Industrial Energy Management Systems Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Industrial Energy Management Systems (IEMS) are rapidly transforming the way manufacturing plants, processing industries, and large-scale facilities monitor, control, and optimize energy consumption. With rising global energy costs, carbon neutrality goals, and increasing regulatory pressure, organizations are adopting smart energy management, IoT-based monitoring systems, AI-driven analytics, and ISO 50001 energy standards to achieve operational efficiency and sustainability. This training course is designed to equip professionals with practical and advanced knowledge of energy optimization, digital energy monitoring, smart grids, carbon footprint reduction, and predictive energy analytics for industrial applications.

The Industrial Energy Management Systems Training Course provides a comprehensive understanding of how modern industries can integrate real-time energy monitoring systems, SCADA-based energy control, renewable energy integration, and industrial automation technologies to reduce operational costs and improve energy efficiency. Participants will gain hands-on exposure to energy auditing techniques, load management strategies, demand response systems, and sustainability reporting frameworks, enabling them to implement scalable energy-saving solutions aligned with global ESG standards.

Programme Curriculum

Industrial Energy Management Systems Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Understand fundamentals of Industrial Energy Management Systems (IEMS)
2. Implement ISO 50001 Energy Management System standards
3. Analyze industrial energy consumption patterns using smart analytics
4. Apply IoT-based energy monitoring solutions in real-time systems
5. Develop skills in energy auditing and carbon footprint assessment
6. Optimize plant performance using AI-driven predictive energy analytics
7. Integrate SCADA systems for energy control and automation
8. Improve efficiency through demand response and peak load management
9. Implement renewable energy integration in industrial facilities
10. Reduce costs using energy efficiency optimization techniques
11. Design smart grid-enabled industrial energy systems
12. Ensure compliance with global ESG and sustainability frameworks
13. Build capability in digital twin energy modeling and simulation

Target Audience

1. Energy Managers and Facility Managers
2. Electrical and Mechanical Engineers
3. Industrial Automation Engineers
4. Sustainability and ESG Consultants
5. Plant Operations Managers
6. Maintenance and Reliability Engineers
7. Renewable Energy Specialists
8. Technical Project Managers and Consultants

Course Modules

Module 1: Fundamentals of Industrial Energy Management Systems

- Energy management principles and lifecycle
- Industrial energy consumption structures
- Introduction to ISO 50001 framework
- Key performance indicators (KPIs) in energy systems

- Energy baseline development techniques
- **Case Study:** Energy reduction strategy in a cement manufacturing plant using baseline optimization

Module 2: Energy Auditing and Monitoring Techniques

- Types of industrial energy audits
- Data acquisition systems and sensors
- Energy monitoring dashboards
- Load profiling and benchmarking
- Energy loss identification methods
- **Case Study:** Energy audit implementation in a textile production facility reducing 18% energy waste

Module 3: IoT and Smart Energy Monitoring Systems

- IoT architecture in energy systems
- Wireless sensor networks for energy tracking
- Cloud-based energy analytics platforms
- Real-time monitoring and alerts
- Edge computing for industrial energy data
- **Case Study:** Smart factory deployment of IoT sensors in automotive manufacturing plant

Module 4: SCADA and Industrial Automation in Energy Control

- SCADA system architecture
- PLC integration for energy optimization
- Supervisory control strategies
- Energy data visualization systems
- Fault detection and diagnostics
- **Case Study:** SCADA-based energy control system in oil & gas refinery reducing peak load costs

Module 5: Renewable Energy Integration in Industry

- Solar PV integration in industrial plants
- Wind energy hybrid systems
- Battery energy storage systems (BESS)
- Grid-tied vs off-grid configurations
- Energy transition strategies
- **Case Study:** Solar-powered industrial park reducing grid dependency by 35%

Module 6: AI, Machine Learning & Predictive Energy Analytics

- Machine learning for energy forecasting
- Predictive maintenance in energy systems
- AI-based load optimization
- Digital twin energy modeling
- Anomaly detection in consumption patterns
- **Case Study:** AI-based energy optimization in semiconductor manufacturing facility

Module 7: Demand Response and Energy Optimization Strategies

- Peak load management techniques
- Demand-side management systems

- Time-of-use tariff optimization
- Energy storage optimization
- Load shifting strategies
- **Case Study:** Demand response implementation in steel manufacturing plant reducing peak charges by 22%

Module 8: Sustainability, ESG & Smart Grid Energy Systems

- ESG reporting frameworks
- Carbon accounting and reporting tools
- Smart grid infrastructure
- Energy efficiency compliance standards
- Digital sustainability reporting
- **Case Study:** Smart grid integration in a multinational FMCG production facility

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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