MERCURY

Industrial Utilities Management in Steel Manufacturing

22 February – 5 March 2027
Madrid (Spain)



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Industrial Utilities Management in Steel Manufacturing

Ref: 16007_1002405 **Date:** 22 February – 5 March 2027 **Location:** Madrid (Spain) **Fees:** 11100 Euro

Introduction:

Industrial utilities form the critical infrastructure that powers the steel manufacturing industry. The seamless functioning of energy, water, air, and waste systems is essential to ensure consistent, cost-effective, and sustainable steel production. This Industrial Utilities Management in Steel Manufacturing course equips participants with the skills and strategies to manage and optimize utility systems across steel plants. It bridges foundational knowledge with advanced industrial practices for improved operational efficiency and environmental compliance.

Participants will explore various systems, including energy utilization, air supply, wastewater management, and digital automation, that are essential for maintaining steel plant performance. The Industrial Utilities Management in Steel Manufacturing training emphasizes risk management in the utilities industry while developing leadership and decision-making skills for real-world scenarios.

By integrating sustainable development practices, attendees will learn to implement long-term utilities management solutions in the steel manufacturing sector. Whether enhancing current systems or planning future utility infrastructure, this Industrial Utilities Management in Steel Manufacturing program delivers actionable insights and practical tools for impactful change.

Targeted Groups:

This Industrial Utilities Management in Steel Manufacturing training course targets professionals seeking specialized knowledge and skills:

- Steel plant managers are aiming to optimize industrial utilities.
- Engineers are involved in steel manufacturing operations.
- Facility managers in the industrial or heavy manufacturing sectors.
- Professionals working in utilities management and planning.
- Operations and production supervisors in steel plants.
- Environmental compliance officers in industrial firms.
- Asset management professionals in the utilities industry.
- Energy consultants focused on industrial energy management and utilization.
- Students or recent graduates entering the steel manufacturing industry.
- Technical personnel preparing for leadership in utilities management.

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Course Objectives:

Participants will achieve the following objectives by completing the Industrial Utilities Management in Steel Manufacturing course:

- Comprehend the role and components of industrial utilities in steel manufacturing.
- Recognize how utility systems contribute to efficient steel production.
- Analyze and optimize energy usage within plant operations.
- Apply techniques for managing industrial air, water, and waste systems.
- Design effective monitoring systems for utility performance.
- Evaluate energy-saving strategies and integrate them into existing systems.
- Assess environmental impacts and adopt sustainable utility practices.
- Interpret the utilities industry and waste management standards and compliance needs.
- Utilize risk management principles for safer utility system operations.
- Explore automation tools, including SCADA and IoT, for real-time management.
- Implement strategies to meet safety and regulatory requirements.
- Plan and conduct performance audits to identify areas for improvement.
- Recommend data-driven improvements to utility systems.
- Demonstrate leadership in coordinating utility teams in steel plants.
- Incorporate renewable energy solutions where applicable.
- Develop adaptive strategies for upcoming technologies in the utilities management field.

Targeted Competencies:

Participants will gain the following competencies during the Industrial Utilities Management in Steel Manufacturing program:

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- Efficiently manage utility systems in the steel manufacturing industry.
- Detect inefficiencies and propose optimization plans.
- Implement industrial energy management and utilization strategies to optimize energy use.
- Apply best practices in water treatment and wastewater control.
- Monitor and manage air supply and ventilation effectively.
- Comply with regulations on environmental protection and safety.
- Utilize digital utilities management solutions for operational control.
- Coordinate with utilities teams and utilize leadership and communication skills.
- Analyze risk and implement risk management in the utilities industry.
- Integrate emerging technologies and sustainable practices into plant utilities.

Course Content:

Unit 1: Introduction to Industrial Utilities in Steel Manufacturing:

- Definition and scope of industrial utilities in the manufacturing industry.
- Explain the importance of utilities in maintaining a production flow.
- Learn about the types of utilities used in steel manufacturing plants.
- Understand the basic components of energy, water, and air systems.
- Overview of what utilities management is and its relevance.
- Understand Key performance indicators for utility systems.
- Introduction to utilities management concepts.
- Explain the relationship between steel manufacturing processes and utility systems.
- Explore the role of utilities in productivity, safety, and cost control.
- Understand the strategic integration of utilities management in plant operations.

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Unit 2: Energy Management in Steel Manufacturing:

- Introduction to industrial energy management and utilization.
- Sources of energy used in steel production include electricity, gas, and thermal energy.
- Energy flow mapping and consumption tracking.
- Identifying high-energy-consuming operations in steel plants.
- Implementing energy efficiency measures and upgrades.
- Use of sub-metering and energy dashboards.
- Role of ISO 50001 in energy performance.
- Benefits of energy audits in identifying savings opportunities.
- Load forecasting and energy procurement strategies.
- Case studies of energy savings in the steel manufacturing industry.

