Advanced Root Cause Analysis (RCA)

Energy Milestones Corporation

Advancing Professionals to the next level

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Advanced Root Cause Analysis (RCA)

Overview

Advanced Root Cause Analysis training course will enable delegates to remain abreast of the latest researched trends, techniques and strategies to improve the condition and performance of their operational process. RCA seeks to identify the origin of a problem. It uses a specific set of steps, with tools such as the 5 Whys and Cause & Effect Diagram, to find the primary cause of the problem, so that you can determine what happened, why it happened and figure out what to do to prevent its recurrence.

Course Objectives

At the end of this course, the participants will be able to:

- **Gain a broad understanding and appreciation of the core functional aspects of how to perform an effective advanced Root Cause and Failure Analysis**
- **Understand the importance of identifying root causes in problem-solving**
- **Describe how to apply common Root Cause Analysis tools such as Six Sigma, 5 Whys and Cause & Effect Diagram to identify root causes**
- **Learn how to prioritise root causes with a Pareto Chart**
- **Gain awareness of the pitfalls in root cause analysis**
- **Failure mode, effect & criticality analysis**
- **Fault tree analysis**
- **Gain insight and understanding into the unique leadership required for advanced Root Cause Analysis**

Course Content

1. Key Concepts & Principles of Root Cause Analysis

- What is Root Cause Analysis?
- Root Cause: The "Evil at the Bottom"
- Relationship of Problems, Symptoms and Root Causes
- Why Root Cause Analysis?
- Principles of Root Cause Analysis
- Applications of Root Cause Analysis
- Root Cause Analysis Tools

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Course Content

2. Overview of a Problem-Solving Process

- What is a Problem?
- Problem-Solving Funnel
- A Simple Problem-Solving Process
- PDCA Problem-Solving Process
- DMAIC Problem-Solving Process
- 8D Problem-Solving Process
- What is a Root Cause?
- Dealing with Root Causes

3. Root Cause Analysis using 5 Whys

- What is the 5 Whys?
- Benefits of the 5 Whys
- When is the 5 Whys Most Used?
- 5 Whys Preparation
- How to Complete the 5 Whys
- 5 Whys Process Funnel
- Examples of 5 Whys
- 5 Whys: Key Points
- Drawbacks of the 5 Whys
- Group Activity: 5 Whys Analysis

4. Root Cause Analysis using Cause & Effect Diagram

- Cause & Effect Diagram
- When to Use
- Benefits
- Cause & Effect Diagram (Manufacturing)
- Cause & Effect Diagram (Service)
- Examples of Cause & Effect Diagrams
- How to Construct a Cause & Effect Diagram
- Cause & Effect Diagram: Considerations
- Cause & Effect Diagram: Practice Tips
- Checklists for the 5M1E
- Corrective Actions

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Course Content

5. Root Cause Prioritisation using Pareto Chart

- Cause / Effect relationships
- Generic relationships between two variables
- More complex modelling techniques
- A “Blueprint” for effective operational practice
- Leadership Development and Motivation of Operations Employees
- Maintenance/Operations Process Standards based on regular audits with variable frequencies
- Principles of Information Management
- Definition: Difficulty and Commitment combined to assess Probability of Success

6. Pitfalls to Avoid

- Introduction to the Pareto Chart
- Pareto Chart: Purpose & When to Use
- Pareto Chart - Data Collection
- Example of a Pareto Chart
- How to Construct a Pareto Chart
- Pareto Chart: Tips & Tricks

7. Pitfalls to Avoid

8. A Cause-Effect (also called “Ishikawa” or “Fishbone”) Diagram is a Data Analysis/Process Management Tool used to:

- Organise and sort ideas about causes contributing to a particular problem or issue
- Gather and group ideas
- Encourage creativity
- Breakdown communication barriers
- Encourage “ownership” of ideas
- Overcome infighting

9. Scenario Analysis and Action Plan Development

- Theory of Inventive Problem Solving
- Pros and Cons
- Addressing delegate problems
- Understanding the complexity - Putting it all together

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Targeted Audience

This advanced course has been developed for Process Engineers, Maintenance and Reliability Engineers, Maintenance Managers, Operations Managers, and Asset Management Professionals. Participants benefit from experienced lecturers and updated curriculum aimed at providing an introduction to, or supplementing a candidates' knowledge of Asset Maintenance and Reliability.

Course Methodology

Facilitated by an experienced professional trainer, this training course will be conducted as a highly interactive workshop session. A variety of training methodologies and facilitation techniques will be used before and during the course whenever applicable. These methods are aimed at enhancing individual and group interaction while maximizing learning. Some of these methods are:

- Online Pre-post Test
- Colorful Visual Aids
- Gamification
- Self-Assessment Instruments
- Simulations
- Case Studies
- Videos
- Group Exercises & Discussions
- Role plays
- Indoor & Outdoor games