

dense phase pneumatic conveying solutions

AIR-TEC SYSTEM

our strength is in the air



Air-Tec system®

Air-Tec system® is a leading company in dense phase pneumatic conveying systems with gaseous fluids (air or nitrogen).
Founded in 1994, the company has developed a proprietary technology in order to handle and store a wide variety of bulk materials.
Air-Tec system patented transporters are developed by highly competent and specialised engineers, and guarantee reliability and safety during the transportation of foods, as well as of fragile, abrasive, toxic, plastic, and lumpy materials.
Air-Tec system's quality procedures obtained the certification according to UNI EN ISO 9001:2000.

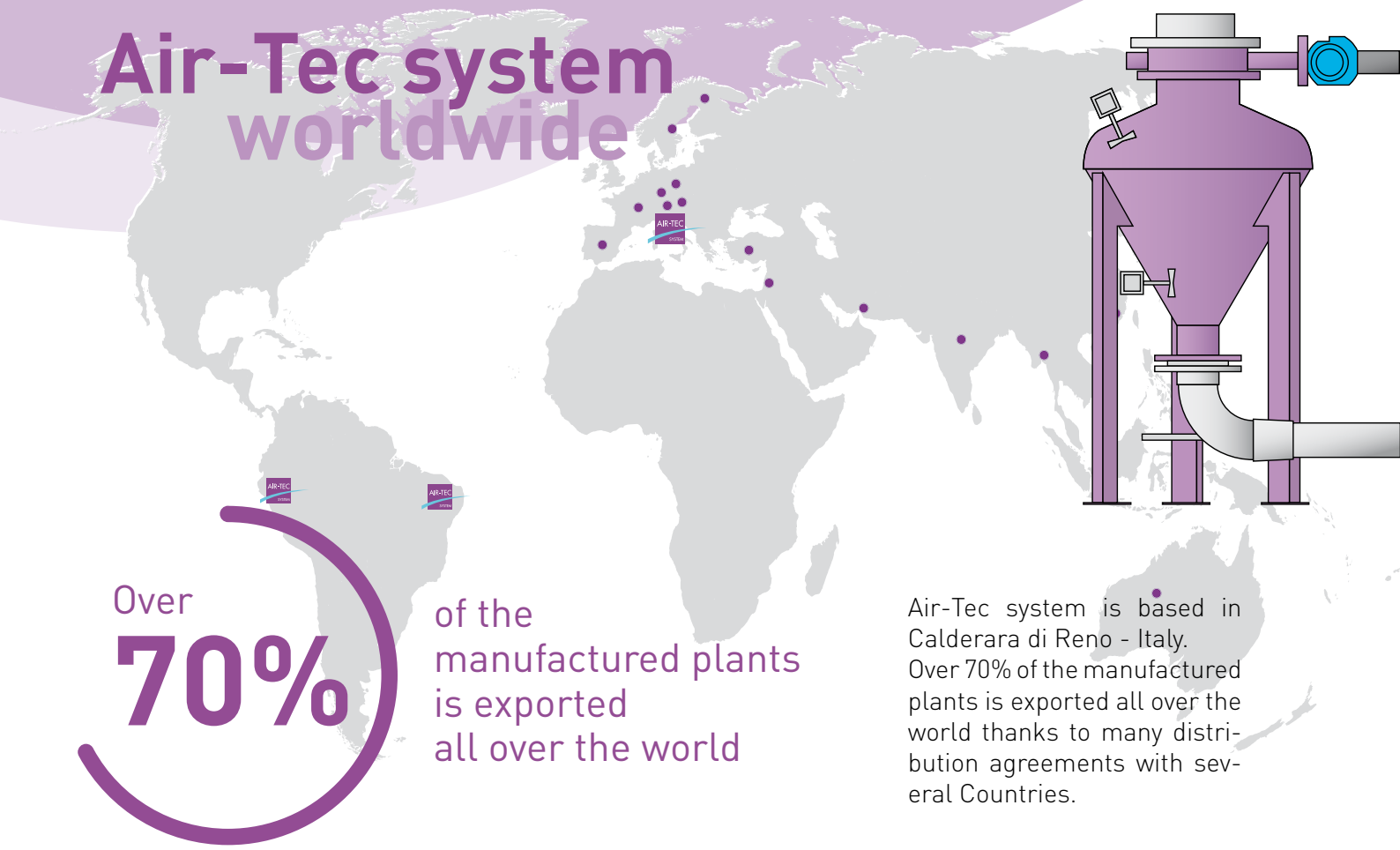
Innovative solutions for bulk materials handling with a real customer focus

process optimization

Thanks to the continuous investment in research and development, the solutions support clients during their production cycle, adapting to the specificities of several markets; milling and food, pet food and animal feed, plastic, chemical, building, ceramic, foundry, environmental, glass, pharmaceutical, mining.
The goal of the constant technological improvements at Air-Tec system is to create value for customers through a wide and flexible range of products to suit customer's specific needs.

food
milling
building
chemical
foundry
animal feed
plastic
enviroment
glass
ceramic
mining
pharmaceutical

Air-Tec system worldwide



Over **70%** of the manufactured plants is exported all over the world

Air-Tec system is based in Calderara di Reno - Italy. Over 70% of the manufactured plants is exported all over the world thanks to many distribution agreements with several Countries.

a selection of Air-Tec system's customers

Saint Gobain Group (Verallia) - transport of mixed powders for the French manufacturer of glass packaging.

