report

Customer receives a report, which includes information on:

- The optimum settings for motors, generators, and protection devices.
- Recommendations on coordination and any necessary equipment modifications.



4

Recommendations

If the analysis shows that equipment is under-protected, ABB will give recommendations for improving protection and system reliability. This includes recommendations for modifying the electrification system, such as protection relay upgrades.





ABB Electrification Service

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