



Pneumatic conveying

Jetsolutions provides the best solution to transfer bulk materials, using pneumatic conveying systems adapted to the process and the product. Our transfer systems are designed to work in negative or positive pressure and to work in dilute or dense phases. Depending on the process the gas used to convey the product can be air or nitrogen.

The pneumatic conveying system is an efficient method to move fluidizable powders or granulates between different points. This technology allows the discharging of bulk materials coming from bags, FIBC's, IBC's, trucks and silos, to feed reactors, tanks and other elements.

Main advantages

- Economical solution
- Easy to install and operate
- No moving parts in contact with the product
- System completely closed, which allows a product and environment protection



Positive and negative conveying pressure

Negative pressure or vacuum conveying, is used normally to transfer delicate and dangerous products, this technology avoid the contact between the product and the environment in case of leaks on the piping. In the other hand positive pressure, also denominated overpressure conveying is used mainly for heavy materials such cement, sand or salt or to protect the product from the environment.

Dilute Phase

The dilute phase can be defined as the continuous transfer method, to push or pull powders from the point A to B, using a sufficient air stream speed. This phase is characterized mainly for its high speed, low pressure and low ratio between product and the gas. Resuming this technology uses a large air quantity to convey a small product quantity in continuous. Almost all the powders can be conveyed using this method.

Dense phase

The dense phase uses low volume of gas and high pressure (for positive conveying) or high vacuum (for negative conveying) and a ratio mass of product/gas very high (up to 80-100). This technology represents the best choice to convey abrasive and fragile products.

Conveying phase	Gas speed [m/s]	Particle size [µm]	Bulk materials
Dilute	15–40	0.05–20k	FlourCerealsStarch
Dense	3-20	0.01–1k	 Calcium Chalk Magnesium Stearate Cement Friable products
Plug	2-15	0.01–5k	 Granulates Pills Sucrose Polyvidone Lactose Magnesium Stearate Friable products

Comparison between the different conveying phases

Vacuum conveying - Working principle



- 1. Creation of a permanent under pressure inside the separator
- Suction of the powder from the supply hopper (bag, IBC, silo, etc...)
- 3. Cyclone filling, up to the level sensor
- 4. Opening of the discharge valve
- 5. Powder discharge and cleaning of the separator's filter, using a gas blow-back
- During all the transferring the filter clogging is controlled by a differential pressure transmitter





F-Series

The **F-type** separator is used to convey powders in dilute phase. The separator consists of a multi-bag filter with an integrated in-line cleaning filter system. This technology can be used with positive or negative pressure.

Features



- Able to transfer a wide range of products (fine, non-free flowing, hygroscopic, sticky powders)
- Transfer capacity from few kg to 30 ton per hour
- Safe conveying of API/HAPI's up to OEB5
- Higher filtration surface (in function of the application)
- Integrated high efficiency in-line filter cleaning system
- Possible to be operated in continuous
- GMP and ATEX compliant

PCS

The **PCS** is the smartest way to transfer and dispense dry or wet powders, granulates and friable products, using dense/plug phase. Depending of the bulk material, the transferring can be realised using vacuum or over pressure.

Features



- Able to transfer a wide range of products (fine, non-free flowing, hygroscopic, sticky powders)
- Transfer capacity from few kg to 4 ton per hour
- Safe conveying of API/HAPI's up to OEB5
- Low footprint
- Filtration surface in function of the application
- Integrated hi efficiency in-line filter cleaning system
- No tools required to disassemble the unit
- Easy to clean
- GMP and ATEX compliant

Design



AVAILABLE DIMENSIONS

	F15	F25	F60
Volume [l]	60	60	60
A – Height [mm]	1200	1450	1450
B – Diameter [mm]	570	570	570
C – Product inlet	DN40/ DN80	DN40 / DN50	DN50
D – Clean air connection	DN40 / DN50	DN40 / DN50	DN50
E – Product outlet	DN 150	DN 200	DN 250
Filtration surface [m²]	1.5	2.5	6

Design



AVAILABLE DIMENSIONS

	PCS200	PCS 250	PCS300
Volume [l]	9	20	27
A – Height [mm]	970	1060	1150
B – Diameter [mm]	200	250	300
C – Product inlet	DN40 / DN50	DN40 / DN50	DN50
D – Clean air connection	DN40 / DN50	DN40 / DN50	DN50
E – Product outlet	DN 150	DN 200	DN 250
Transfer capacity [l/h]	up to 1200	up to 2400	up to 3250

These technologies are applied and approved in pharmaceutical, chemical, beverage and personal care industries.



Accessories

Bag dump station



System to unload solids in clean and safe way. Depending on the size, weight, pace and containment level, the product can be fed using a front door, side airlock or dedicated door for semi-continuous loading.

Suction wand

Allows the suction can include a environment the wand.

Suction hopper



of the bulk material from bags, drums or containers, using a wand. The system mobile frame with dedusting ring to avoid the contamination of the during the operation and a compensation mass device for an easy handling of

C Dover Company

for FIBC discharge

The suction hopper is used to pick-up the powder from FIBC's or other process equipment. If combined with the ILC canister technology an OEB5 containment level can be achieved.

Multi-Dosimat

This unit can be installed at the PCS outlet to be used for fluidizing, weighing and dosing, allowing the powder dispensing with high accuracy.

Flexi-vac for API/HAPI transfer



Hybrid installation, combining the ILC flexible containment technology and the Jetsolutions systems. The flexi-vac allows the toxic powders transfer without containment rupture. The drum's opening and the operation of the wand is done, using a flexible isolator. The contained connection between the drum and the system is ensured by the drum sleeve.

The FlexiVac PCS reduces process time for transfer and significantly improves operator ergonomics. With the capability to meet a Containment Performance Target of less than 1.0 ug/m3 on a TWA or to simply contain for a dust free transfer the FlexiVac PCS makes processing easier and faster than conventional PTS system

• Drums can be docked with the lid on to assure high containment

• Typical time for docking a drum is less than 5 minutes reducing the time from conventional systems by half or more

• The open work space created by the "Flexi" improves the operator ability to use the pick-up





wand and see into the drum for improved ergonomics

• Fully automated PCD design conveys powders to the receiver and efficiently releases the powder from the process gas into your process

Projects

PCS250



- Pharm application
- Emptying of drums and bags
- Discharging in IBC
- High containment application
- GMP and ATEX compliant

PCS200



- Pharm application
- Pick-up from compactor
- Transfer to IBC
- Dust free application
- GMP and ATEX compliant





PCS with integrated Multi-Dosimat



- Pharm application
- Emptying of drums with integrated dispensing system
- Dust-free application
- Integrated CIP
- GMP and ATEX compliant

F-series for dispensing



- Food application
- FIBC discharge
- Dispensing in bags
- Dust free application
- ATEX compliant





F-series for receipts preparation



- Chemicals application
- Pick-up from multi bag dump station
- Dispensing into intermediate hopper for PST injector feeding
- Dust-free application