Unit 3: Water Management Systems in Steel Manufacturing:

- Importance of water in cooling, processing, and cleaning.
- Water balance analysis in steel plants.
- Types of water treatment systems and technologies.
- The utilities industry's waste management related to water.
- Water recycling, reuse, and zero liquid discharge methods.
- Managing and reducing wastewater discharge.
- Monitoring water quality and treatment efficiency.
- Environmental compliance in water system operations.
- Automation of water utility systems for real-time control.
- Sustainable water conservation practices in steel manufacturing.

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Unit 4: Air Supply and Ventilation Systems in Steel Manufacturing:

- Air system requirements for safe and efficient production.
- Key equipment: compressors, fans, ducts, and air dryers.
- Utility management in ventilation and pressure control.
- Air filtration and methods for removing particulate matter.
- Energy recovery from compressed air systems.
- Monitoring air quality and emissions.
- Risk management in the utilities industry for air hazards.
- Design considerations for ventilation in high-heat areas.
- Maintenance scheduling and system diagnostics.
- Using digital sensors for predictive maintenance of air systems.

Unit 5: Waste Treatment and Management in Steel Plants:

- Classification of waste generated in steel production.
- Utilities industry and waste management frameworks.
- Treatment options for solid, liquid, and hazardous waste.
- Slag processing and by-product recovery strategies.
- Environmental impact assessments and mitigation planning.
- Handling and disposal of dust, sludge, and scrap.
- Best practices in industrial waste segregation.
- Compliance with national and international waste laws.
- Integration of circular economy principles.
- Role of digital reporting in waste tracking and audits.

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Unit 6: Automation and Digital Tools in Utility Management:

- Introduction to automation in utilities management.
- Overview of SCADA and HMI systems for monitoring utilities.
- Role of predictive maintenance using AI and ML.
- Integrating IoT sensors for energy and water flow tracking.
- Asset management in the utilities industry using digital tools.
- Real-time analytics for performance decision-making.
- Implementing cloud-based utilities management solutions.
- Digital twins for simulating utility operations.
- ROI of automation in steel manufacturing utilities.
- Change management for digital utility transformation.

Unit 7: Sustainability in Utilities Management:

- What is steel manufacturing's environmental footprint?
- Role of sustainability in utility planning.
- Adopting renewable energy sources like solar or waste heat recovery.
- Efficient use of natural resources in steel production.
- Sustainable design of utility systems.
- Aligning with SDGs in utilities management.
- Green certification and reporting standards.
- Case studies on sustainable utilities management concepts.
- Behavior-based strategies for utility conservation.
- Lifecycle assessment of utility infrastructure.

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Unit 8: Regulatory Compliance and Safety Standards:

- What is utilities management compliance in industry standards?
- Key regulations include OSHA, EPA, and ISO standards.
- Safety protocols for high-pressure systems and chemical handling.
- Environmental and emissions compliance.
- Risk management in utility systems operations.
- Emergency response planning for utility failures.
- Training requirements for utilities personnel.
- Conducting safety inspections and risk audits.
- Permit-to-work systems and lockout/tagout procedures.
- Documenting and reporting regulatory compliance.

Unit 9: Utility Performance Audits and Improvement:

- Importance of auditing utility systems in steel plants.
- Framework for energy, water, and waste audits.
- Tools for measuring performance and benchmarking.
- Identifying bottlenecks and inefficiencies.
- Developing action plans for cost-effective improvements.
- Performance metrics: KPIs and energy intensity.
- Stakeholder engagement in audit processes.
- Post-audit implementation and tracking.
- Reporting structures and dashboard creation.
- Continuous improvement through periodic reviews.

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Unit 10: Future Trends and Emerging Technologies in Utility Management:

- What is the future of utilities management in heavy industry?
- Role of AI, IoT, and data science in smart utility systems.
- Blockchain applications in utility data security and traceability.
- Machine learning for failure prediction and system control.
- Hydrogen, bioenergy, and other emerging energy sources.
- Remote operation and control centers for utilities.
- Integrated platform management for all utilities.
- Impact of evolving environmental regulations.
- Preparing utility managers for Industry 4.0.
- Innovation case studies from the steel manufacturing industry.

Final Insights & Key Takeaways:

Industrial utilities are the lifeblood of steel manufacturing, directly affecting cost, quality, and sustainability. Mastery of utilities management empowers professionals to streamline operations and meet strategic performance goals. Embracing automation, sustainability, and emerging technologies is essential to staying competitive in the steel manufacturing industry. With the right knowledge and tools, participants will drive innovation and long-term success in industrial utility operations.