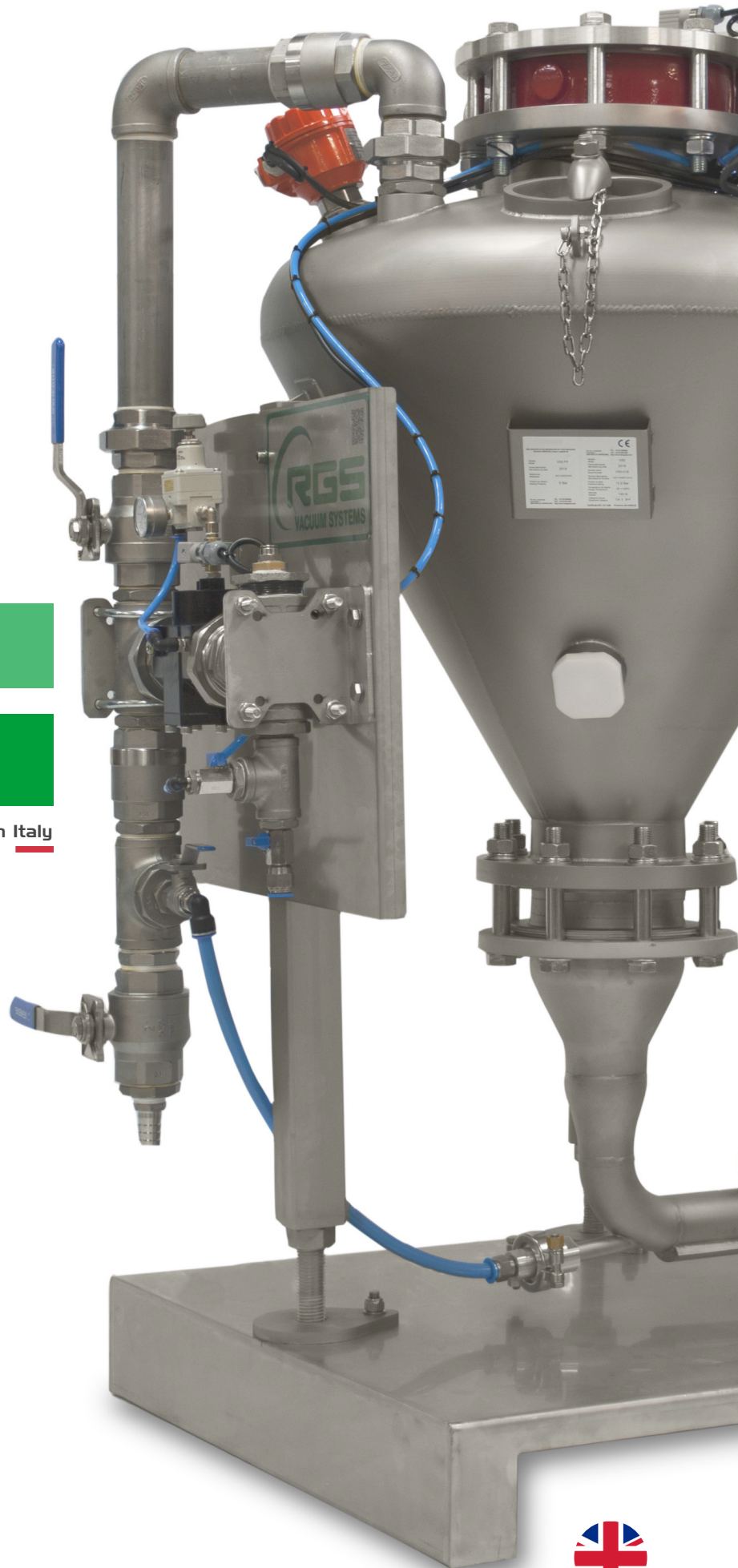


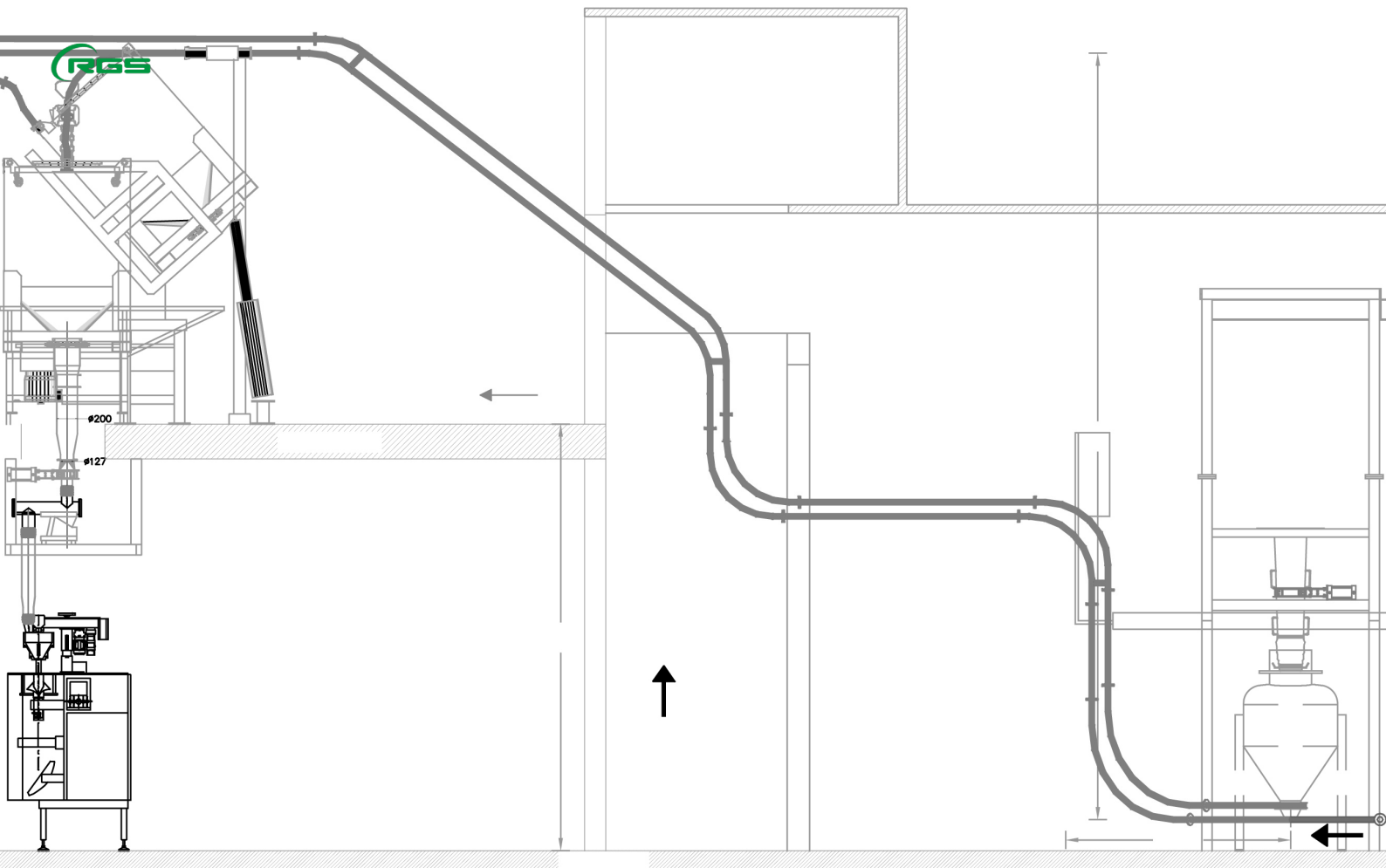


*Pneumatic Conveying*

**DENSE PHASE**

made in Italy





## | The technology

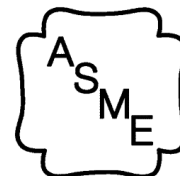
The dense phase pneumatic conveying systems are suitable to transport **big quantities of powders and granules** (even dozens of tons per hour) with low conveying speed, **from few meters up to very large distances** (> 100 m).

**The DENSE PHASE** is the best technology to **convey fragile or very abrasive materials**, as the **low transport speed make it possible to preserve their integrity and avoid the wear of the systems**.

All our conveyors can be made of:

- > **painted carbon steel**
- > stainless steel **AISI 304**
- > stainless steel **AISI316**

Available with certification **PED** or **ASME**  
and with components **ATEX** zone 21 or 22.



