

# Decision Analysis for Operation and Maintenance Professionals

Oil & Gas Engineering  
Cairo (Egypt)  
23 - 27 Mar 2025

UK Training

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## Decision Analysis for Operation and Maintenance Professionals

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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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