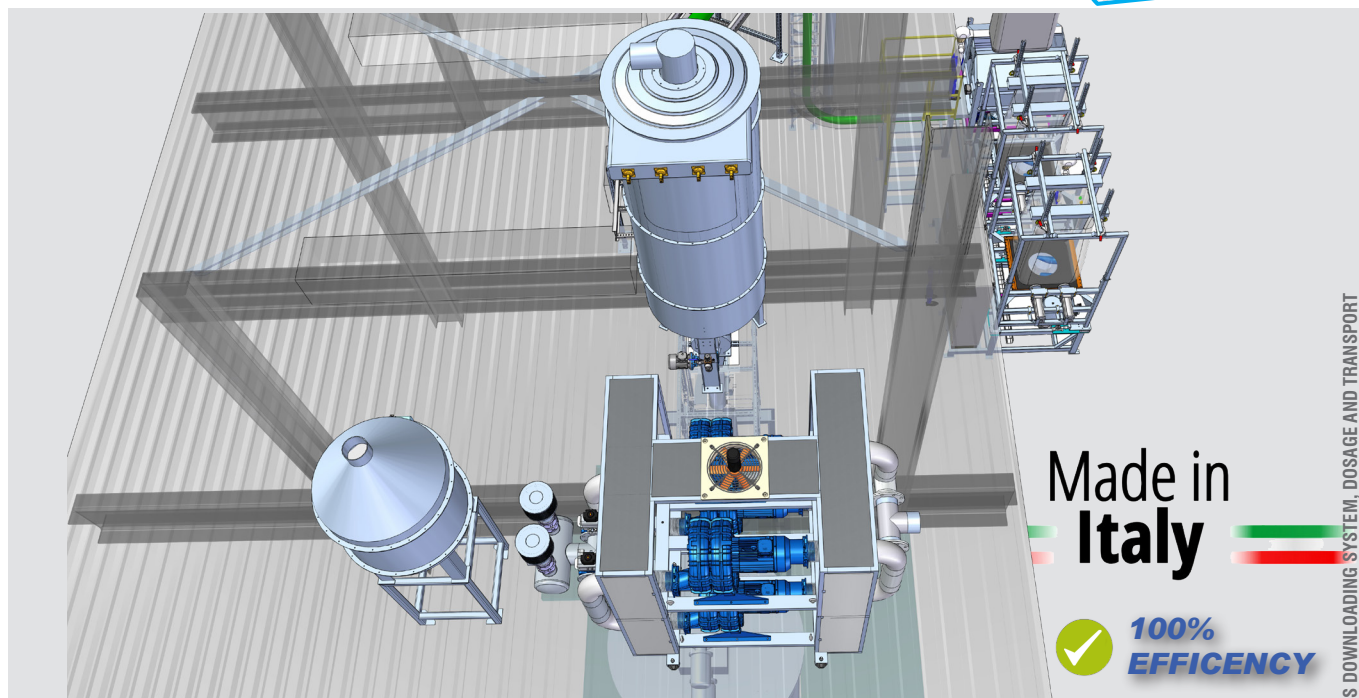


# PNEUMATIC CONVEYING

DENSE, SEMI-DENSE AND DILUTE PHASE SYSTEMS

# STAD



BIG BAGS DOWNLOADING SYSTEM, DOSAGE AND TRANSPORT

## OVERVIEW

Pneumatic conveying involves the transportation of dry powders and granular solids in pipelines using a gas stream, usually air. Based upon the material-to-air ratio, are classified as 'dense', 'semi-dense' or 'dilute' phase systems.

Suction or vacuum systems, utilize a vacuum created in the pipeline to transfer the material. Pressure systems use positive pressure to push the material along the pipeline.

The sum of the characteristics of pneumatic conveying give the ability, within numerous industries, to transport products without any loss to the environment, choosing the appropriate route that can move around obstacles, multiple floor levels or between buildings.

## ADVANTAGES

Dust-free transportation

Flexibility in transport line routing

Distribution / pickup from multiple points

Low maintenance and low manpower costs

## DISADVANTAGES

Higher power consumption

Higher wear and abrasion of equipment

Limitations in transport distance and capacity are

High levels of skill in design, maintain and operate

## HOW TO CHOOSE THE PERFECT PNEUMATIC TRANSPORT

	DENSE Phase	SEMI-DENSE	DILUTE Phase
Transport speed	Low (<5 m/s)	Medium (5...10 m/s)	High (>16 m/s)
Transport pressure	High (>3 bar)	Medium (1.5...3 bar)	Low (<0.6 bar)
Wear / Breakage	Very low	Average	Medium to high
Material-to-air ratio	High (>60)	Medium (20...60)	Low (<20)
Function	Discontinuous	Discontinuous	Discontinuous / Continuous
Space requirements	High	High	Low to very low
Capital investment	High	High	Medium to Low