Negociaciones Horizonte - mixed flours pneumatic conveying for the food company based in Peru.

Simem - concrete batching plants. Cement and pozzolan pneumatic conveying for the Panama Channel widening project.

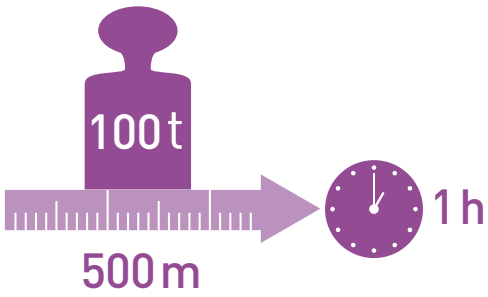
Pates Warda - couscous pneumatic conveying for the company specialized in the manufacturing of pasta based in Tunisia.

San Benedetto - mineral water and soft drinks producer; pneumatic transport of citric acid for iced tea production.

Siemens S.p.A. Water Technologies - transport of dried sludge obtained from the depuration of waste water in Arzignano, Vicenza - Italy.

Villeroy & Boch - three plants for ceramic powder adopted by the ceramics manufacturer of international standing.





core tecnology

Air-Tec system's technology allows the movement of powder and granules inside of a pipeline for distances over 500 m and flow rates greater than 100 tons per hour.
The low conveying speed not only preserves the quality and the integrity of the product but also the condition of the pipeline. The reduced quantity of air with a resulting energy saving.
The use of the Air-Tec system technology for the dense phase pneumatic conveying of bulk materials not only has a cost savings benefit but enables en increased efficiency compared to the traditional mechanical transportation systems.

+ energy saving

+ cost saving

+ efficiency

+ safety

products quality

Air-Tec system has developed three product lines, Bart, Bart-One and Tpa, and a broad range of accessories and components in order to develop customised solutions.
The system works with low air speeds and reduced air consumption.
A controlled flow of air or gas gently pushes powders and granules, making it possible to transport a wide range of products with different flow rates.
Clients are able to request technical support to design pipes, assistance and mechanical assembling.
All the Air-Tec system machines are available in carbon steel, AISI304 and AISI 316 (internal finishes for food and pharmaceutical use), for high temperatures (up to 250° C) and for ATEX21 and ATEX22 settings.



AISI 304

AISI 316

ATEX 21

ATEX 22

advantages

energy saving

Air-Tec system technology for the dense phase pneumatic conveying systems of bulk materials enables en increased efficiency compared to the traditional mechanical transportation and dilute phase systems. It is characterized by high product to air ratio.

cleaning and safety

The low amount of gas used avoids unnecessary dispersal of volatile substances into the atmosphere.

reduced maintenance

Less wear on the pipes in the system reduces maintenance costs and the purchase of spare parts.

materials integrity

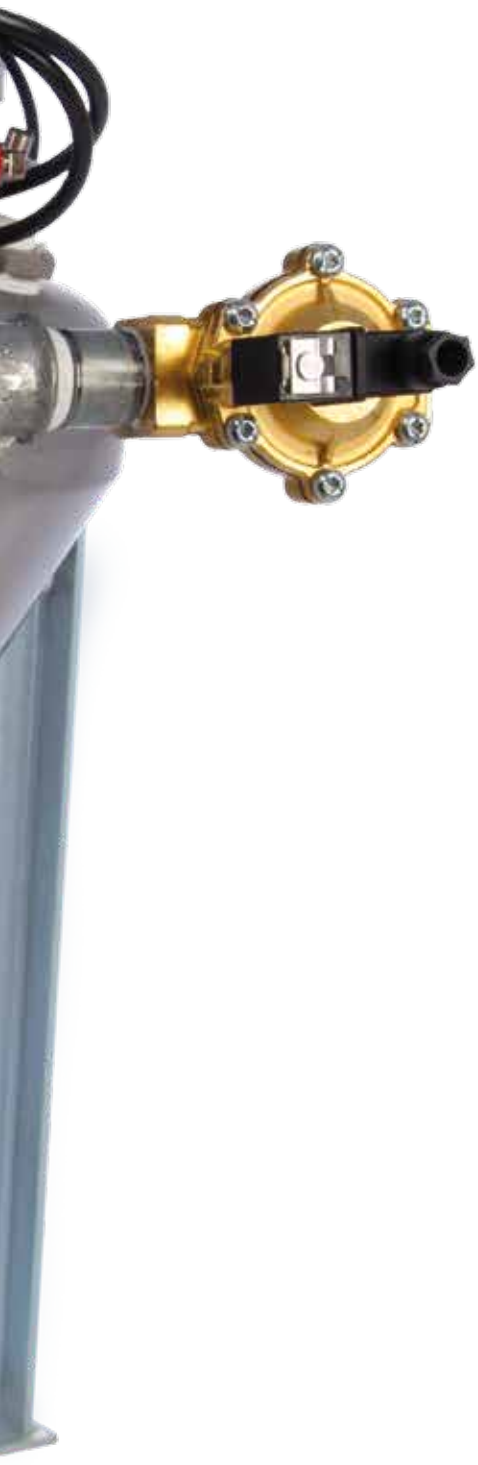
The low speed enables to preserve the integrity of fragile and abrasive materials as well as mixed products. It safeguards the integrity of, for instance, the plastic granules from the formation of “angel hair” (whitish filaments) and preserves the aroma of any food product.

