

Decision Analysis for Operation and Maintenance  
Professionals

*Cape Town (South Africa)*

*14 - 18 April 2025*

UK Training

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# Decision Analysis for Operation and Maintenance Professionals

Code: OG28 From: 14 - 18 April 2025 City: Cape Town (South Africa) Fees: 4000 Pound

## 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

- 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.

## 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

- 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.

### 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

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- 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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