

PNEUMATIC CONVEYING

Lean Phase



Rotary valve for pneumatic conveying

DEFINITION AND WORKING PRINCIPLE

The lean phase pneumatic conveying system allows moving powdery and granular materials over a more or less long distance using low pressure air compressed (< 1 bar) and high conveying velocity (10 to 25 m/s). This conveying mode is chiefly used for non-explosive, non-abrasive powdery materials.

Material shipping is continuously processed. Material enters the pipeline through a rotary valve via an injecting device or directly (feeding valve). Compressed air is made by a blower or a fan.

In lean phase pneumatic conveying, two principles can be used :

- The positive pressure systems (blowing) an,
- The negative pressure systems (suction).

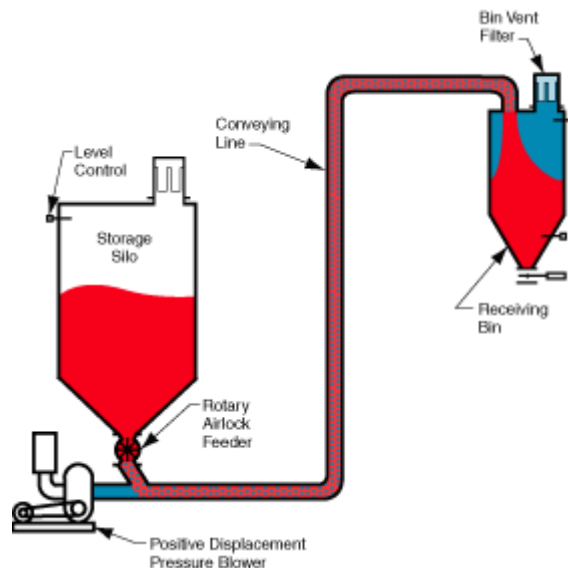
Selection between the two systems is made depending on the materials physical characteristics and the desired conveying flowrates.

Material to air ratio is very important and often requires setting up of more or less large size filters with fans on hoppers or collecting silos.

COMPOSITION AND MAIN CHARACTERISTICS

Lean phase conveying systems are made of 6 main parts:

- A blower, fan or vacuum pump to produce conveying air at the required pressure and adequate quantity.
- A rotary valve to control the flowrate and suitable for the process material specification.
- An injection device to feed the material in the pipeline while protecting the rotary valve from wear especially from abrasive materials.
- A pneumatic circuit made of standard tube with large radius or anti-abrasion bends.
- A control cabinet including motor overload protection (blower, rotary valve and filter), relay control and if required full automation of the system with or without auto/manual facility.
- A dust removal fan assisted filter on the collecting hopper sized large enough to enable processing of the air after its separation from the material.



ADVANTAGES

- Dedicated solutions tailored to our customers needs,
- Well designed systems for powdery products and high flowrates,
- Limited investment (blower or fan + rotary valve) for an economic solution,
- We can also supply comprehensive systems including discharge equipment under silos, weighing, feeding, mixing and bagging with automation systems (if required).
- Operators training and field support service.



At the center of your systems

RANGES OF APPLICATION

Lean phase pneumatic conveying system is mainly used for non abrasive fireproof and non explosive powdery materials. It is often commonly used for emptying silos or hoppers and transferring powder further along the Process.

Food industry	Flour, Powdered milk, Vegetable flour
Chemicals, detergents:	Sulfate, Perborate, Carbonate,
Building materials	Cement (kiln dust, fly ash) Plaster (starch, gypsum, plaster) Aluminium (alumina, bauxite) Glass (feldspar)
Plastics industry:	PVC powder, talc
Paper:	Kaolin
Water treatment process	Bentonite, Flocculant,



Pneumatic conveying system including a Big Bags emptying station and a Fines collecting filter and their reintroduction into the circuit (clean station)



Pneumatic conveying circuit with anti-abrasion bends and end receiver at arrival.

CONTROL COMMAND CUBICLE / PLC CONTROL PANEL



Command cabinet including:

- Motor overload protection (switch, circuit-breaker, thermal),
- Variable speed controller for rotary valve (option),
- Blower motor starter,
- Transformer,
- PLC (if necessary),
- Signaling relays,
- Connecting terminal,
- Inlet section switch, etc...

Sautelma supplies also central control systems with signalling synopsis and commands which can be simple or more sophisticated depending on customer's needs.