simplicity of both design and installation

It is quicker to design the layout and install a dense phase system than traditional systems. Traditional methods may require a combination of several components making design and assembly a longer and costlier process.



testing laboratory



air consumption

pressure

speed

conveying capacity

yeld coefficient

material fragility

Air-Tec system's pilot pneumatic plant is able to perform tests on customers' products, whether powdered or granular and verify transport features prior to fabrication.
The laboratory has a materials database covering more than 2000 samples with the corresponding characteristics carefully determined: air consumption, pressure, speed and carrying capacity (maximum volume), yield coefficient, fragility of the materials and further information on request.
The minimum amount of material needed for each test is 0,5 m^3.

Tests enable to:

- highlight important information for plant design;
- optimise times and procedures during the machinery's start-up;
- look at new solutions;
- show the system's operation during the site visit.



automation

Air-Tec system solutions provide advanced automation technology to manage and control the entire cycle of transport, from the loading of the vessel to the destination chosen by the customer.

The automation software is programmed to perform operations relating to the stages of loading, movement and washing. It is designed according to the customer's needs and on the plant's characteristics and can be adapted to provide solutions to the most complex problems.

The electrical panel consists of a PLC (programmable logic controller) which is able to elaborate signs from sensors and other electronic components to control the entire process of transport..

The main functions of the electrical panel are:

- the setting of various parameters, such as time and pressure according to different phases;
- the management of the opening and closing valves;
- the management of the inlet and venting compressed air;
- the viewing of the work phase of the plant.

The panel offers the possibility to select the most appropriate operating modality: the manual mode (element by element) manages each use individually and verifies their efficiency; the semi-automatic mode (with periods of work), controls the loading, the transport and the washing; the automatic mode manages the different phases of work automatically based on the received signals.

cutting edge technology

customized software

entire process control

multiple operating modalities

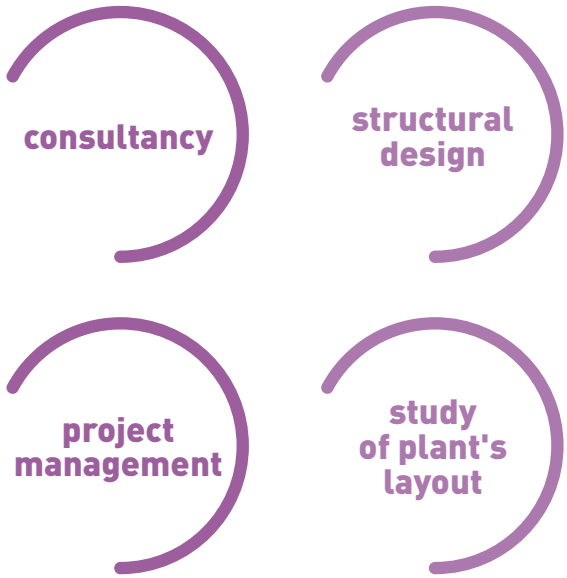




During the internal pre-testing procedure, Air-Tec system verifies the panel's electro-mechanical operation and the automation steps.
The system will be tested during the plant's start-up on the customer's site.

