



ARP-A Category I – Advocate

Track B – Manager-Engineer Awareness

Asset Reliability Practitioner Training & Certification

CAT - IB

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The Asset Reliability Practitioner [ARP-A] Category I - Track B “MANAGER-ENGINEER AWARENESS” course is intended for senior management, maintenance and operations/production management, engineers, junior reliability engineers, and condition monitoring professionals who need to understand the “big picture” of the reliability and performance improvement process.

Course Information:

Course Format: Public classroom (and live stream) courses in Nærum (Denmark) or Darmstadt (Germany). Private and on-site courses for a single company (min. 5 students) are available.

Optional: Certification examination, 2 hours, 60 multiple-choice questions, 70% passing grade. Can be taken online or in the classroom.

Certification Prerequisite: Prior experience is not required for attending the training course, but 6 months of general industrial experience is required for certification.

The Asset Reliability Practitioner (ARP) certification scheme follows the independent format of the time-tested ISO certification programs, such as ISO 18436, and it follows the guidelines defined under ISO/IEC 17024.

Detailed topic list:

Understand why improvement is desired

Introduction

- Overview of reliability and performance improvement
- What causes equipment to be unreliable or perform poorly
- The relationship between reliability improvement and asset management, operational excellence, TPM, and lean strategies
 - An introduction to ISO 55000
- The relationship between reliability and safety

Benefits

- An overview of the benefits, with basic examples

Assessing Your Benefits

- What is important to your business?
- What are you good at, where do you need help?
- What do those gaps cost you?

Culture Change

- The importance of developing the culture of reliability
- The steps to change people’s and an organization’s culture
- Being aware of human error and psychology (e.g. biases)
- The importance of defining:
 - who is responsible?

- Who is accountable?
- Who will provide support?
- Who should be consulted?
- Who should be kept informed [RASCI]?

Selling Senior Management

- Building the business case based on the goals of the business, the identified gaps, and the value gained by closing those gaps
- How to ensure you gain and retain senior management support

Strategy

- What is involved in developing a strategy o Setting goals
 - The need for a mission/vision statement
 - The main components of a “roadmap” strategy
 - The need to establish a “steering committee”
- Gaining support across the organization

Understanding Failure

- Why does equipment fail?
 - Mechanical failures
 - Electrical failures
- Understanding equipment “failure patterns” o Does all equipment wear out with age?
 - What are “random failures”
 - Early age “infant mortality” failures
- Why is this so important?



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Understand what we can all do about it

Defect Elimination

- Overview of the goals of defect elimination
- An overview of each of the main sources of defects and how to eliminate them
 - Design for reliability, maintainability, operability, and sustainability
 - Procurement for lowest life cycle costs
 - Transport without damage
 - Acceptance testing to reject defective equipment
 - Storage to eliminate degradation
 - Eliminating maintenance induced failures through precision installation, maintenance and commissioning
 - Eliminating operator induced failures
 - Proactive tasks that reduce the likelihood of failure and poor performance

Asset Strategy

- Overview of run-to-failure, condition-based, and interval-based maintenance
- The need for the master asset list and bill of materials
- Establishing the asset criticality ranking
- Utilizing Preventive Maintenance Optimization [PMO], Reliability Centered Maintenance [RCM], and/or Failure Modes Effects (and Criticality) Analysis [FMECA] to develop the asset reliability strategy
- Operator driven reliability [ODR]
- How can people share their knowledge to improve these processes?
- The importance of senior management support
- The importance of leadership throughout the organization
- The difference between leadership and management (and reluctant obedience)
- Culture change
- Helping to gain and retain senior management support
- Engaging people in the reliability and performance improvement effort o Training and certification
 - Skills development
 - Awareness sessions

Work Management

- The benefits of coordinated, planned, and scheduled work
- An overview of the complete cycle: work requests, planned tasks, kitting, scheduling, managing break-in work, precision job execution (and the need for written procedures), job feedback and improvement
- The opportunity to improve work efficiency (or “wrench time”)
- How planning can minimize time/costs with shutdowns and outages
- The role of the computerized maintenance management system [CMMS] or enterprise asset management [EAM] system

Spares Management

- The financial and work management benefit of efficient spares management
- Basic introduction to spares selection
- Caring for spares

Precision and Proactive Work

- What is precision and the importance of precision work
 - The basics of precision shaft and belt alignment, soft foot correction, fastening, machine balancing, and other common mechanical and electrical tasks
 - The importance of developing and following written procedures
 - The importance of precision installation, such as bearings, seals, gears, belts, pumps, electrical equipment, and other equipment
 - The importance of commissioning
 - The importance of taking proactive steps to avoid future problems, including precision lubrication, resonance correction, power quality control, and keeping equipment and workplaces clean and organized

Condition Monitoring

- Overview of CM principles for mechanical and electrical equipment
- The relationship between CM and planning/scheduling and operations
- A detailed overview of:
 - Vibration analysis
 - Ultrasound
 - Oil analysis
 - Wear particle analysis
 - Electric motor testing
 - Infrared analysis
 - Non-Destructive Testing [NDT]
 - Process/performance monitoring
 - Visual inspections
 - The future of CM and predictive analytics

Breaking Out of Reactive Maintenance

- What to do if you are trapped in the reactive maintenance cycle?
- The importance of contributing to the strategy and offering your ideas and observations

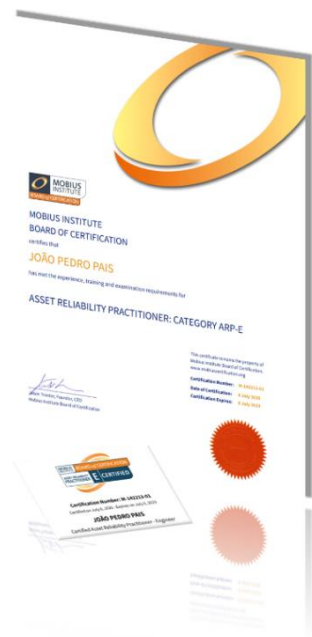


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Continuous Improvement

- The principle of and importance of continuous improvement, Kaizen, PDCA, and Lean
 - The need to reassess business conditions and what is critical
 - Utilizing metrics to measure and improve performance
 - Benchmarking against industry and the facilities “best day”
 - The importance of establishing the right KPIs
 - Suggested metrics and KPIs
 - Most effective use of KPIs
 - The importance of accurate data collection
- The importance of constant communication
 - Root cause (failure) analysis [RCA and RCFA]
 - The importance of conducting RCA/RCFA
 - The importance of making the improvements
 - How to perform RCA/RCFA
 - The need for on-going education, skills, and awareness training.



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