Digitalizing Industrial Maintenance and Reliability Training Course



23 - 27 Nov 2026

Cape town

4600 € (Per Person)

Ref: #INM9987_277511

Course Introduction / Overview:

The industrial landscape is undergoing a profound transformation, moving away from traditional reactive and preventive maintenance towards more intelligent, data-driven strategies. This shift, often termed Maintenance 4.0, is critical for organizations aiming to enhance operational efficiency, minimize downtime, and maximize asset lifecycle value. This course provides a comprehensive exploration of the principles, technologies, and strategies underpinning the digital transformation of industrial maintenance and reliability. Drawing on foundational concepts like those presented by John Moubray in his seminal work "Reliability-Centered Maintenance II," we will explore how modern digital tools amplify these proven methodologies. Participants will delve into the core components of this evolution, including the Industrial Internet of Things (IIoT), predictive analytics, machine learning, and digital twins. BIG BEN Training Center has designed this program to bridge the gap between operational technology (OT) and information technology (IT), equipping professionals with the skills to not just understand these technologies but to strategically implement them. The curriculum focuses on creating a practical roadmap for digitalization, from initial assessment and data acquisition to full-scale implementation and calculating return on investment, ensuring that maintenance functions become a core driver of business value and competitive advantage in the modern industrial era.

Target Audience / This training course is suitable for:

- Maintenance Managers and Supervisors.
- Reliability Engineers and Technicians.
- Plant and Facility Managers.
- Operations and Production Managers.
- Asset Management Professionals.
- IT and OT Professionals involved in industrial systems.
- Continuous Improvement and Process Engineers.
- Project Managers leading digitalization initiatives.

Target Sectors and Industries:

- Manufacturing and Assembly Plants.
- Oil and Gas Production and Refining.
- Power Generation and Utilities.
- Pharmaceuticals and Chemical Processing.
- Aerospace and Defense.
- Automotive and Transportation.
- Mining and Metals.
- Government and Public Sector Infrastructure Management.

Target Organizations Departments:

- Maintenance and Reliability.
- Engineering and Technical Services.
- Plant and Factory Operations.
- Asset Management and Integrity.
- Information Technology (IT) and Operational Technology (OT).
- Capital Projects and Planning.
- Supply Chain and MRO Inventory Management.
- Health, Safety, and Environment (HSE).

Course Offerings:

By the end of this course, the participants will have able to:

- Develop a strategic roadmap for digital transformation in maintenance operations.
- Evaluate and select appropriate IIoT sensors and data acquisition technologies.
- Implement condition-based and predictive maintenance programs using data analytics.
- Understand the application of AI and Machine Learning for failure prediction.
- Utilize digital twin technology for asset monitoring and simulation.
- Integrate modern CMMS/EAM systems with advanced analytics platforms.
- Master data analysis techniques to derive actionable insights for reliability improvement.
- Lead change management initiatives to foster a data-driven maintenance culture.
- Calculate the return on investment (ROI) for digitalization projects.
- Enhance operational efficiency and overall equipment effectiveness (OEE).

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be immersive, interactive, and highly practical, ensuring participants can apply their learning directly to their work environments. This course moves beyond theoretical lectures to foster a deep, functional understanding of digital maintenance. The program is built around a blend of expert-led presentations, real-world case study analyses, and collaborative group workshops. Participants will engage in hands-on exercises simulating the process of developing a digitalization strategy and analyzing maintenance data sets. Interactive sessions encourage open discussion and knowledge sharing, allowing attendees to learn from both the instructor's expertise and the diverse experiences of their peers. We emphasize a problem-solving approach, where teams will tackle common challenges in implementing technologies like predictive maintenance and IIoT. Continuous feedback is a cornerstone of our approach, with structured Q&A sessions and practical application reviews ensuring that all concepts are thoroughly understood. This dynamic learning environment guarantees a comprehensive mastery of the skills needed to lead maintenance and reliability into the digital future.

Course Agenda (Course Units):

Unit One: Foundations of Digital Maintenance and Reliability

- Introduction to Industry 4.0 and Maintenance 4.0.
- The evolution from reactive to prescriptive maintenance.
- Key concepts of digital transformation in an industrial context.
- Understanding the business case for digitalization.
- Assessing organizational readiness for digital change.
- Core components of a smart factory ecosystem.
- The relationship between reliability engineering and digital tools.

Unit Two: Core Enabling Technologies

- The Industrial Internet of Things (IIoT) for data acquisition.
- Condition-Based Monitoring (CBM) sensors and techniques.
- Introduction to Artificial Intelligence (AI) and Machine Learning (ML) in maintenance.
- Understanding Digital Twins for asset lifecycle management.
- Augmented Reality (AR) and Virtual Reality (VR) for maintenance tasks.
- Cloud computing vs. edge computing for industrial data.
- Mobile technologies and their role in modern maintenance workflows.

Unit three: Data Management and Analytics for Reliability

- The role of CMMS and EAM in a digital strategy.
- Strategies for effective industrial data collection and storage.
- Data cleansing, preparation, and validation techniques.
- Descriptive, diagnostic, and predictive analytics models.
- Root Cause Analysis (RCA) in a data-rich environment.
- Developing and tracking key performance indicators (KPIs) and asset health scores.
- Visualizing maintenance data for actionable insights.

Unit Four: Strategy, Implementation, and Change Management

- Developing a phased digital transformation roadmap.
- Integrating new technologies with legacy systems and processes.
- Project management for maintenance digitalization initiatives.
- Cybersecurity considerations for Operational Technology (OT).
- Managing the human element and fostering a digital-first culture.
- Training and upskilling the maintenance workforce.
- Calculating ROI and securing stakeholder buy-in.

Unit Five: Advanced Applications and Future Trends

- Introduction to Prescriptive Maintenance (RxM).
- Leveraging digital tools for MRO and spare parts inventory optimization.
- The role of digitalization in sustainability and energy management.
- Ethical considerations of AI in maintenance decision-making.
- The future of autonomous maintenance and self-healing assets.
- Building a resilient and agile maintenance organization.
- Final project presentation and course wrap-up.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As maintenance becomes increasingly data-driven and automated, what is the evolving role of human intuition and experience in ensuring industrial reliability?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by offering a holistic, strategy-first approach to the digitalization of industrial maintenance and reliability. While many programs focus narrowly on specific technologies, our curriculum is built on the premise that successful transformation is rooted in a solid strategic foundation, effective change management, and a clear understanding of business value. We bridge the critical gap between operational technology (OT) and information technology (IT), providing a common language and framework for professionals from both domains. The content is vendor-neutral, focusing on principles and methodologies rather than promoting specific software or hardware. This empowers participants to make informed, unbiased decisions tailored to their organization's unique needs. Furthermore, the course places significant emphasis on the human element, addressing the challenges of upskilling the workforce and fostering a culture that embraces data-driven decision-making. By integrating foundational reliability principles with cutting-edge digital applications, this training provides a uniquely comprehensive and practical learning experience that prepares leaders to not just adopt new tools, but to architect a truly intelligent and resilient maintenance ecosystem for the future.