engineering

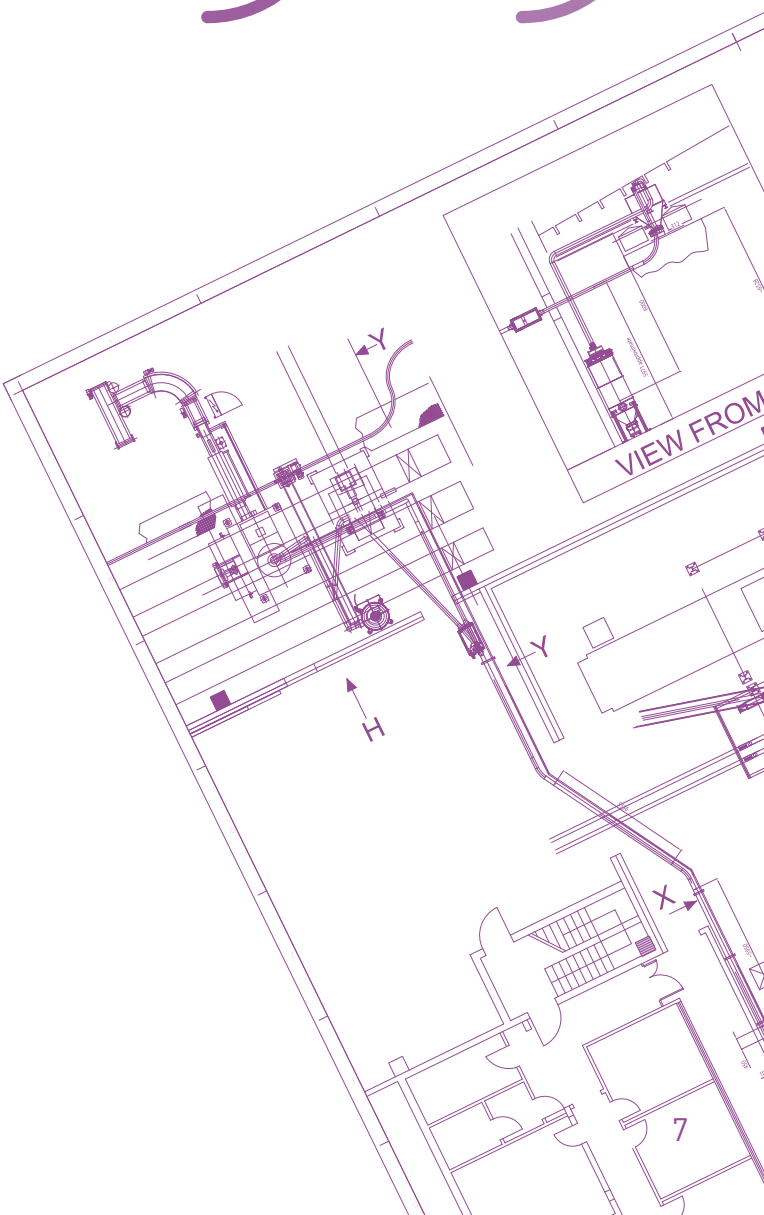
Air-Tec system has a multidisciplinary approach that includes consultancy, plant structural design and project management with a focus on the service quality.
After a thorough review of the conditions and space available at the intended site and what system would be most suitable Air-Tec system's professionals support customers, in choosing the type of transport required dependent on the length of the route and the characteristics and quantity of material.
The study of the plant's layout includes: logical development, the provision of components and equipment with accessories, the design of the lines to carry material and compressed air, structural calculations, where necessary, and relevant to consumption of air or other gaseous fluid used to transport.



technical assistance

Air- Tec system offers a timely and efficient service for the management of the assistance's procedures, updating and revising the pneumatic conveying systems and bulk handling.
Thanks to this dedicated attention to customer service and to the multiyear experience in solving problems as they arise in the plants, Air-Tec system is able to offer:

- solutions tailored to customer needs;
- start- up service for new conveying systems;
- training courses on the operation of Air-Tec system's equipment;
- setup and calibration services;
- technical assistance;
- supply of spare parts;
- plant maintenance and overhaul;
- support for the expansion of existing plants.



a selection of the materials handled

Air-Tec system's dense phase pneumatic conveying systems are able to handle a wide variety of materials with particle size from 0.1µ up to 3cm.



alumina



dry blend



fiberglass

- Acrylamide
- Acrylic modifier
- Active carbon
- Adipic acid
- Alumina
- Aluminium fluoride
- Aluminium nitride
- Aluminium silicate
- Ascorbic acid
- Atomized aluminium powder

- Barium and strontium sulfate
- Barium sulfate
- Barley malt
- Base granules detergent
- Bed ash
- Bentonite
- Bicarbonate
- Biscuit mix
- Black sand
- Blended glass batch
- Bone meals
- Borax
- Boric acid
- Bran flakes
- Bread crumbs
- Burnt sand

- Cake mix
- Calcium carbonate
- Calcium fluoride
- Calcium oxide
- Calcium phosphate
- Calcium silicate
- Calcium stearate
- Calcium sulfate
- Calium carbide
- Carbon black
- Carbon Mix
- Carnalite
- Catalyst
- Celite
- Cellulose
- Cement
- Cement blend
- Ceramic
- Ceramic dust
- Cereals
- Chamomile
- Charred wood
- Chewing gum base
- Chicken seasoning
- China clay
- Chromic acid
- Citric acid
- Clay
- Clay calcined
- Clay tile
- Coal
- Coal dust
- Coal slag
- Cobalt oxide
- Cocoa
- Coffee beans
- Coke
- Copper matte
- Copper Powder
- Corn
- Corn Gluten Meal
- Corn Grits
- Couscous
- Crispy rice
- Crushed rock
- Cryolite dust

