

Introduction

This training program on decision analysis for operation and maintenance professionals explores proven methods and practices for making informed decisions, with emphasis on efficiency, responsiveness, and alignment with customer requirements. Decision-making is a fundamental human activity that occurs both consciously and unconsciously, and it plays a vital role in every aspect of life and work.

Decision-making is more than simply selecting one option; it often requires evaluating a variety of alternatives to ensure effective allocation of resources or reassessing the effects of adjustments to earlier choices. This course will immerse participants in practical training designed for professionals in operation and maintenance, equipping them with the skills to make better decisions and achieve excellence in their roles.

Advancing with Decision Analysis

As part of our advanced training commitment, this conference provides participants with a comprehensive understanding of the principles of decision analysis, highlighting both its practical advantages and recent developments in the field.

Attendees will examine structured decision-making processes and learn to use analytical tools that support sound operational judgments. Applied decision analysis in operations research will also be addressed, ensuring participants can directly connect theory with practical applications in their professional environment.

The goal is to demonstrate the value of decision analysis in both strategic planning and day-to-day activities within operation and maintenance functions, making participants more effective in addressing organizational challenges.

Intended Audience

- Professionals working in operation functions
- Professionals working in maintenance functions
- Professionals specializing in reliability
- Supervisors responsible for key operations
- Consultants focusing on organizational improvement

Objectives of the Conference

By the conclusion of this training program, participants will be able to:

- Increase productivity by utilizing accurate and timely information.

- Learn how leading organizations resolve common challenges in asset management.
- Improve efficiency in resource planning and scheduling.
- Conduct in-depth failure analysis to determine underlying causes.
- Reduce costs associated with equipment breakdowns through improved planning.
- Create and implement an actionable plan that integrates new decision-making techniques into operational strategies while tracking measurable benefits.

Targeted Skills and Competencies

Upon completion, participants will strengthen their ability to:

- Break down complex challenges into structured and manageable parts.
- Assign value to alternatives and rank them according to well-defined criteria.
- Apply multi-criteria decision-making tools to practical problems.
- Use operational research and management science methods to support analysis.
- Enhance decision-making by aligning objectives with specific standards and developing ways to measure and prioritize these factors.

Conference Content

Unit 1: Introduction to Decision-Making

- Understanding the scope and significance of decision-making
- Stages of the decision-making process
- Using projective analysis to evaluate potential outcomes
- Applying decision tree analysis, including evaluating rare but high-impact events and determining the value of additional information
- Exploring Monte Carlo simulation for optimization, with its strengths and limitations

Unit 2: Applying Multiple Criteria Decision Analysis

- Definition and relevance of decision analysis
- Identifying common causes of poor decision-making
- Limitations of traditional methods of decision-making
- Establishing guidelines for structured and effective analysis

Unit 3: The Analytic Hierarchy Process

- Introduction to the analytic hierarchy process and its role in decision analysis

- Building and interpreting the comparative matrix
- Evaluating consistency in decision-making within this framework
- Conducting sensitivity analysis
- Applying cost-benefit analysis and allocating resources
- Real-world applications, such as maintenance strategy design and highway planning

Unit 4: Risk Management with Failure Mode and Effect Analysis

- Approaches to risk mitigation
- Conducting fault tree analysis
- Understanding and applying the risk priority number
- Developing a criticality matrix to grade equipment importance
- Case studies from industries such as oil and gas
- Modeling system reliability, including series systems, parallel systems, and redundancy

Unit 5: Enterprise and Resource Planning Systems

- History and development of enterprise resource planning systems
- Understanding material requirements planning and manufacturing resource planning systems
- Planning and control processes
- Importance of the bill of materials and the master production schedule

Unit 6: Measuring Optimum Performance

- Challenges in establishing effective performance measurements
- Approaching performance measurement as part of continuous improvement
- Identifying desirable features in evaluating maintenance performance
- Comparing best practices and worst practices in performance measurement

Unit 7: Overall Equipment Effectiveness as a Maintenance Benchmark

- Benefits of overall equipment effectiveness as an improvement tool
- Applying overall equipment effectiveness to lean maintenance practices
- Examining the six categories of performance loss and their effect on efficiency

Unit 8: The House of Quality in Design and Maintenance

- Fundamentals of evaluating design quality
- Translating customer input into engineering requirements

- Applying the house of quality to real-world engineering and maintenance scenarios

Unit 9: Decision Analysis for Optimizing Maintenance Activities

- Maximizing the potential of computerized maintenance management systems
- Understanding the wide range of benefits these systems provide
- Making effective decisions about maintenance strategies
- Addressing unmet needs in responsive maintenance
- Exploring the features of next-generation maintenance systems
- Converting operational data into actionable decisions