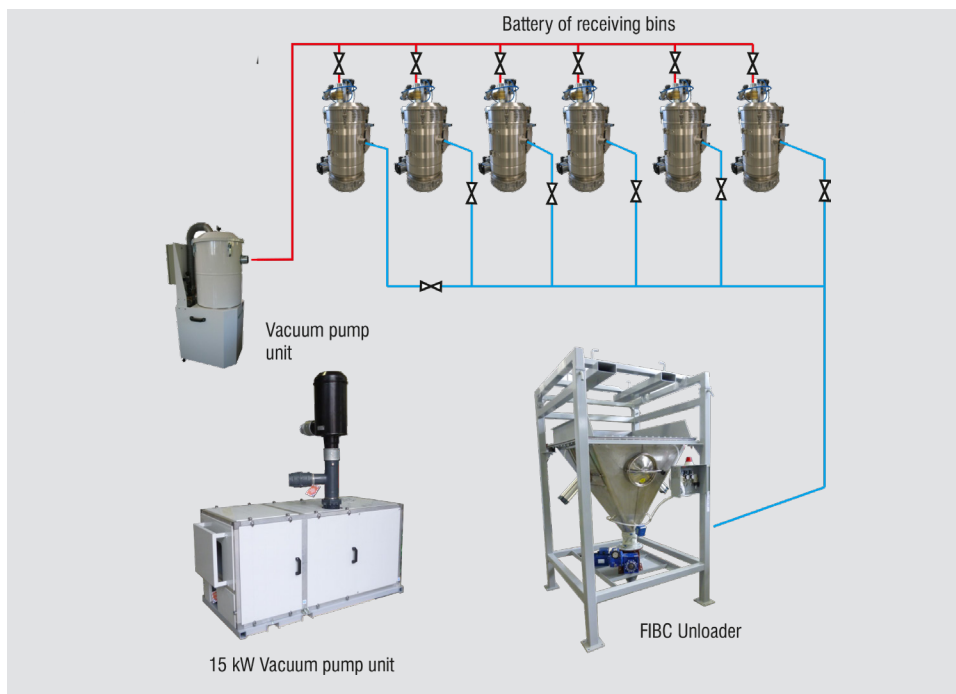
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## DILUTE PHASE

Dilute phase conveying is characterized by high transfer speeds, above saltation, so material «floats» into the airstream. Pressure (or vacuum) is relatively low (compared to dense phase systems).



## DENSE / SEMI-DENSE PHASE

### DENSE PHASE

Dense phase conveying is commonly used when materials are either abrasive or fragile. Dense phase systems operate at lower transfer speeds, higher pressures and higher product-to-air ratios. The higher available pressure permits a longer transport distance.

### SEMI-DENSE PHASE

Semi-dense phase conveying is an intermediate phase between dense and dilute. Semi-dense phase systems operate at below saltation transfer speeds, with intermediate pressures and product-to-air ratios.





# PNEUMATIC CONVEYING

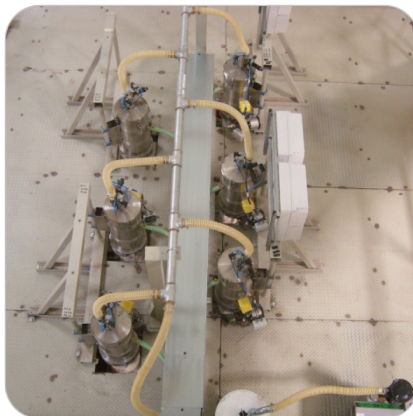
DENSE, SEMI-DENSE AND DILUTE PHASE SYSTEMS

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## EXAMPLES OF INSTALLATIONS AND ACCESSORIES FOR PNEUMATIC CONVEYING



Battery of loading scale hoppers



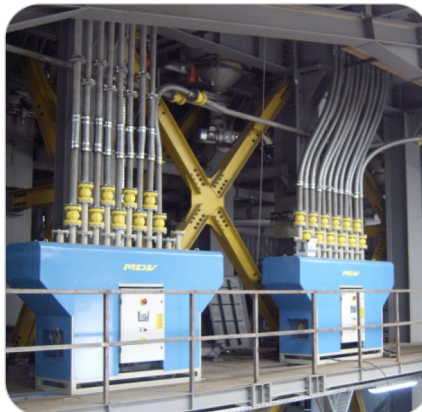
Battery of receiving bins



Vacuum pump unit & receiving cyclone / filter (continuous)



Arrival point with air filter



Multi-port automatic diverter valves



Diverter valves