- Desiccated coconut
- Dextrose
- Diatomaceous earth
- Disodium phosphate
- Dolomite
- Dried Anthracite
- Dried peas
- Dried sludge
- Dry ash
- Dry Soap

- Epoxy resin
- Ethylene vinyl acetate

- Feldspar
- Ferrite
- Fiberglass
- Fly ash
- Foundry dust
- Freeze dried coffee
- Frit



tin



dehydrating

- Fructose
- Fumed silica

- Glass batch
- Glass beads
- Granola
- Graphite
- Green oats
- Groats
- Gypsum

- Hydrated alumina
- Hydroquinone

- Ilmenite
- Iron oxide
- Iron powder

- Lactose
- Lignite
- Lime
- Limestone

- Magnesite
- Magnesium chloride
- Magnesium oxide
- Maltodextrin
- Manganese dioxide
- Marble chips
- Medicinal herbs
- Melamine powder
- Metal powder
- Mica
- Milk powder
- Milled zircon
- Mineral black
- Mixed sand and soda ash
- Molybdenum oxide
- Monoammonium phosphate
- Mortar mix
- Mush

- Nickel carbonate
- Nickel granules
- Nickel oxide
- Nickel sulfate
- Nylon pellets

- Oat flakes
- Olivine sand

- Paper pulp
- Parmesan cheese
- Peanuts
- Perlite
- Pet food
- Pharmaceutical gelatin
- Phenolic resin
- Phosphoric anhydride
- Pink Beans

- Plastic caps
- Plastic Pellet
- Plastic resin pellet
- Polyester
- Polyethylene
- Polyethylene glycol
- Polypropylene
- Polystyrene
- Polyvinyl chloride
- Popcorns
- Potash
- Potassium carbonate
- Potassium sulfate
- Potato flakes
- Potato flour
- Prilled ferrous sulfate
- Pvc compounds
- Pvc powder
- Pvc resin
- Pyrite concentrate

- Reclaimed sand
- Red lead
- Refractory batch
- Resin
- Resin copolymer
- Resin-coated sands
- Rice grains
- Rock dust
- Rye flour

- Saccharin sodium
- Salt crystals
- Sand
- Scrap glass
- Silica
- Silica flour
- Silica sand
- Silicates
- Silicon carbide
- Silicon dioxide
- Silicon powder
- Soda ash
- Sodium carbonate peroxide
- Sodium chlorate
- Sodium citrate
- Sodium fluoride

- Sodium nitrate
- Sodium perborate
- Sodium percarbonate
- Sodium polyacrylate
- Sodium stearate
- Sodium sulfate
- Sodium triphosphate
- Soy protein powder
- Soybean meal
- Spodumene
- Starch
- Sugar
- Superabsorbent polymer

- Talc
- Tea
- Tile dust
- Titanium dioxide
- Titanium slag
- Tobacco
- Trisodium phosphate powder

- Urea

- Vermiculite
- Vinyl resin
- Vinyl tile chips
- Wheat flour
- Wollastonite

- Zeolite
- Zinc oxide
- Zinc powder
- Zinc stearate
- Zirconium
- Zirconium carbonate



phenolic resin



pet food





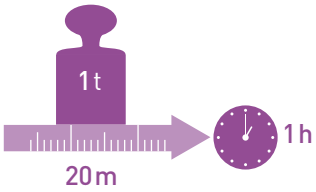
roasted coffee beans


100% ARIA ALLA CURVA
100% AIR TO ELBOW
FLUIDIFYING
50% ARIA DALL'ALTO
50% ARIA ALLA CURVA
50% AIR TO TOP
50% AIR TO ELBOW

Bart & Bart-One lines

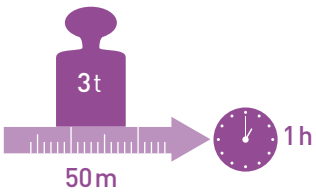
Bart and Bart-One lines differentiate for the cutting edge technology with an economic price.
Bart is a standard product available in a unique size, suitable for short routes.
Bart-One transporters are suitable for medium length transportation with a flow rate up to 20 tons/h depending on the length of the route and the material. They have a capacity of 900 litres.
For both of the lines there is also a HT version (high temperature) for the transport of material up to 250°, like ashes and slag.





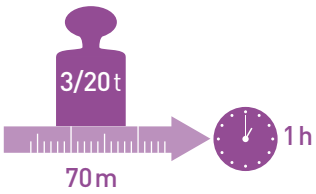
Bart

Bart is a small dimension system which is quiet and suitable for routes up to 20 meters (55 feet), with a capacity of 1 ton/h and a pressure up to 2 bar.
It is able to transport materials that tend to clog.
Bart can be employed in several markets and is particularly suitable for humid places, and the food, chemical or pharmaceutical industries.
Bart line vessels are available in one size (capacity 24 litres), they have a loading mouth 150mm in diameter and an exit tube of 1.5", 2" e 3" diameter.