# I Advantages



## ENERGY SAVING

Low and non-continuous air consumption, no electrical motors always turned on.

## MORE EFFICIENT

Very high ratio of product conveyed/air used.

## LESS MAINTENANCE

Less wearing of the piping and the moving parts.

## LOW CONVEYING SPEED

Usually between 2-10 m/s, allows to **preserve the integrity of the product**, minimizing changes in bulk density and particle size distribution.

## PRESERVES THE CHARACTERISTICS OF THE PRODUCT

Using compressed air dried and with a low temperature allows to **do not change the characteristics of the product**. The use of a little quantity of air reduces the oxidation of the product. Moreover, the dense phase conveying limits the segregation effects onto mixed products along the pipe routing.

## NO PROBLEM IN CASE OF FORCED INTERRUPTION

While in traditional installations a forced interruption of transport results in the dismantling of the line which must be emptied to restart it, **the dense phase can be interrupted and resumed at any time** without any need for extraordinary intervention.

# I Fields of application

RGS dense phase systems are able to convey large quantities of **powders and granules, brittle or very abrasive materials, product mixtures** without segregation.



**CHEMICAL**



**PHARMACEUTICAL**



**FOOD & BEVERAGE**



**PLASTIC**



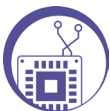
**GLASS and CERAMIC**



**CEMENT and AGGREGATES**



**BIOMASS and ENERGY PRODUCTION**



**BATTERIES**



**ECOLOGY and ENVIRONMENT**



**METAL PRODUCTION**



# I Range of products - DPC

The **Pressure Vessel** is the heart of dense conveying systems. Dense phase systems were introduced in the 60s to overcome the limits of the transport components in the diluted phase and to be able **to transport materials at very long distances through the use of high pressure compressed air (> 1 Bar).**

The **tank** is therefore designed to withstand high pressures (**PED or ASME certified**) and can have a variable volume depending on the design flow rate.

The Conveyor **can be made of painted carbon steel, stainless steel AISI 304 or AISI 316.** The interior and exterior finishing can be customized according to the needs of customers. All tanks can also be equipped with suitable components for installation in **ATEX** zones.

The use of high pressure and low air flow allows you to push the material along the pipe to the destination at very low speeds (1-10 m/s), **avoiding breakage of fragile materials, segregation of mixtures and wear of abrasive materials.**



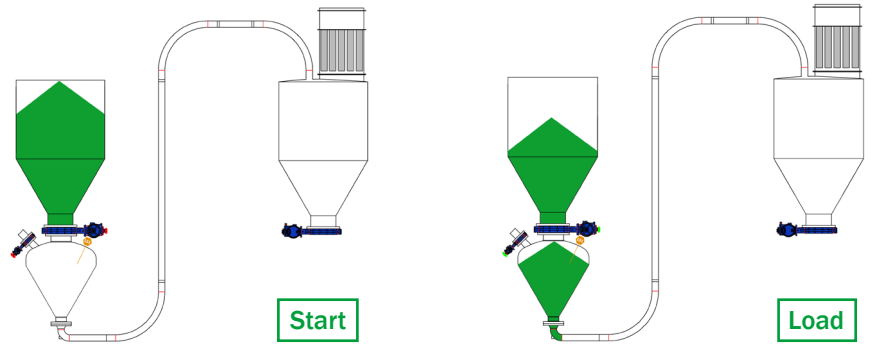
MODEL	Capacity (liters)	Load valve Ø (mm)	Dimensions (mm)	Flow rate * (kg/h)	Conveying Distance (m)	
					EMPTY PIPE	FULL PIPE
DPC-20	20	150	Ø 400 x h 700	700	10-20	100-250
DPC-50	50	150	Ø 400 x h 1.000	1.200	25-30	100-250
DPC-80	80	200	Ø 600 x h 1.300	2.000	40-50	100-250
DPC-180	180	200	Ø 800 x h 1.550	3.500	60-100	100-250
DPC-300	300	200	Ø 800 x h 1.850	7.000		
DPC-600	600	250	Ø 1.100 x h 2.150	12.500		
DPC-900	900	250	Ø 1.100 x h 2.500	20.000		

