

Dense Phase Conveying Systems

Description

Solid, Granular & powdered materials have been handled conventionally, by mechanical conveying equipments such as belt conveyers/screw conveyers/ bucket elevators/ goods lifts etc.

This newer concept is making the solids air borne, in a fluid state, with the help of air or an inert gas travelling in a closed pipeline. The concept was found very attractive due to a closed pipeline conveying & was picked up by most industries for handling of solids pneumatically, in the last three decades.

Depending on the product characteristics, air volume & pressures are applied at design stage. This parameters categorise the systems as either DENSE Phase Conveying System or DILUTE / LEAN Phase Conveying System

TE-TECHFLOW is one of the pioneer manufacturer of Dense Phase Conveying Systems. These systems are also known as [Pneumatic transporters](#), material transporter, Foundry Sand Transporter. This system is used to convey the material from source to multiple or single destination with the help of compressed air. These method employ higher pressure with lesser air volume per kilogram of weight conveyed compared to LEAN phase system. Solids in powder form has a greater fluidisability hence the same are conveyed with this type. The pipeline usually has a denser solid component flowing in air, hence termed DENSE PHASE.

These Dense Phase Pneumatic Conveying Systems are further categorised as PLUG TYPE & CONTINUOUS TYPE, as per the solids movement style in the pipe.

Medium to high pressures are required for this type of conveying, hence Dry compressed air is employed as prime moving force.

Conveying velocities are designed relatively lower & under 5 mtrs/sec. However starting pressures sometimes exceed 3 to 4 Bar designed commensurate with the distances to be conveyed & system resistance. The pipe diameters are designed as per the throughput requirement & however works out relatively smaller.

A pressure vessel is kept to receive & transport the powder material. A terminal pulse-jet filter is kept to vent out the conveying air. A set of compressed air valve & sensor system is usually come assembled on the vessel. A primary storage feed hopper is kept above the Vessel with an isolating DOME valve in between. An electrical control panel with PLC programme is provided to operate the cycles of FILLING & CONVEYING

Following is the animation of the working principal of the system.

TECHFLOW supplies following type of Dense Phase Pneumatic Conveying Systems.

- ◆ Empty Pipe Conveying System
- ◆ Full Pipe Conveying System

Features

- ◆ Low Velocities
- ◆ Lower Amount of Segregation & Degradation
- ◆ Lower Air Consumption
- ◆ Batch or continuous conveying
- ◆ Reduced erosion of conveying line
- ◆ Longer conveying distances are possible
- ◆ Reduction of blocked line possibilities
- ◆ Can Handle Powders, Granules & Irregular Shaped Materials

Options

- ◆ Pneumatic Line Diverter
- ◆ Wear Resistant Bends / Long Radius Bend
- ◆ Feed Hoppers With Vibro Motors & Pneumatic Piston Vibrator
- ◆ Aeration Pad for Hopper Discharge
- ◆ Control Panel Modules With MIMIC & Programming
- ◆ Dome Valve
- ◆ Vent Filters For Discharge Lines & Silo
- ◆ Rotary Airlock Valves / Rotary Airlock Feeders
- ◆ Regenerative Blowers / Turbine Blowers / Roots Blower / Centrifugal Blower
- ◆ Anti Plug Line Vales / Booster Valves