

# FMEA & FMECA — THE GOLD STANDARD FOR FAILURE STRATEGY

When it comes to understanding failure and preventing it, nothing stands taller than **FMEA (Failure Modes and Effects Analysis)** and **FMECA (Failure Modes, Effects, and Criticality Analysis)**. These structured methods have been around since the **1950s**, developed by the **aviation industry**, and are still considered **the gold standard** for failure analysis and strategy development today.

Why? Because they offer a **systematic approach** to understanding how equipment and systems can fail, how those failures impact operations, and—most importantly—**what we can do to prevent or detect them**.

FMEA/FMECA begins by understanding the **function of a system**, then identifying the **most reasonable and likely ways it can fail** to perform that function. From there, we assess the **effects, causes, and detection methods**, and define **strategies to reduce risk**—including condition monitoring, redesign, redundancy, or inspection tasks.

There are **7 core steps** in a well-executed FMEA/FMECA:

1. **Select the system or asset**
2. **Define its functions**
3. **Identify functional failures**
4. **Determine failure modes**
5. **Assess failure effects and consequences**
6. **Evaluate criticality or risk**
7. **Develop proactive maintenance or control strategies**

This process forms the backbone of any robust **Equipment Maintenance Plan (EMP)** and lays the groundwork for **reliability-centered maintenance, criticality assessments, and risk-based decision-making**.

**FMEA and FMECA don't just study failure—they teach us how to prevent it.**

If your asset strategies don't begin here, it's time to re-evaluate.

