

Failures occur, and when it does, to prevent reoccurrence and to find the best practical solution, a failure has to be thoroughly studied and its causes identified. The art of collecting and analysing data to determine the cause(s) of a failure is called **Failure Analysis**

Failure Mode and Effects Analysis (FMEA) is a systemised approach used to eliminate failure by a series of quality improvement activities. The strength of FMEA is usually derived from a cross-functional, team-based approach. The objective of FMEA is to capture the following aspects of a failure:

-  What might have gone wrong (failure mode)
-  What might the result of that failure be (failure effect)
-  How serious could the result of the failure have been (failure severity).



Failures occur due to numerous reasons: It can be the result of design, where materials and shapes are not appropriate for the application. Failure can also be caused from the result of operation and process, where the required procedures were not properly applied throughout the entire process. In most cases, failures that are the result of corrosion occur due to the **chemical, electro-chemical and microbial degradation mechanisms**.

What Extrin Can Offer



Extrin offers a wide range of investigations applicable for almost all types of failure and are customisable, a few of these are listed below:

-  Comprehensive desktop studies
-  Site inspection visits with sample collection
-  Chemical analysis of a wide range of materials including ferrous or non-ferrous metals (copper, aluminium, zinc and their alloys), wood (especially, in wooden cooling towers), plastics and rubbers, and paints and coatings.
-  Photographic reports with full laboratory results
-  Microbial Testing in house or at site
-  Microscopic Examinations
-  Metallurgical tests (SEM, EDS, XRD, OES, PMI, etc.) in the partner third party laboratories



Asset/Infrastructure Assessment

- Corrosion Management Audit
- Asset Condition
- Failure Investigation
- Criticality Review

QA/QC

- Coating Inspections
- Project Management
- Repair Integrity Analysis
- Shutdown Planning and Maintenance Management



Microbial Investigation

- Site Inspections
- Analytical Testing Mechanism Determination
- Remediation

Cathodic Protection

- Complete System Design
- System inspections and testing
- Material Procurement
- Coordination of installation



Concrete Services

- Durability Assessments
- Mix Design Review
- Protective Coatings
- Refurbishment works
- Project Management

Analytical Services

- Water Analysis
- Corrosion Product Testing
- Metallurgical Testing
- Product Trials
- Concrete Testing



Corrosion Training Services

- Corrosion Awareness
- Corrosion Prevention
- Corrosion Detection
- Other Client-Specific Training Courses

Design and Durability

- Durability Report
- Materials selection
- Concrete mix design
- Corrosion rate prediction
- Maintenance specifications



Visit our website for more information on our services and projects undertaken



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