

Root Cause Analysis (RCA)

Course general description:

The natural tendency of many individuals and organizations when presented with a problem is to jump to a solution, any solution. They do not systematically analyse the problem to determine a root cause before considering potential solutions. Reliability engineering and predictive maintenance have two major objectives: preventing catastrophic failures and avoiding deviations from acceptable performance levels that result in personal injury, environmental impact, capacity loss, or poor product quality.

Audience:

This course is designed for:

1. Personnel who are responsible for the failure and deviation investigation process in a GMP (global process management) environment and maintenance engineers
2. Those newer to this field or those who wish to refresh their knowledge of root cause analysis and investigative techniques

Course objectives:

At the end of the workshop participants will be able to understand and practice the following:

- Provides clarification of regulatory expectations and guidance, and the Essential skills necessary to ensure effective and efficient investigations.
- Topics will examine each step of the investigation process from failure identification and notification through documentation
- Participants will practice root cause analysis techniques and Identify corrective and/or preventive actions towards successful remediation

Course duration:

5 days

Course location:

Cairo-Dubai-Istanbul

Course contents:

Day-1

- Introduction & Overview
 - What is failure
 - The Causes of failures
- Failure and Failure Analysis Concepts
 - Failures and Performance Relation
 - Asset Management and Maintenance Engineering
 - Failure Analysis in PAS 55-1:2008
 - Failure Analysis in ISO 55001:2014
 - Failure data in ISO 14224:2007
 - Failure definitions and nomenclature
 - Failure in relation to reliability and availability
 - Failure mechanism
 - Detection method

- Rotating equipment observed failure modes

Day-2

- Top Reasons Why we need to perform RCA
- New needed focus & Top 10 Problems
- No Blame / Accountability Concept
- P-F Curve
- Safeguards / Barriers / Layers of Protection
- Layers of Protection
- Modern Theory of accident

Day-3

- Root Cause Analysis Methodologies and techniques
 - Root Cause analysis basics
 - What is RCA?
 - Root Cause Analysis Cycle
 - Failure troubleshooting
 - Causal Factors

Day-4

- Useful Tools for determining root cause
 - FMEA
 - 5 Whys?
 - Pareto
 - Fishbone/Ishikawa Diagrams
 - Tree Diagram

Day-5

- Case studies
 - Why Titanic Sink
 - Hot Coffee Burn
- PROACT RCA Methodology
- Taproot RCA Methodology overview
 - Taproot software overview
 - Taproot RCA Methodology using software
- Root Cause Analysis Applications, practical examples using Taproot software

Methodology:

- 50% lectures & concepts
- 10% Videos
- 10% Case studies
- 10% Exercises
- 10% Discussions
- 10% Software (if applicable or examples)

Course code: (TEME020)