Best Technology Soultions **(BTS)**

Training Program

Optimizing Equipment Availability

Introduction:

This course is designed to teach the skills of availability engineering as detailed in the Facilities Maintenance Management Competency Map. As an intermediate level course we will use root cause failure analysis, statistical analysis, and software to identify ways to optimize asset availability to meet business goals. Process equipment examples, case studies, and exercises will be used to demonstrate the techniques. The candidates will be asked to prepare and present an action plan for applying the methods learned to their everyday work upon returning to their own facility.

Throughout this course you will find answers to:

- Is your equipment (fixed or mobile) failing before planned replacement?
- Are you unable to execute maintenance tasks because spare parts are not available?
- Have you made significant investment in CBM methods and tools but struggle to realize the benefit?
- Do you have lots of data from oil analyses but still struggle to accurately predict your equipment breakdowns?
- Do you know how to determine optimum asset life?
- Are you struggling to justify the economics of asset replacement?

- Are you having difficulties in deciding whether to rebuild or replace your equipment to minimize the life cycle costs?
- Do you need to optimize your emergency spare requirements?

Who Should Attend?

Maintenance, engineering, and operations personnel involved in improving the performance of process equipment and systems, Participants should have foundation skills in statistical analysis, reliability techniques for equipment, and maintenance planning and work control.

Course Objectives:

By the end of this course delegates will be able to:

- Recognize the three types of availability
- Establish methods for improving the three types of availability
- Apply root cause failure analysis and problem solving
- Improve availability through maintenance, operations, and engineering actions
- Analyze current availability
- Project future levels of availability
- Optimize availability to meet the profit, safety, operational, and environmental goals of the business

Course Outline:

- RE Fundamentals
- Important Definitions
- Challenges of physical asset management
- The maintenance excellence pyramid

- Reliability through the operator
- Total Productive Maintenance
- Reliability by design: Reliability Centered Maintenance
- Optimizing Maintenance & Replacement Decisions
- Three Types of Availability
- How Equipment Spends Its Time
- Reliability-Centered Maintenance (RCM) Methodology
- Seven Questions of RCM
- Six Failure Patterns
- Maintenance Strategies for Battling Failure Patterns
- Failure Modes, Effects and Criticality Analysis
- How to Apply RCM in Operating Facilities
- How to Apply RCM in New Facilities
- How to Implement a Reliability-Centered Maintenance Program
- RCM with Simulation and Modeling
- Availability improvement methods
- Availability prediction
- Types of availability
- Inherent availability
- Achievable availability
- Operational availability
- Factors that impact availability
- Equipment design
- Equipment installation
- Operating methods
- Maintenance methods
- Availability improvement methods
- Predicting availability
- Weibull analysis

- Reliability block diagrams
- Availability modelling