Pilot Plant Operations and Equipment Selection Training Course

Professional Development Training Course Outline

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

Course Introduction

Pilot Plant Operations and Equipment Selection Training course is designed to provide participants with advanced knowledge and practical skills required to optimize pilot-scale process development, equipment selection, and plant operations. With a strong focus on process simulation, operational efficiency, and scaling methodologies, this training equips professionals to bridge the gap between laboratory research and full-scale industrial production. Participants will learn to evaluate technical, economic, and operational factors that influence decision-making in pilot plant environments, ensuring safe, cost-effective, and innovative process scale-up.

In an era where industrial efficiency and innovation drive competitive advantage, this training emphasizes trending industry practices such as process intensification, automation integration, digital twin applications, and sustainable equipment design. By combining theoretical insights with practical case studies, participants will develop the competence to troubleshoot operational challenges, select the most appropriate process equipment, and streamline plant workflows. This unique program prepares engineers, operators, and managers to make impactful contributions to their organizations by leveraging modern pilot plant technologies and process optimization strategies.

Programme Curriculum

Pilot Plant Operations and Equipment Selection Training Course

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Course Objectives

1. Understand the fundamentals of pilot plant operations and process scale-up.
2. Apply trending techniques in equipment selection for diverse industrial applications.
3. Evaluate process simulation tools and digital twin technologies for pilot plants.
4. Enhance operational efficiency through automation and data-driven monitoring.
5. Develop practical troubleshooting approaches for pilot-scale challenges.
6. Implement process safety and compliance standards in pilot plant operations.
7. Analyze sustainable design and energy-efficient equipment alternatives.
8. Strengthen decision-making with techno-economic feasibility assessments.
9. Master operational control and quality management strategies.
10. Integrate lean manufacturing and continuous improvement principles.
11. Translate R&D outcomes into scalable pilot plant processes.
12. Benchmark global best practices in pilot plant and equipment selection.
13. Build hands-on expertise through case studies and scenario-based learning.

Organizational Benefits

- Improved process efficiency and reduced operational costs
- Enhanced safety and compliance across pilot plant operations
- Informed decision-making in equipment procurement and selection
- Strengthened innovation through advanced pilot-scale process design
- Increased adaptability to global industrial standards
- Streamlined process scale-up from R&D to commercial production
- Effective use of automation and digital transformation technologies
- Higher return on investment in plant equipment and operations
- Better cross-functional collaboration between engineers and managers
- Sustainable growth through energy-efficient pilot plant solutions

Target Audiences

- Process Engineers
- Plant Operations Managers
- Equipment Procurement Specialists
- Industrial Researchers
- Chemical Engineers
- Pilot Plant Supervisors

- Project Managers
- Quality and Safety Officers

Course Duration: 5 days

Course Modules

Module 1: Fundamentals of Pilot Plant Operations

- Introduction to pilot plant operations and objectives
- Key differences between laboratory, pilot, and industrial scales
- Importance of scalability and reproducibility in pilot operations
- Equipment categories commonly used in pilot plants
- Case study: Pilot plant fundamentals in pharmaceutical manufacturing
- Operational challenges and solutions

Module 2: Equipment Selection Principles

- Criteria for choosing pilot plant equipment
- Cost-benefit and lifecycle analysis for equipment selection
- Compatibility of materials and processes
- Trends in modular and flexible plant design
- Case study: Equipment selection for specialty chemicals pilot plant
- Performance evaluation and selection checklist

Module 3: Process Simulation and Digital Tools

- Role of simulation in process optimization
- Application of digital twin technologies
- Data integration for predictive maintenance
- Simulation-driven design for efficiency
- Case study: Digital twin application in pilot-scale food processing
- Best practices for simulation-based scale-up

Module 4: Operational Efficiency and Automation

- Principles of lean operations in pilot plants
- Automation technologies and process control systems
- Role of sensors and IoT in pilot operations
- Monitoring and optimizing resource utilization
- Case study: Automation in a petrochemical pilot facility
- Strategies for improving operational productivity

Module 5: Process Safety and Compliance

- Identifying potential safety hazards
- Implementing safety management systems
- Compliance with environmental and industrial regulations
- Training staff for safe operations
- Case study: Process safety failures and lessons learned
- Best practices for compliance in pilot operations

Module 6: Sustainable Equipment and Energy Efficiency

- Importance of sustainability in equipment design
- Energy-efficient technologies and practices
- Waste minimization strategies in pilot plants
- Green chemistry and eco-friendly materials
- Case study: Sustainable pilot plant in renewable energy sector
- Lifecycle assessment of equipment

Module 7: Techno-Economic Feasibility and Decision-Making

- Methods for conducting feasibility studies
- Analyzing process economics and investment risks
- Decision-making frameworks for equipment selection
- Financial modeling for pilot operations
- Case study: Economic analysis of bioprocess pilot plant
- Integrating technical and financial perspectives

Module 8: Case Studies in Pilot Plant Operations and Equipment Selection

- Analysis of real-world pilot plant operations
- Key lessons from pharmaceutical, chemical, and energy industries
- Challenges in equipment scalability and adaptation
- Evaluating pilot project outcomes
- Case study: Successful pilot-to-production scale-up in agrochemicals
- Future trends and innovations in pilot plant operations

Training Methodology

- Instructor-led sessions with interactive discussions
- Hands-on demonstrations with simulation software
- Group workshops and scenario-based learning
- Case study analysis and problem-solving exercises
- Role-playing for equipment selection decision-making
- Q&A sessions with industry experts

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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