Bart-One 80

Transporter with a capacity of 80 litres suitable for routes up to 50 meters (140 feet) and a pressure limit up to 4,5 bar (tested till 6 bar according the PED - European Pressure Equipment Directive).
Bart-One has a capacity up to 2 tons/h and a loading mouth of 200mm in diameter and an unloading mouth of 2", 3" e 4".
Bart-One vessels have been designed for the standard method of transportation. They are also suitable for movement with full tube and for use as a dosage system on the scale.



Bart-One 150 - 300 - 600 - 900

The Bart-One transporters are available with different capacities: 150, 300, 600 and 900 litres. All of them are equipped with an advanced control system of introduced air.
They are suitable for routes up to 70 meters (200 feet) and for pressure up to 6 bar with flow rates from 3 to 20 tons/h. Loading mouth diameter: 200 or 250mm.

Tpa line



The Tpa line is suitable for routes from 70 to more than 500 meter length.
It represents the appropriate solution for fragile and difficult materials with a flow rate even higher than 100 tons/h.
The Tpa line avails itself of the presence of advanced electronic components to enable a bigger flexibility of application and a better control of the transport cycle.
Thanks to the use of appropriate boosters for the introduction of air into the pipe, Tpa vessels guarantee the integrity of the granules and powdery materials during transport. They are designed to ensure a high level of the system's efficiency.
Tpa vessels are certified according to the PED - European Pressure Equipment Directive.
The TPA transporters are available with different capacities from 85 to 4250 liters and in three types depending on the chosen system of transport:

Standard

The line of transport is emptied after each loading.

Full pipeline

The transport happens with a full pipe. This permits air and energy saving compared with the conventional method. The TPA full pipeline transporters are used to move fragile.

Full pipeline continuous

The use of two TPA full pipeline transporters connected between them renders possible a constant trajectory of the material inside of the pipe reducing the system's loading time.

The values mentioned are only indicative and they can vary depending on the material and the distance.



Standard transport cycle or hollow tube

Phase 1

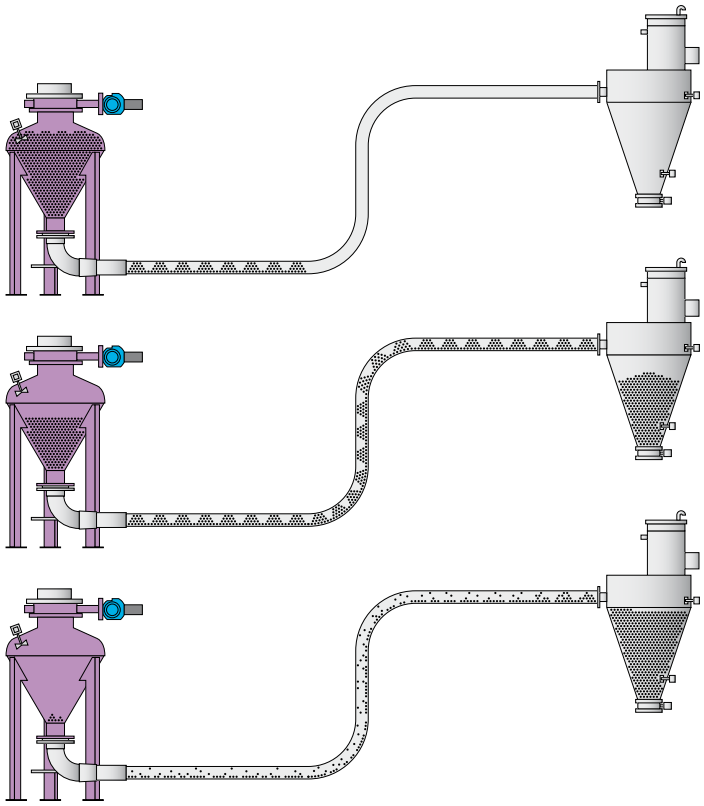
The vessel is loaded, normally by gravity. When the level sensor indicates that the vessel is full, the loading valves and the vent valves close releasing compressed air or other inert gases.

Phase 2

The material is then pushed into the transport line to the hopper.

Phase 3

When the material is loaded, the pressure switch of the vessel goes to zero. The intake of compressed air stops and the loading valve will open to start a new cycle (phase 1).



