



*Training Course:
Transport of Solids: Hydraulic & Pneumatic
Conveying*

*30 March - 3 April 2025
Dubai (UAE)*

Training Course: Transport of Solids: Hydraulic & Pneumatic Conveying

Training Course code: EN6045 From: 30 March - 3 April 2025 Venue: Dubai (UAE) - Training Course Fees: 5300 € Euro

Introduction

Transport of solids in the form of hydraulic and pneumatic conveying has progressed enormously since its beginning over a century ago. Industries concerned with the processing of particulate solids, have employed hydraulic or pneumatic transport of solids in almost all plants: the examples of catalyst, polymer particles, china, clay, pigments, paints, foodstuffs, etc. In these process industries, the greatest bulk is in the solid-state and almost always in particulate form. In the chemical industry alone, the value of the product formed as particles is greater than 30% of the whole. The handling of particles is very important and often done wastefully from an engineering point of view. Improvements could lead to considerable savings over wide range of industries.

Because of the complex nature of interaction between solid particles and intervening, the subject of transport solids in the form of hydraulic transport and pneumatic conveying is difficult and multi-faceted. The entire system is difficult to design and it is even more important to be operated and maintained properly. In order to decide whether hydraulic or pneumatic transport is viable solution, it is necessary to know the costs of the entire process including solids preparation, pumping or compressing, pipeline and solids post-processing. The course is very practical and provides information on materials, equipment, design, operation, maintenance and troubleshooting. The practical numerical examples and workshops are designed to facilitate and solidify the understanding of the material.

Highlights of the course include:

- Principles of selecting the most appropriate means of transport of solids for the given application
- Guidance for optimum performance and in trouble-free operation
- Practical real-life examples of how to calculate slurry pipeline or pneumatic piping system
- Interplay of various influencing design parameters
- Economical issues: cost and benefit analysis

Objectives

This course will enable the participants to achieve the following:

- Familiarity with different systems for hydraulic transport and pneumatic conveying and their advantages and disadvantages
- Appreciation of methods of the hydraulic and mechanical design of systems for the transport of solids according to existing world standards and codes
- Knowledge on how to make optimal selection and sizing of elements of a system for a given industrial application
- Application of methods of estimating the efficiency of transport systems and the ways to improve the reliability of operation
- Guidelines for accepted maintenance and protection techniques regarding problems in operation, such as corrosion, erosion, abrasion, wear, etc

Benefits

This course will benefit the delegates through:

- Greater familiarity with hydraulic transport and pneumatic conveying systems as encountered in every-day industrial practice in process and chemical industry
- Better knowledge of methods to assess the main design parameters of systems for the transport of solids
- Understanding of guidelines for selection and sizing of main components of these systems
- Modern methods of transport of solids industry regarding continuous demands for better overall efficiency and long and trouble-free life
- Appreciation of the accepted best practices for their efficient operation and maintenance and potential alterations

Outlines

Day 1:

Main Characteristics of Systems for Transport of Solids

- System for hydraulic transport of solids: main features, elements, and components
- Basics of the flow of liquids in pipes: velocity and pressure drop of the flow of mixtures
- Classification of flow characteristics of common slurries
- Review of main elements of slurry preparation equipment
- Other vital components of hydraulic transport

Day 2:

Pipeline Design Considerations

- Selection of pipes, material, and diameter based on maximum fluid velocity
- Detailed calculation of pressure losses in the pipeline
- Selection and sizing of pumps for a hydraulic transport system
- Handling of difficult slurries
- After-treatment of transported material
- Case study on selected projects of hydraulic transport

Day 3:

Practical Aspects of System Safe Operation

- System design environmental considerations
- Guidelines for adequate pipeline installation and maintenance

- Hydraulic system inspection, control, and performance testing
- Problems with system starting and stopping
- Methods of pipeline vibration reduction
- Economic analysis: capital costs and operating costs

Day 4:

Characteristics of Different Types of Pneumatic Conveying Systems

- Systems for pneumatic conveying of solids
- Basics of the flow of gases in pipes
- Sizing of blowers and piping connections
- Review of main elements of material preparation equipment
- Selection of pipe material and diameter and design of piping systems

Day 5:

Survey of Equipment and Methods for After Treatment of Transported Material

- Material - gas separation
- After-installation inspection and check-up
- Receiving and unloading of material, start-up of operation
- Operational problems and troubleshooting
- Control and monitoring the system
- Optimizing and upgrading the existing systems: issue of changing the material

Registration form on the Training Course: Transport of Solids: Hydraulic & Pneumatic Conveying

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