ABB MOTION SERVICES

Failure Mode and Effects Analysis

Increase the robustness of your drive system

Would you like to improve the reliability and availability of your drive system? ABB offers a specific application of its Drive System Consulting service, called Failure Mode and Effects Analysis (FMEA). FMEA is a specific method to measure and evaluate the robustness of a drive system, design, or process for potential failure mechanisms.

FMEA can be described as a systematic set of activities intended to identify and evaluate the various possibilities of failure and identify actions that can reduce or prevent them or, if they cannot be avoided, mitigate their effects.

Be it part of the design process of a new installation or a study of an existing installation to identify and address potential root causes that could lead to system failure, an FMEA results in a list of relevant improvement actions that will substantially increase the robustness of your systems in coping with potential failures. As a result, it enables you to drive your business more effectively.

Main benefits

Maximize the uptime of your drive system
- Assess and mitigate system failures
- Leverage system operation history to optimize performance

Minimize costs
- Reduce downtime and maintenance costs
- Optimize operating expenses

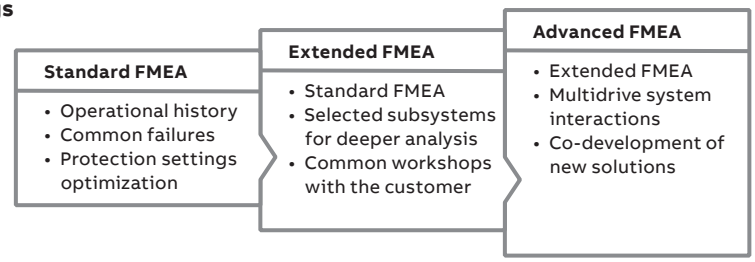
Co-develop innovation
- A holistic view on plant-wide performance optimization
- Custom-made state-of-the-art features for multi-drive setups

Working together
The role of ABB's drive system experts can vary according to your needs. They can work as consultants supporting you in the FMEA process, or they can offer a full turnkey delivery. You decide whether you want ABB to support the whole process – from the first stage of defining the system to the final implementation – or just some of the phases.

A thorough FMEA is the result of a cross-functional team composed of individuals qualified to recognize and assess the magnitude and consequences of potential inadequacies in the system design that may lead to failures. The advantage of this teamwork is that it stimulates the thought process and ensures that the necessary expertise is available.

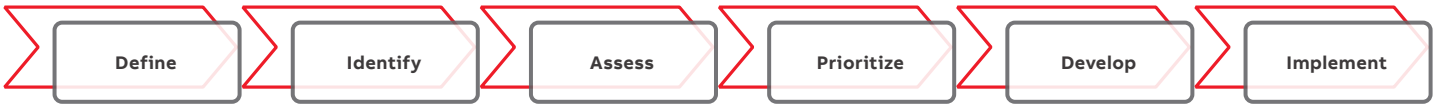
—

FMEA Offerings



—

FMEA Workflow



Define the scope
The drive system is broken down into a hierarchy of its basic elements to define the scope and the detailed analysis. This preparation work includes developing a system description with the defined scope for the FMEA together with you.

Identify potential failure modes
Analysis of possible failure modes and their effects on the higher levels of the system are conducted level by level in a bottom-up manner to identify the final effect on the system. This includes:
- A collection of previously observed onsite failures
- Other possible failure modes that have not occurred in the past

Assess identified failure modes
Once all the potential failure modes are identified, they are assessed from three different perspectives:
- Likelihood of detection
- Severity of the effects
- Probability of occurrence

Prioritize risks
The completed FMEA overview is reviewed, and the most relevant failure modes are identified, typically by multiplying the three factors (detection, severity, probability). Different or additional prioritization is possible, e.g., addressing all the failure modes with severe consequences irrespective of their probability. As a result, all of the potential failure modes are assigned a risk priority number (RPN).

Develop & implement solutions
The identified failure modes are classified according to the RPN number, and relevant mitigation actions, corrective actions or compensating provisions are proposed for those failure modes that need to be addressed. The final findings are documented, including recommendations, actions, and remarks, in a final report for you. The actions for implementation are selected and assigned to responsible personnel. The findings can result in various activities for system-level optimization on both your and ABB's sides. The activities on ABB's side can be agreed upon and enacted separately.

—

For more information, please contact your local ABB representative or visit:

new.abb.com/drives/services/engineering-and-consulting
new.abb.com/service/motion

—

3AUA0000198794 REV C 8.4.2022