**NB:** We can realize even bigger engines depending on the customer's capacity requirements.

\* maximum approximate flow rate, considering an average number of cycles and a bulk density of 1 kg/L

# Ways of working

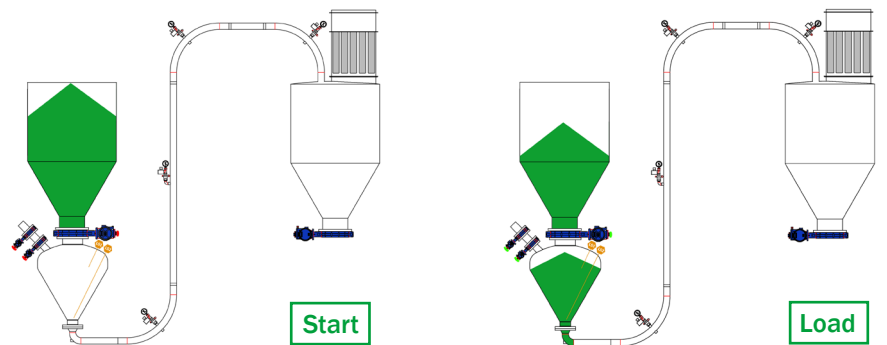
## BATCH (OR EMPTY PIPE)



It's a non-continuous functioning according to which the material, loaded into the pressure vessel, is pushed by compressed air along the pipeline till the destination; at the end of the cycle, both the pipeline and the pressure vessel are empty and all the material has been transferred in the destination.

This kind of convey is suitable for **short/medium distances** (up to 50-60 meters).

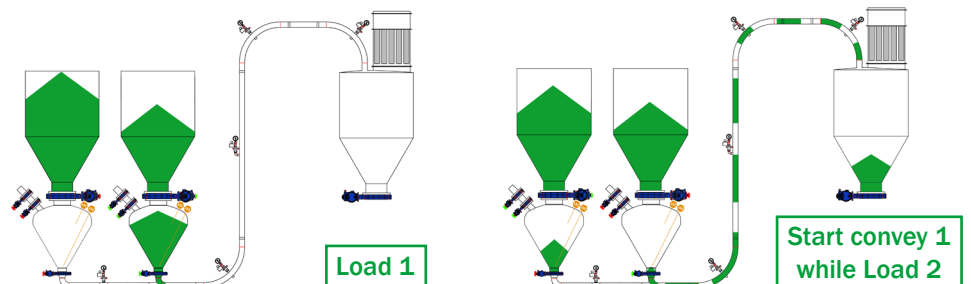
## FULL PIPE



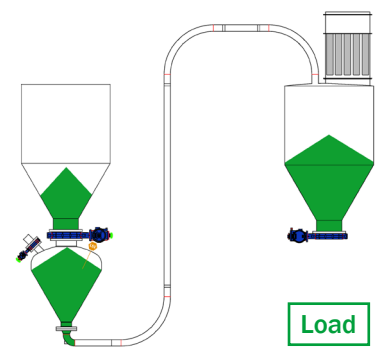
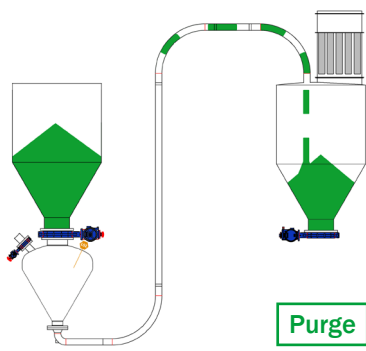
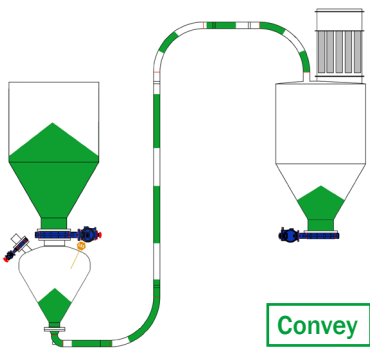
Expects functioning cycles according to which the pressure vessel is loaded and emptied, pushing the material little by little along the pipe. After having filled all the pipeline, the material begins to be discharged into the destination with very low speed.