Full pipeline transport cycle

Phase 1

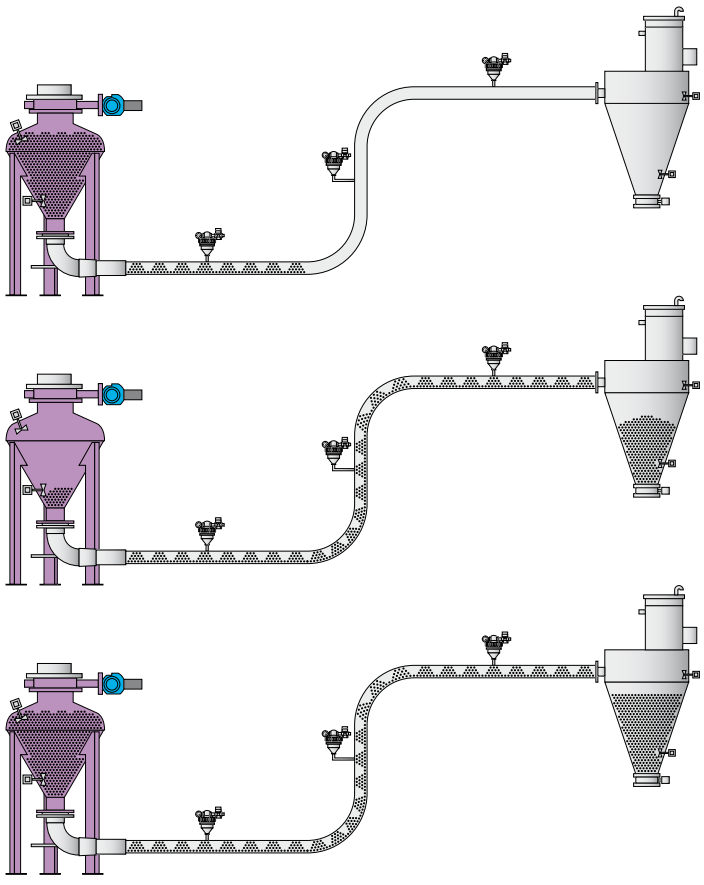
The vessel is loaded, normally by gravity. When the level sensor indicates that the vessel is full, the loading valves and the vent valves close releasing compressed air or other inert gases.

Phase 2

The transport continues until the sensor falls to the minimum level which indicates the vessel is empty. The transport stops and the loading valve opens again.

Phase 3

The transport cycle starts again filling up the vessel. In this way, the line will remain always full



components & accessories

According to clients' needs, plants can be provided with:

- guillotine valves
- pressure relief valves
- butterfly valves
- dust collectors
- rotating paddle bin level indicators
- silencer



Big bag discharge station

Emptying systems for bags of 1000, 1500, 2000 kg hanged to the structure using a forklift or a hoist. The discharge stations are equipped with pneumatic pistons to break internal lumps.
They are complete with unloading hoppers which are dimensioned depending on the installation needs.
The big bag unloading stations are also available with protective gloves and can be connected to transporters or screw conveyors.



Automatic bag splitter

Stations for emptying bags automatically up to 25 kg.
They are able to separate the material from the bags and convey it to other machines by a vessel or a screw conveyor.



Booster

The goal of the booster is to homogenize the passage of the product inside the pipe.
The use of boosters enables a high level of efficiency during transport and a reduction of air consumption.



Valve receivers

The valve receiver is a system for intercepting the material. Installed on silos or hoppers, it allows for feeding more destinations with a single pipe. The valve receiver can be on going if installed along the route, or end if positioned at the end of the trajectory to allow the flow of the material inside the silo.
If open the material flows inside of the silo; if closed the material moves towards the next destination.



Wide beam elbows

The wide beam elbows are used for the transport of non abrasive materials.
The size ranges from 2" to 6".



Anti-wear elbows

The anti-wear elbows are used to transport abrasive materials. They are available in sectors from 30° modular curves up to 90°.
Their size can range from 2" to 4" and they are also available in NI Hard type version.



Manual bag splitter

The manual bag splitter is a device for emptying paper or plastic bags in dust free places.
This is also available with protective door and gloves and can be connected to transporters or screw conveyors.
The machine can be equipped with a fluidification or filter system.



Diverter

The diverter is placed along the pipes to direct the flow of material in two or three different directions.
It is suitable for handling materials of any size and can be used with abrasive or fragile materials as well as those that tend to clog.
The diverters have an oscillating tube for fully automatic movements in any position.
They are available in sizes from 2" to 6".
It is available a special 2" version for Bart vessels.



Lump breaker or Clodder

Systems for the breaking up of lumps formed during the storage process.
They can be installed as a separate component or they can be mounted within existing systems or devices for emptying bags or big bags.
The Clodder has two sets of knives with a double engine that allows for different speeds.
It is suitable for hygroscopic materials or those that tend to clog such assugar, salt, urea or silicate.



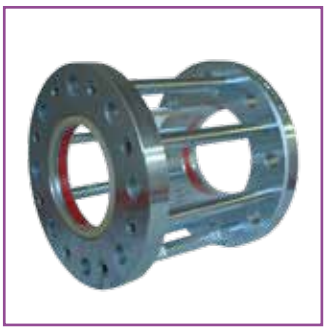
Vibra-Flow™

The Vibra-Flow™ is an air blade extraction dynamic system for emptying silos and hoppers.
It's easy to install and can be applied inside or outside silos and hoppers.



Air gravity conveyor

Air activated gravity conveyors transport powdery material through a straight section, taking advantage of the force of gravity.
They are installed at a 10° inclination angle which permits the movement of the material.
The length, inlet and outlet of material can be customised depending on system needs.



