



ROOT CAUSE ANALYSIS

Accredited by ECSA: **2CPD Points**

OVERVIEW

Engineers and Technicians are often involved in solving maintenance and reliability problems in systems, processes and equipment, as it is critical in preventing repeats of failures and faults in the future. Management and senior engineering staff are tasked with finding reasons as to why things have gone wrong, and how to ensure that these incidents are not repeated. Root Cause Analysis is a (usually reactive) method to identify both the obvious and the underlying causes of a non-conformance or incidents in order that specific solutions can be implemented successfully. The proactive method, however, allows for calculated recommendations of Corrective Actions before an incident occurs.

This RCCA Workshop for Engineers and Technical Personnel is designed to equip delegates with a comprehensive and complete understanding of the tools and techniques used for, and to successfully complete root cause analysis and appropriate corrective actions

LEARNING OUTCOMES

After successfully completing this course, you will be able to:

- Be able to recommend corrective actions and contribute proactively towards the corrective actions
- Understand that a chain of events is generally required to result in either a non-conformance or an incident.
- Effectively and efficiently able to record the data, analyse and contribute productively towards RCA
- Appreciate the inter-dependence of various disciplines when conducting a RCA or an incident investigation.

ROOT CAUSE ANALYSIS

INTRODUCTION TO ROOT CAUSE ANALYSIS

- The three causes – direct cause, contributing cause and root cause
- The three corrective actions – specific, preventative and systemic
- Definition of root cause
- Philosophy of root cause analysis
- Symptom approach vs root cause
- ICAM Methodology
- The basis for RCA – Production, Failure, Systems, Process, Safety and Corrective

BASICS OF ROOT CAUSE ANALYSIS

- What is the need of root cause analysis
- Purpose of corrective based solutions (RCCA)
- Steps for corrective based RCCA approach When to do root cause analysis
- Various techniques of performing root cause analysis

ROOT CAUSE ANALYSIS TOOLS AND TECHNIQUES

- Fishbone technique/ Ishikawa analysis
- FMEA & FMECA – Failure Mode and Effects Analysis & Failure Modes, Effects and Critical Analysis technique
- DMAIC Process
- The Five-Why technique
- Kepner-Tregoe Problem Analysis
- Various other techniques such as Pareto chart, Scatter diagram, Control chart, Tree diagram etc.

MPS – MULTI DIMENSIONAL MODEL

- MPS Model for RCCA
- Basic elements of RCCA
- Key limitations of RCCA
- Ways to alleviate the limitations of RCCA
- Risk Assessments

FISHBONE TECHNIQUE AND FIVE-WHY WITH MPS MODEL (COMBO TOOL)

- Effective usage of combo tool
- Factors to be considered
- Questions to be asked while investigating the root cause
- Referencing and tallying of processes and procedures of quality management

ROOT CAUSE ANALYSIS AND SOLUTION DESIGNING, PUTTING INTO ACTION

- Beginning to End of RCCA Lifecycle (steps and tasks)
- Incident investigation
- Process of analysis
- Solution identification
- Implementation timelines for actions
- Follow up for implementation of solution(s) proposed
- RCCA Flowchart (fact based analysis)

CASE STUDY (EXERCISE)

- Case study exercise to utilize all the learning from the course to perform root cause analysis and corrective actions (RCCA)
- Group discussion of identifications for the above case study
- Wrap-up with key learning points from the workshop