
Maintenance and Troubleshooting of **CONVEYORS AND CHUTES**

Plus

CONVEYOR, CHUTE AND FEEDER DESIGN



YOU WILL LEARN:

- Maintenance of conveyors
- Troubleshooting conveyor problems
- Splicing techniques
- Safety management
- Design and installation
- Capacity, sizing and power of equipment
- The fundamentals of belt conveyor, chute and feeder design

WHO SHOULD ATTEND:

- Maintenance Engineers, Technicians and Staff
- Plant Engineers
- Operation, Maintenance, Inspection and Repair Managers, Supervisors and Engineers
- Mechanical Engineers and Technicians
- Design Engineers
- Electrical Engineers and Technicians
- Consulting Engineers



Technology Training that Works

THE WORKSHOP

The workshop is broken into three days - the first two days will cover basic conveyors, selection, safety, legal obligations, terminology and background and an optional third day will deal with the nuts and bolts of conveyor, chute and feeder design.

Belt conveyors frequently provide the most satisfactory and economical method of transporting materials such as mine ores, earth, sand, crushed stone, cement and concrete. The high and continuous speed of operation of the belt makes for a high capacity of transport of materials.

This workshop is designed for engineers and technicians from a wide range of abilities and backgrounds and will provide an excellent introduction to troubleshooting, maintenance and basic design rules of conveyors and chutes. It is intended to cover the fundamentals of belt conveying and would be useful for those with little experience in this area.

Before commencing a detailed course on conveyors it is important to have a solid practical knowledge of the material to be conveyed. A basic knowledge is provided of the bulk materials characteristics and properties. This will enable you to have a far stronger ability to troubleshoot and design workable conveyor systems.

Numerous tips throughout the course make it practical and topical. You will also engage in problem solving and case studies to absorb the materials as quickly and effectively as possible.

PRE-REQUISITES

Fundamental knowledge of basic mechanical plant and operation thereof.

ON-SITE TRAINING

- ✓ **SAVE** over 50% by having an IDC workshop presented at your premises.
- ✓ Customise the training to **YOUR** workplace.
- ✓ Have the training delivered when and where you need it.

Contact us for a **FREE** proposal.

THE PROGRAM

DAY ONE

INTRODUCTION

- Fundamentals of bulk materials handling
- Nature of bulk solids
- Characteristics of generally used bulk materials
- Conveyors and chutes overview

Practical Exercise

BELT CONVEYING

- Introduction
- Layout
- Basic Configuration
- Components of a standard conveyor
- Capacity of belt conveyors and selection of belt width
- Selection of other components (belt, idlers, pulleys and takeups etc.)
- Simple calculation of belt tension
- Selection of drive
- Troubleshooting tips
- Take-ups
- Operation and maintenance of belts
- Tips for cost savings

Practical Exercise

SAFETY OF CONVEYORS

- Conveyor safety standard
- General background on AS 4024.1 (RA and hazard recognition)
- Hazard recognition
- History of accidents
- Key conveyor safety issues
- Demonstration of unsafe conveyors
- AS 1755 conveyors
- Chute doors hazards and controls

Case Study

Practical Exercise

MAINTENANCE AND TROUBLESHOOTING OF CONVEYORS

- Troubleshooting conveyor problems
- Types of joints
- Splice failures
- Splice inspections
- Splice repairs
- Typical problems
- Root cause process
- Systematic approach for tracking
- Site specific problems

Case Study

Practical Exercise

DAY TWO

CHUTE MAINTENANCE AND TROUBLESHOOTING

- Transfer chutes theory
- Laser scanning applications
- Best practice design
- Boosting flow
- Troubleshooting chutes
- Spillage and buildup
- The awkward marriage of conveyor and chutes

Practical Exercise

FEEDERS MAINTENANCE AND TROUBLESHOOTING

- Belt, apron, screw and other feeders
- Optimum draw down
- Troubleshooting typical problems

Practical Exercise

STORAGE AND FLOW

- Flow properties of materials
- Funnel - flow and expanded flow
- Flow rate analysis
- Gravity reclaim
- Bin wall pressures

Practical Exercise

DAY THREE (optional)

PRACTICAL CONVEYOR DESIGN

- Review of bulk material characteristics
- Layout
- Component selection
- Lump size limitation
- Capacity
- Minimum pulley diameters
- Burden cross sectional area calculations
- Volumetric capacity
- Velocity calculations
- Idler spacing and load rating
- Belt tension calculations
- Drive arrangements
- Power demand capacity
- Starting and stopping
- Start up current calculations
- Vertical curves
- Gearbox and drive selection
- Safety factors
- Bearing types and selection

Conveyor design calculations Exercises

CHUTE DESIGN

- Liner selection
- Use of solidworks
- DEM and application to transfer design
- Stress analysis using cosmos

Chute Design Exercise

FEEDER DESIGN

- Calculation of loads/drive torques and power
- Feeder selection

Feeder Design Exercise

APPLICATIONS AND FUTURE TRENDS

- Case studies
- Future trends in conveyors, feeders and chutes