Spy

The spy is positioned on the pipes to make the material in transit visible.



Coupling systems

The coupling systems allow for the connection between two ends of pipes.



Pipes

The transport path comprises a line for air and another one for the material.
Using special booster air is introduced into the pipes dedicated to the material

solutions
for pneumatic conveying

Thanks to a consolidate experience in pneumatic transport, Air-Tec system is able to offer solutions which could include a transporter and accessories or components.
Qualified professionals can design other solutions depending on the customer's needs.



Dosa-Flow

suitable system for the weight dosage of raw materials and additives.



Big bag discharge station with Bart



Bag splitter with screw conveyor or Bart



Bart with dust collector

for the transport of sucked up dust.



Tpa with insulated pipes

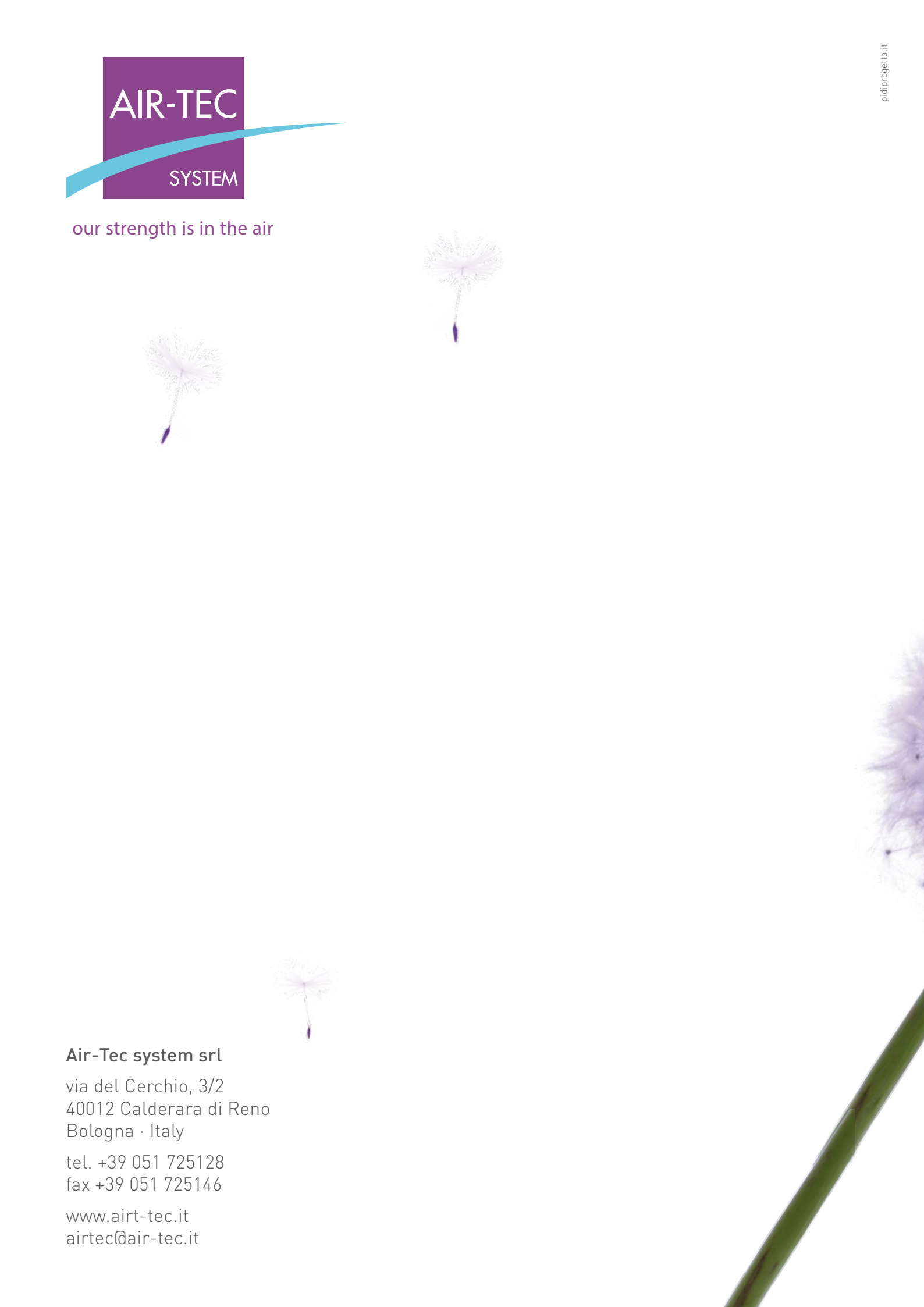
for the transport of high temperature materials or to preserve the temperature along the route



AIR-TEC SYSTEM

our strength is in the air

pidiprogetto.it



Air-Tec system srl

via del Cerchio, 3/2
40012 Calderara di Reno
Bologna · Italy

tel. +39 051 725128
fax +39 051 725146

www.airt-tec.it
airtec@air-tec.it