

Spray Drying: Operation, Optimization and Design Aspects

DIRECTED BY

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ACCREDITED
COURSE

- Fundamentals of Spray Drying Technology
- Introduction to Calculation Methods
- Practical Applications
- Troubleshooting Typical Problems

about the course

This 90-minute accredited online training focuses on the Spray-Drying process and technology, which is present in numerous industries. Even though the training will focus on the fundamentals of spray drying by emphasizing scientific principles that are common to any industry, specific examples will be given for applications in Food, Beverages, Chemicals, Pharmaceuticals, Pulp and Paper, etc. The course will balance the science behind spray drying with real-world challenges that are faced in the day-to-day routine of Operations, Engineers, and Science Professionals.

Experience top-notch training LIVE from an industry expert that goes beyond traditional lectures. Engage in an interactive and stimulating learning experience that will help you develop the skills you need to excel in your field.

Those attending the live training event must have a webcam on their computer as well as a microphone and speakers/headset to fully participate.

who should attend

This online training will be especially valuable to anyone involved with the operations, design, testing, and projects requiring Spray Drying technology.

The course's target audience includes Operations Professionals, Engineers, Scientists, Quality Control Professionals, Environmental, Health and Safety Professionals, and anyone involved with Spray Drying systems.

Professionals who work in Food, Beverages, Specialty Chemicals, pharmaceuticals, Pulp and Paper, Pilot Plants, etc. will greatly benefit from this course.

learning objectives

Upon completion of this course, you will be able to:

- Explain the fundamentals of spray drying, including all its different units of operation.
- Select and design the best spray drying system, based on the application requirements.
- Perform basic dryer calculations to determine the system's efficiency and baseline.
- Troubleshoot typical problems that occur in Spray Drying operations.
- Describe the drying system's limits and how to increase process efficiency.
- List the critical design parameters for all units of operation that are part of a Spray Drying system

course outline

Review of Learning Objectives

Module 1:

Fundamentals of Spray Drying Technology

- Introduction to Spray Drying
- Elements of a Spray Dryer processing line
- Feed slurry conditions – Pre-heating, viscosity, solids percentage, etc.
- What makes a particular product more challenging to dry than others?
- Methods of liquid atomization: Which method to select?
- Configurations of Spray Drying Systems.
- Single-stage versus multi-stage drying processes
- Chamber design and configuration
- Instrumentation: Critical variables to monitor and control in a Spray Drying process
- Droplet drying theory
- Air-Powder separation

Module 2:

Introduction to Calculation Methods

- Spray Dryer Thermal Efficiency Formula
- Mass and Energy balance analysis
- Introduction to Psychrometry
 - Water vapor – air mixtures
 - Evaporative cooling
 - Dry bulb and wet bulb temperatures
 - Enthalpy
 - Relative Humidity
- Psychrometric charts
- Air-powder separation calculations

Module 3:

Practical Applications

- Pilot plant testing
- Challenges in Spray Drying processes
- Incomplete drying
- Drying chamber impingement
- Powder line blockages
- Product out of spec
- Troubleshooting/ Root Cause Analysis
- Product-specific examples
- Case study

Question and Answer Session

Assessment Opportunity

course instructor

Herberto Dutra, Mechanical Engineer with 30 years of experience in processing industries with careers at Kraft Foods, Nestle, Bay Valley, and Sensient, including 20 years of hands-on experience in Spray Drying. Mr. Dutra's expertise ranges from pilot plant scaling up, design and construction of numerous Spray Drying plants, day-to-day operation, troubleshooting, and optimization. Academically, Mr. Dutra holds a bachelor's degree in mechanical engineering from UERJ (Rio de Janeiro, Brazil), an MBA from Keller Graduate School, and an MSc in Mechanical Engineering at Purdue University.

Through his employers, Mr. Dutra has written and taught several training courses in Spray Drying, Powder Handling, Agglomeration, Liquids Handling, Cooking Processes, Plant Design, Packaging, and many other programs developed for Operations Professionals, Engineering, Scientists, etc.

Accreditations



International Accreditors for Continuing Education and Training (IACET)

Cobblestone has been approved as a CEU Accreditor by IACET and awards CEUs for participation in qualified courses. Cobblestone has demonstrated that it complies with the ANSI/IACET Standards and is authorized to offer IACET CEUs for its programs. CEUs will be awarded for participation in Cobblestone's courses at the rate of .1 CEU per contact hour upon successful completion of the entire course and 70% accuracy in the required Learners' Assessment. A minimum score of 80% is required for all courses within a Cobblestone Certification Program. This course offers a total of 1.5 contact hours or .2CEUs. For further information, visit www.iacet.org