This kind of convey is suitable for reach **very long distances (beyond 100 meters) and to convey very fragile or very abrasive materials.**

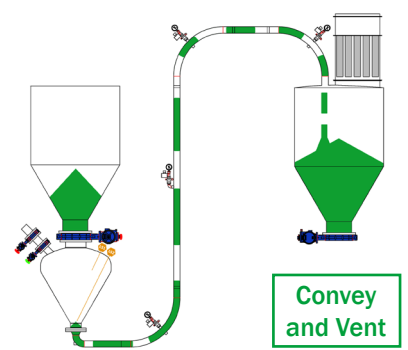
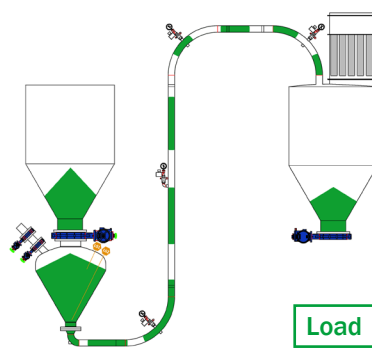
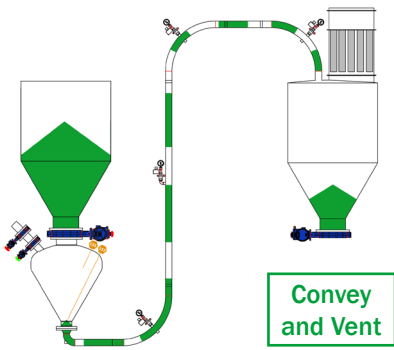
## FULL PIPE CONTINUOUS



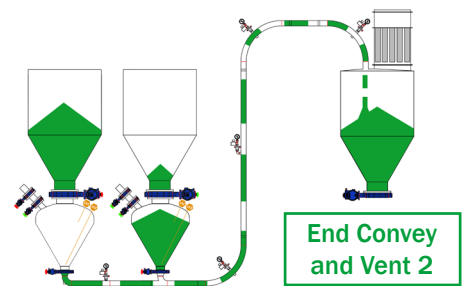
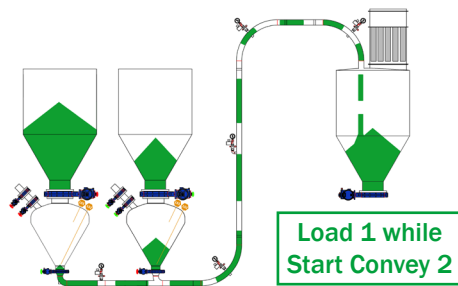
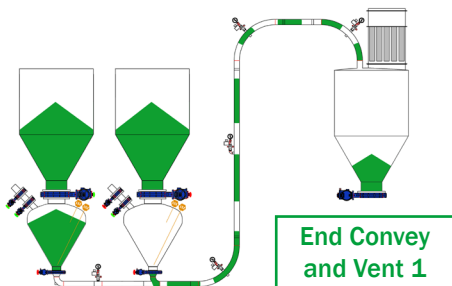
When it's required a continuous functioning, we can use a **twin system with two pressure vessels working alternatively in parallel**, pushing the material along the same pipe.



## BATCH (OR EMPTY PIPE)



## FULL PIPE



## FULL PIPE CONTINUOUS

# I Components

Depending on the customer's needs, dense phase conveying systems can be equipped with:

## FILTRATION SYSTEMS

Thanks to the use of a reduced air flow rate to transport the product, it's possible to use of filtering systems much more contained.

They are used for **the separation of the material from the gaseous flow and are installed in the destination to allow the vent of the air**. They may also be placed on the ground with proper suction.

They are equipped with **an automatic filtering media cleaning system** to ensure the correct working and maximum filtration efficiency.



"Primary filter for air ejection"



"Secondary filter for vent"

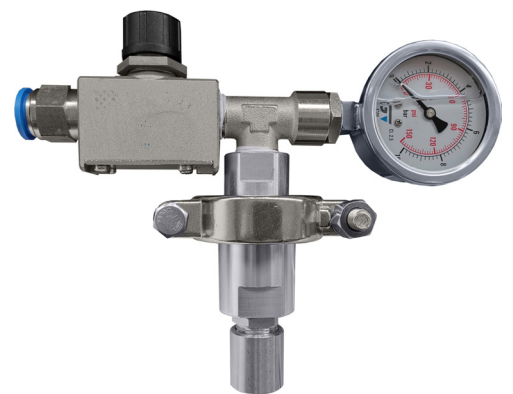
## FLUIDIZATION KIT - AIR-FLUYD

**Additional fluidization kit** to be installed along the transport line to **reduce the friction of the material** and consequently the energy required for its transport.

