

Root Cause Failure Analysis Training Program

Technical Proposal

Scope

- **Root Cause Failure Analysis (RCFA) is a systematic approach to identifying the root causes of failures and implementing corrective actions to prevent recurrence.**
- **This training program is designed to provide participants with the knowledge and skills necessary to perform RCFA effectively.**
- **The program will cover maintenance management processes, policies, actions, RCFA steps, Pareto principles, descriptive statistics using Minitab, failure analysis techniques, maintenance management workflow, and the ranking index for maintenance expenditures.**

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Objectives

The primary objectives of this training program are to:

1. Develop a detailed understanding of maintenance management processes and policies.
2. Equip participants with the knowledge to perform effective RCFA.
3. Teach the application of Pareto principles and descriptive statistics in failure analysis.
4. Provide practical guidelines for developing and implementing maintenance management workflows.
5. Understand the ranking index for maintenance expenditures to prioritize action

Course Contents

Day 1: Maintenance Management Process and Policies

Module 1: Maintenance Management Process

- Introduction to Maintenance Management
- Objectives of Maintenance Management
- Key Components of Maintenance Management
- Best Practices in Maintenance Management

Module 2: Maintenance Policies

- Types of Maintenance Policies

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Root Cause Failure Analysis Training Program

- Preventive Maintenance
- Predictive Maintenance
- Corrective Maintenance
- Policy Development and Implementation
- Aligning Policies with Organizational Goals
- Case Studies of Effective Maintenance Policies

Module 3: Maintenance Actions

- Types of Maintenance Actions
- Scheduling and Planning Maintenance Actions
- Documentation and Reporting
- Evaluating Maintenance Effectiveness

Day 2: RCFA Steps and Pareto Principles

Module 4: RCFA Steps

- Introduction to RCFA
- Step-by-Step RCFA Process
 - Problem Identification

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Root Cause Failure Analysis Training Program

- Data Collection and Analysis
- Root Cause Identification
- Corrective Action Development
- Implementation and Follow-Up
- Tools and Techniques for RCFA

Module 5: Pareto Principles

- Introduction to Pareto Analysis
- Applying the Pareto Principle in Maintenance
- Identifying Critical Failures
- Prioritizing Maintenance Actions
- Case Studies and Practical Examples

Day 3: Descriptive Statistics Using Minitab

Module 6: Introduction to Minitab

- Overview of Minitab Software
- Basic Features and Functions
- Data Entry and Management

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Module 7: Descriptive Statistics

- **Measures of Central Tendency (Mean, Median, Mode)**
- **Measures of Dispersion (Range, Variance, Standard Deviation)**
- **Data Visualization (Histograms, Pareto Charts)**
- **Using Minitab for Descriptive Statistics**
- **Interpreting Statistical Results**

Day 4: Failure Analysis Techniques and Maintenance

Management Workflow

Module 8: Failure Analysis Techniques

- **Overview of Failure Analysis**
- **Common Techniques (FMEA, FTA, RCA)**
- **Selecting the Appropriate Technique**
- **Case Studies of Failure Analysis**

Module 9: Maintenance Management Workflow

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- **Designing an Effective Maintenance Workflow**
- **Workflow Components and Sequence**
- **Integrating RCFA into the Workflow**
- **Workflow Automation Tools**
- **Evaluating and Improving the Workflow**

Day 5: Ranking Index for Maintenance Expenditures and Practical Applications

Module 10: Ranking Index for Maintenance Expenditures

- **Introduction to Ranking Index**
- **Factors Influencing Maintenance Expenditures**
- **Developing a Ranking Index**
- **Prioritizing Maintenance Projects**
- **Case Studies and Practical Examples**

Module 11: Practical Applications and Case Studies

- **Applying RCFA in Real-World Scenarios**
- **Group Exercises and Workshops**

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Root Cause Failure Analysis Training Program

- Analysis of Case Studies
- Presenting Findings and Recommendations

Module 12: Course Review and Assessment

- Summary of Key Concepts
- Interactive Q&A Session
- Knowledge Assessment
- Feedback and Course Evaluation

Who Should Attend

This training program is intended for:

1. Maintenance Engineers and Managers
2. Reliability Engineers
3. Operations Managers
4. Technicians involved in maintenance activities
5. Anyone responsible for maintenance management and failure analysis

Course Duration

The proposed duration for the training program is 5 days, with each day comprising 6-8 hours of training, including breaks.

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