MERCURY

Smart Asset Management in Power Transmission: Integrating Technology, Risk, & Operational Excellence

26 – 30 April 2027
Rome (Italy)



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Ref: 16345_1016778 **Date:** 26 – 30 April 2027 **Location:** Rome (Italy) **Fees:** 7200 Euro

Introduction:

The power transmission sector is facing increasing challenges in ensuring reliability, efficiency, and sustainability. Smart asset management has become essential for operators who aim to optimize performance while reducing risks and operational costs. This Smart Asset Management in Power Transmission: Integrating Technology, Risk, and Operational Excellence course examines how the integration of technology and data-driven strategies can enhance decision-making in asset-intensive environments.

This Smart Asset Management in Power Transmission: Integrating Technology, Risk, and Operational Excellence program provides insights into risk-based maintenance, predictive analytics, and operational excellence models in the energy sector. It emphasizes practical frameworks that ensure transmission assets deliver maximum value across their lifecycle. Participants will gain an understanding of how to balance technological adoption with regulatory compliance and financial considerations. They will apply cutting-edge methods that support sustainable and resilient power systems.

Targeted Groups:

This Smart Asset Management in Power Transmission: Integrating Technology, Risk, and Operational Excellence training targets professionals seeking specialized knowledge and skills:

- Transmission engineers and system operators.
- Asset managers and maintenance planners.
- Risk managers and compliance officers.
- Electrical utility supervisors and coordinators.
- Energy policy advisors and regulatory specialists.
- Reliability and operations engineers.
- Consultants in energy and infrastructure.
- Senior managers in utilities and power companies.
- Professionals transitioning into smart grid and digital asset management.

Targeted Competencies:

Participants will gain the following competencies during the Smart Asset Management in Power Transmission: Integrating Technology, Risk, and Operational Excellence program:

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- Ability to design and manage smart asset management frameworks.
- Skills in applying predictive and condition-based maintenance.
- Competence in integrating IoT, AI, and data analytics.
- Knowledge of risk assessment models in asset reliability.
- Capability to implement operational excellence strategies.
- Analytical skills for asset health and lifecycle management.
- Decision-making competence using data-driven insights.
- Strategic planning for digital transformation in utilities.
- Practical application of compliance and regulatory standards.

Course Objectives:

Participants will achieve the following objectives by completing the Smart Asset Management in Power Transmission: Integrating Technology, Risk, and Operational Excellence course:

- Define principles of smart asset management in power transmission.
- Analyze the role of digital tools in asset lifecycle optimization.
- Apply risk-based frameworks to evaluate asset reliability.
- Differentiate between preventive, predictive, and condition-based maintenance.
- Evaluate operational excellence strategies for sustainable transmission networks to ensure optimal performance and reliability.
- Integrate IoT and data analytics into asset performance monitoring.
- Develop asset health indices to prioritize investments.
- Assess regulatory and compliance requirements in asset management.
- Interpret data-driven decision-making for critical asset strategies.
- Formulate practical asset replacement and renewal plans.
- Demonstrate leadership in implementing digital transformation initiatives.
- Create risk mitigation approaches aligned with organizational goals.
- Optimize asset utilization with cost-efficiency principles.
- Construct cross-functional strategies linking technology and operations.
- Design smart asset roadmaps for future transmission systems.

Studying Scenarios:

In this Smart Asset Management in Power Transmission: Integrating Technology, Risk, and Operational Excellence training, participants will develop their skills through the analysis of the following scenarios:

- Evaluating asset performance using predictive maintenance tools.
- Designing a risk-based framework for transmission networks.
- Responding to unexpected equipment failure with resilience plans.
- Applying IoT solutions to monitor high-voltage assets.
- Prioritizing investment through asset health indices.
- Managing regulatory compliance in digital asset transformation.
- Integrating operational excellence into routine maintenance planning.
- Planning renewal strategies for aging transmission infrastructure.
- Developing a technology roadmap for future-ready power systems.

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Course Content:

Unit 1: Foundations of Smart Asset Management in Power Transmission:

- Overview of asset management principles in power transmission.
- Evolution of asset management from traditional to smart frameworks.
- Key challenges in modern power transmission systems.
- Concepts of asset lifecycle management and optimization.
- Digital Transformation and Its Impact on Transmission Networks.
- Benefits of integrating technology into asset management.
- Introduction to Data-Driven Decision-Making for Energy Systems.
- Understanding Cost Efficiency and Sustainability in Asset Use.
- Aligning asset management with organizational strategies.

Unit 2: Technology Integration in Power Transmission Asset Management:

- Role of IoT and sensor-based monitoring in asset health tracking.
- Big Data and Analytics for Predictive Asset Performance.
- Artificial intelligence and machine learning in energy operations.
- Cloud platforms for asset data management and visualization.
- Case studies on digital twin applications in transmission.
- Benefits and risks of adopting emerging technologies.
- Cybersecurity considerations in digital asset environments.
- Practical integration of digital platforms with legacy systems.
- Building workforce readiness for technology adoption.

Unit 3: Risk-Based Asset Management and Reliability:

- Definition of Risk in Power Transmission Asset Management.
- Frameworks for asset risk identification and assessment.
- Quantitative vs. qualitative risk assessment models.
- Developing asset health indices for prioritization.
- Methods for balancing reliability, risk, and cost.
- Case examples of asset failures and lessons learned.
- Strategies for proactive and predictive maintenance planning.
- Contingency planning for critical infrastructure disruptions.
- Regulatory standards guiding risk-based asset management.

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Unit 4: Operational Excellence in Power Transmission:

- Defining operational excellence in asset management.
- Linking performance management with asset strategies.
- Continuous improvement models in utility operations.
- Lean and Six Sigma Approaches for Maintenance Efficiency
- Benchmarking best practices in global transmission networks.
- Stakeholder engagement in achieving operational goals.
- Integrating sustainability into operational excellence.
- Workforce training and competency development.
- Key performance indicators for monitoring asset success.

Unit 5: Future Trends and Strategic Roadmaps in Asset Management:

- Trends in the Digital Transformation of Power Systems.
- Role of renewable integration in asset management.
- Smart grids and their impact on transmission asset planning.
- Building Resilient Systems for Climate and Disaster Risks.
- Policy and regulatory developments shaping asset strategies.
- Financing models for long-term asset investment.
- Roadmaps for digital asset management adoption.
- Innovation strategies for sustainable energy transitions.
- Vision for next-generation power transmission networks.

Final Insights & Key Takeaways:

Smart asset management in power transmission is a cornerstone of sustainable, resilient, and efficient energy systems. By integrating technology, risk-based frameworks, and operational excellence, organizations can enhance reliability while reducing costs and improving overall efficiency. Participants leave this course ready to lead digital transformation and implement strategies that future-proof transmission networks.