Energy Transition in Process Industries 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

The global process industries are undergoing a profound transformation driven by Net-Zero Emissions, Decarbonization, Sustainability, Energy Efficiency, and Climate Change Mitigation. Energy transition has become a strategic imperative for industries such as oil & gas, petrochemicals, chemicals, fertilizers, cement, mining, steel, pulp & paper, and manufacturing. Organizations are increasingly investing in renewable energy integration, green hydrogen, carbon capture utilization and storage (CCUS), electrification, digital energy management, and circular economy initiatives to achieve environmental compliance, operational excellence, and long-term business resilience. Energy Transition in Process Industries Training Course provides participants with practical knowledge and strategic insights to navigate evolving energy landscapes while maintaining competitiveness and profitability.

As governments, investors, and customers demand stronger Environmental, Social, and Governance (ESG) performance, process industries must adopt innovative technologies and sustainable operating models. The course explores emerging trends such as Industry 4.0, Artificial Intelligence for Energy Optimization, Smart Manufacturing, Carbon Management, Low-Carbon Technologies, Sustainable Process Engineering, and Clean Energy Solutions. Through practical case studies, interactive discussions, and industry best practices, participants will develop actionable strategies to accelerate energy transition projects, reduce carbon footprints, improve energy productivity, and support organizational sustainability goals.

Programme Curriculum

Energy Transition in Process Industries Training Course

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Course Duration

5 days

Course Objectives

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

1. Understand global Energy Transition Strategies and decarbonization pathways.
2. Evaluate Net-Zero Roadmaps for process industry operations.
3. Identify opportunities for Energy Efficiency Optimization.
4. Assess the business value of Renewable Energy Integration.
5. Analyze applications of Green Hydrogen Technologies.
6. Implement Carbon Capture, Utilization and Storage (CCUS) initiatives.
7. Develop effective Carbon Management Frameworks.
8. Apply Digital Transformation tools for energy optimization.
9. Leverage Artificial Intelligence and Predictive Analytics for energy performance.
10. Integrate ESG and Sustainability Reporting into business strategies.
11. Evaluate Circular Economy Solutions for industrial sustainability.
12. Design practical Low-Carbon Process Improvement Projects.
13. Develop comprehensive Energy Transition Action Plans aligned with corporate objectives.

Target Audience

1. Process Engineers
2. Energy Managers
3. Operations Managers
4. Sustainability and ESG Professionals
5. Plant Managers and Production Supervisors
6. Asset Integrity and Reliability Engineers
7. Environmental Compliance Specialists
8. Senior Executives, Technical Directors, and Decision Makers

Course Modules

Module 1: Energy Transition Fundamentals and Industry Drivers

- Global energy transition trends and market outlook
- Net-zero commitments and climate policies
- Decarbonization strategies for process industries
- Energy transition technologies and innovations
- Regulatory frameworks and ESG requirements
- **Case Study:** Decarbonization roadmap implementation in a multinational petrochemical company.

Module 2: Energy Efficiency and Process Optimization

- Energy performance assessment methodologies
- Process integration and heat recovery systems
- Utility optimization and energy audits
- Advanced process control for energy savings
- Benchmarking and performance indicators
- **Case Study:** Energy efficiency improvement project in a refinery reducing energy intensity by 15%.

Module 3: Renewable Energy Integration

- Solar and wind power applications in industry
- Renewable power purchase agreements (PPAs)
- Hybrid energy systems for process plants
- Energy storage technologies and solutions
- Economic evaluation of renewable projects
- **Case Study:** Industrial manufacturing facility integrating renewable energy to reduce operational costs.

Module 4: Hydrogen Economy and Alternative Fuels

- Green hydrogen production technologies
- Hydrogen storage and transportation
- Industrial applications of hydrogen
- Biofuels and synthetic fuels
- Safety considerations and risk management
- **Case Study:** Green hydrogen deployment in fertilizer production operations.

Module 5: Carbon Management and CCUS

- Carbon footprint measurement techniques
- Carbon accounting and reporting standards
- Carbon Capture Utilization and Storage technologies
- Carbon reduction investment strategies
- Carbon market mechanisms and pricing
- **Case Study:** CCUS implementation in a cement manufacturing facility.

Module 6: Digitalization and Smart Energy Management

- Industry 4.0 for energy optimization
- Artificial Intelligence and Machine Learning applications
- Digital twins and predictive analytics

- Industrial Internet of Things (IIoT)
- Smart energy monitoring systems
- **Case Study:** AI-driven energy management system reducing plant energy consumption.

Module 7: Circular Economy and Sustainable Operations

- Circular economy principles in process industries
- Resource efficiency and waste valorization
- Water-energy nexus optimization
- Sustainable supply chain management
- Environmental risk reduction strategies
- **Case Study:** Circular economy transformation in a chemical manufacturing plant.

Module 8: Developing Energy Transition Roadmaps

- Strategic planning for energy transition
- Technology selection and investment evaluation
- Change management and stakeholder engagement
- Financing and risk assessment
- Building actionable implementation plans
- **Case Study:** Enterprise-wide energy transition roadmap for a large industrial complex.

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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