Fluidizing the material is important to **minimize pressure losses, balance the pressure inside the pipe and prevent the formation of obstructions**.

Thanks to the AIR-FLUYD kits, it is possible to achieve **greater control of the product speed**, thus managing to transport more gently fragile or abrasive materials. They also allow to reduce dynamic loads along the pipes and to stop and start the transport with the full pipe.

They are necessary in the case of full pipe, but can also be used in conventional transport in case of products difficult to convey (e.g. abrasive materials and/or materials with uneven grain size).





## CONTROL PANELS

Electric control panel, complete with **PLC and graphic panel** for the visualization of the synoptic overview and modification of the operating parameters.

Software for automation of conveying cycles, adjustment of operating timers, management of valves and automatic filter cleaning system at destination.



## PNEUMATIC PANELS

The pneumatic control panel is complementary to each conveyor and is used to **optimize the flow of compressed air and adjust the conveying pressure.**

The pressure regulation can be carried out **manually**, in the start-up phase for mono-product and mono-destination transport, or **electronically** by proportional regulator controlled directly from the HMI of the electrical panel.

Thanks to the electronic control it is also possible to set different conveying pressures depending on the destination selected or the material to be conveyed, so as to minimize the consumption of air and energy.



# I Other RGS solutions

## VACUUM CLEANERS

RGS Vacuum Systems offers a wide range of industrial vacuum cleaners of **various powers and capacities**: single-phase, three-phase and compressed air industrial vacuum cleaners.

There are also specific models for the **suction of oils and shavings**, others for applications **in the food and pharmaceutical industry** as well as **special machines** made to meet the needs of the customer.



## PNEUMATIC CONVEYORS

**Pneumatic conveyors systems for powders and granules** for all industrial sectors with **customization** options.

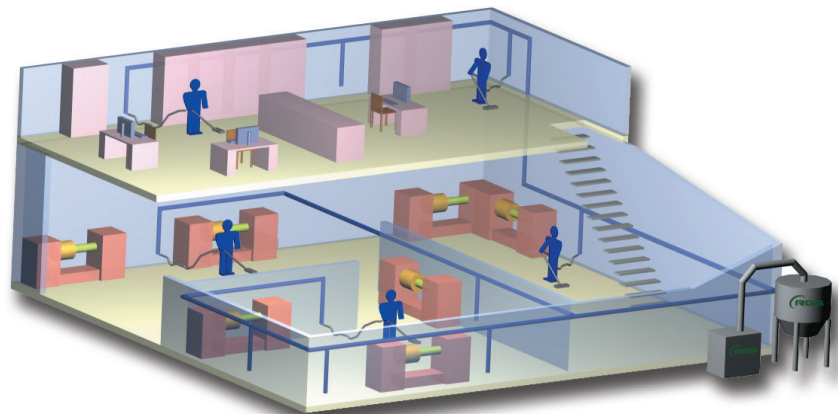


Thanks to a long experience in the sector, it is possible to create and design the most suitable and economical conveying system to solve customer problems, according to the type of product and the needs of the sector.

## CENTRALIZED SYSTEMS

RGS offers a wide range of components for the realization of **centralized suction systems**, such as suction units, collection silos, pre-separators, components for the duct, control systems.

All products can be made of painted steel, stainless steel and **ATEX version** according to the needs of the customer and the application sector.



## **| RGS services**



**Design and engineering of  
customized products**

**Quick call maintenance service**



**Preventive maintenance  
agreements**

**Additions and revamping to  
current regulation on  
installed plants**





**Aspiratori industriali**  
Vacuum cleaners

**Impianti centralizzati**  
Centralized systems

**Trasportatori pneumatici**  
Pneumatic conveyors

# RGS

in the World.



● **RGS headquarter**

● **RGS branches**

**RGS IBERICA**

**RGS INDIA**

**RGS CHINA**

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