Decision Analysis for Operation and Maintenance Professionals

Oil & Gas Engineering
Munich (Germany)
13 - 17 Jan 2025

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Introduction

This program examines lean thinking and techniques for decision analysis with emphasis on the lean approach and responsiveness to the customer requirements. Decision-making is the most central human activity, intrinsic in our biology, and done both consciously and unconsciously. We need it to survive. Taking a decision is not just a question of selecting the best alternative. Often one needs to prioritize all the alternatives for resource allocation among a portfolio of option, or to examine the effect of changes introduced to initial judgments.

Course Objectives of Decision Analysis for Operation and Maintenance Professionals

- Improve productivity through the use of better, timelier information.
- Understand how world-class organizations solve common asset management problems.
- Optimize planning and scheduling resources.
- Carry out optimized failure analyses.
- Optimize asset management budgets by the avoidance of unplanned equipment failures in service.
- Develop a practical approach of an action plan to utilize these technologies in their areas of responsibility, fitting them into the overall strategy, and measuring benefits.

Decision Analysis for Operation and Maintenance Professionals Course Outlines

Day 1
Introduction to Decision Making

- Scope and significance of Decisions
- The Decision Making Process
- Choosing Between Options by Projecting Likely Outcomes
- Decision Tree Analysis: decision models; low probability, high-consequence events; valuing additional information and control
- Monte Carlo Simulation: optimization; advantages and limitations

Implementing Multiple Criteria Decision Analysis

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- Definition of Decision Analysis
- How, and Why, Bad Decisions are Made
- Problems with Traditional Methods
- Guidelines for Good Decision Analysis

Day 2
The Analytic Hierarchy Process AHP

- What is AHP?
- The Comparative Matrix
- Consistency Analysis
- Sensitivity Analysis
- Benefit/Cost Analysis
- Resources Allocation
- Applications of the AHP The Concorde Case, Maintenance Strategy, Highway planning

Risk Management through Failure Mode & Effect Analysis FMEA

- Risk Mitigation
- Fault Tree analysis
- Risk Priority Number
- The Criticality Matrix
- Equipment Criticality Grading
- Cases from Oil and Gas Industry and others
- Modelling Reliability of Systems
- Series and Parallel Systems
- The Redundancy Concept
- Types of Redundancy
- When to Use Redundancy

Day 3
MRP and ERP Systems

- What is ERP and how did it develop
- What is MRP System
- What is MRPII System
- Planning and Control
- The Bill of Materials
- Master Production Schedule
- Scope of Decisions

Optimum Performance Measure

- Challenges of Performance Measures
- Performance Measures as a Continuous Improvement Process
- Desirable Features in Maintenance Performance Measures
- Best and Worst Practices in Performance Measures

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Day 4
The Overall Equipment Effectiveness as a Source of Best Practice in Maintenance

- Advantages of OEE as an Improvement Programme
- Lean Maintenance through the Use of OEE
- Analysis of the Six-Big Losses

The House of Quality

- Basics of design evaluation
- How to convert the voice of the customer to engineering solutions for a better design
- Apply the concept of House of Quality in practical cases

Day 5
Decision Analysis for Optimisation of Maintenance Activities

- How to get the most of your CMMS?
- Benefits that can result from CMMS
- Optimum Decisions for Maintenance Policies
- Unmet needs in Responsive Maintenance
- Key Features of Next Generation Maintenance Systems
- How to transform Data to Decisions

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