Drying Technology and Equipment 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

Drying technology is a critical unit operation widely applied across food processing, pharmaceuticals, chemicals, agriculture, minerals, and manufacturing industries. It involves the controlled removal of moisture from materials to enhance product stability, shelf life, quality, and process efficiency. With increasing demand for energy-efficient drying systems, industrial automation, and sustainable manufacturing, modern drying technologies are evolving rapidly to meet global production standards and regulatory compliance requirements.

Drying Technology and Equipment Training Course provides a comprehensive understanding of fundamental principles, industrial drying systems, equipment selection, process optimization, and troubleshooting techniques. Participants will gain practical insights into thermal drying, freeze drying, spray drying, fluidized bed drying, vacuum drying, and hybrid drying systems. The course emphasizes real-world industrial applications, energy optimization, and quality control strategies aligned with Industry 4.0, process automation, and green manufacturing trends.

Programme Curriculum

Drying Technology and Equipment Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Understand fundamentals of moisture removal mechanisms and drying kinetics
2. Analyze different types of industrial drying technologies and equipment
3. Apply principles of heat and mass transfer in drying processes
4. Optimize energy efficiency in drying systems
5. Evaluate performance of spray dryers, drum dryers, and tray dryers
6. Understand freeze drying and vacuum drying technologies
7. Implement process control and automation in drying operations
8. Identify and troubleshoot common drying defects and failures
9. Enhance product quality through moisture control and uniform drying
10. Select appropriate drying equipment for food, pharma, and chemical industries
11. Apply safety standards and environmental compliance in drying operations
12. Integrate sustainable and green drying technologies
13. Develop skills in industrial case-based problem solving and optimization

Target Audience

1. Process Engineers and Production Engineers
2. Food Processing Industry Professionals
3. Pharmaceutical Manufacturing Technicians
4. Chemical and Petrochemical Engineers
5. Quality Control and Quality Assurance Specialists
6. Mechanical and Industrial Engineering Students
7. Plant Operators and Maintenance Technicians
8. R&D Scientists and Product Development Engineers

Course Modules

Module 1: Fundamentals of Drying Technology

- Moisture content analysis and classification
- Drying rate curves and critical moisture points
- Heat and mass transfer principles
- Types of moisture bonding in materials
- Introduction to industrial drying systems
- **Case Study:** Optimization of drying time in cereal grain processing plant

Module 2: Convective Drying Systems

- Tray dryers and tunnel dryers operation
- Airflow patterns and temperature control
- Batch vs continuous drying systems

- Energy consumption analysis
- Industrial applications in food drying
- **Case Study:** Efficiency improvement in vegetable dehydration unit

Module 3: Spray Drying Technology

- Atomization techniques and droplet formation
- Spray dryer design and components
- Powder formation and particle size control
- Milk, coffee, and pharmaceutical applications
- Process optimization parameters
- **Case Study:** Milk powder production optimization in dairy industry

Module 4: Vacuum Drying & Freeze Drying

- Low-pressure drying mechanisms
- Lyophilization process stages
- Preservation of heat-sensitive materials
- Pharmaceutical and biotech applications
- Equipment design and control systems
- **Case Study:** Vaccine preservation using freeze drying technology

Module 5: Fluidized Bed Drying Systems

- Principle of fluidization
- Heat transfer efficiency in fluidized beds
- Granulation and coating applications
- Pharmaceutical tablet drying processes
- Operational challenges and solutions
- **Case Study:** Granule drying optimization in tablet manufacturing plant

Module 6: Rotary and Drum Dryers

- Rotary dryer design and operation
- Material handling and residence time
- Drum drying for viscous materials
- Mineral and chemical processing applications
- Maintenance and performance monitoring
- **Case Study:** Mineral ore drying efficiency improvement in mining industry

Module 7: Advanced & Hybrid Drying Technologies

- Microwave and infrared drying systems
- Solar-assisted industrial drying
- Hybrid drying system integration
- Smart sensors and IoT-based monitoring
- Energy-efficient innovations
- **Case Study:** Solar-assisted drying system in agricultural produce preservation

Module 8: Process Control, Troubleshooting & Optimization

- Drying system instrumentation and control

- Common defects: case hardening, overheating
- Energy auditing and performance benchmarking
- Predictive maintenance strategies
- Industry 4.0 integration in drying systems
- **Case Study:** Reduction of product loss in pharmaceutical drying process using IoT monitoring

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

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

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