Training Course on Process Plant Optimisation and Energy Conservation

Professional Development Training Course Outline

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

Course Introduction

Training Course on Process Plant Optimisation & Energy Conservation is a specialized program designed to equip professionals with cutting-edge knowledge and actionable skills to streamline operations, reduce energy consumption, and maximize productivity in industrial process plants. As energy costs continue to soar and environmental regulations tighten, industries are increasingly seeking sustainable solutions that align with operational excellence and cost-efficiency. This course bridges the gap between theory and practice through hands-on case studies, smart analytics, and innovative energy-saving techniques.

Participants will gain insight into advanced energy management, real-time data monitoring, and process integration strategies that directly improve bottom-line performance. Tailored for professionals in the oil & gas, petrochemical, power generation, manufacturing, and utility sectors, this training will empower organizations to meet modern challenges with efficiency, sustainability, and resilience.

Programme Curriculum

Training Course on Process Plant Optimisation & Energy Conservation

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Training Objectives

1. Understand key principles of process optimisation and energy conservation.
2. Identify and reduce energy losses in critical plant operations.
3. Apply data-driven decision-making for performance improvement.
4. Learn techniques for waste heat recovery and thermal energy optimization.
5. Enhance operational efficiency through automation and digitization.
6. Implement real-time monitoring systems for energy usage.
7. Develop strategies for process integration and heat exchanger networks.
8. Perform energy audits and interpret energy performance indicators (EnPIs).
9. Explore green technologies and sustainable energy practices.
10. Improve plant safety, compliance, and environmental performance.
11. Optimize compressed air systems, pumps, and motors.
12. Reduce carbon emissions and align with net-zero targets.
13. Execute cost-benefit analysis for energy-saving initiatives.

Target Audience

1. Process Engineers
2. Plant Managers
3. Energy Managers
4. Operations Supervisors
5. Maintenance Engineers
6. HSE Professionals
7. Industrial Automation Specialists
8. Sustainability Coordinators

Course Duration: 5 days

Course Modules

Module 1: Fundamentals of Process Plant Optimisation

- Key concepts in process control and plant performance.
- Efficiency indicators and benchmarks in plant operations.
- Introduction to process flow diagrams and P&IDs.
- Role of automation in optimisation.
- KPI tracking and performance improvement tools.
- **Case Study:** Diagnosing inefficiencies in a chemical processing plant.

Module 2: Energy Conservation Techniques

- Energy balance and utility mapping.
- Pinch technology and heat integration.
- Demand-side management strategies.
- Energy-efficient equipment and retrofitting.
- Key energy-saving opportunities (steam, HVAC, lighting).
- **Case Study:** Implementing energy-saving measures in a refinery.

Module 3: Heat Recovery & Thermal Energy Systems

- Waste heat sources and recovery technologies.
- Heat exchanger network design and retrofitting.
- Steam systems optimization.
- Combined heat and power (CHP) systems.
- Thermal insulation and loss prevention.
- **Case Study:** Waste heat utilization in a food processing facility.

Module 4: Electrical System Optimisation

- Motor and drive efficiency improvements.
- Load analysis and peak shaving techniques.
- Efficient transformer and distribution system design.
- Power factor correction and harmonic mitigation.
- Measurement and verification protocols.
- **Case Study:** Reducing electrical energy losses in a pulp and paper plant.

Module 5: Process Integration & System Analysis

- Systems thinking for energy and process integration.
- Simulation tools and digital twin technologies.
- Integration of utilities with core operations.
- Total site energy targeting methods.
- Cross-functional team collaboration techniques.
- **Case Study:** Process integration in a petrochemical plant.

Module 6: Energy Audit & Performance Evaluation

- Conducting detailed energy audits.
- Energy performance indicators (EnPIs) and benchmarking.
- Data collection methods and instrumentation.
- Audit report preparation and implementation plans.
- Post-audit tracking and continuous improvement.
- **Case Study:** Comprehensive audit of a pharmaceutical manufacturing facility.

Module 7: Renewable Energy in Industrial Applications

- Solar thermal and photovoltaic integration.
- Biomass and biogas for process heating.
- Industrial use of wind and geothermal energy.
- Renewable energy storage systems.
- Grid integration and regulatory compliance.
- **Case Study:** Solar-assisted steam generation in a textile factory.

Module 8: Digital Transformation for Energy Efficiency

- IoT and sensor technologies for energy tracking.
- Use of AI and machine learning in predictive maintenance.
- Cloud-based SCADA and EMS systems.
- Cybersecurity in energy management.
- Big data analytics for performance trends.
- **Case Study:** AI-enabled predictive energy optimization in a cement plant.

Training Methodology

- Interactive lectures and expert-led discussions.
- Real-life case study analysis and problem-solving sessions.

- Hands-on simulation tools and software demonstrations.
- Group activities and collaborative workshops.
- Assessments and feedback to ensure concept retention.

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

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com