

Centralised conveying systems



English

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Customers. The core of our innovation

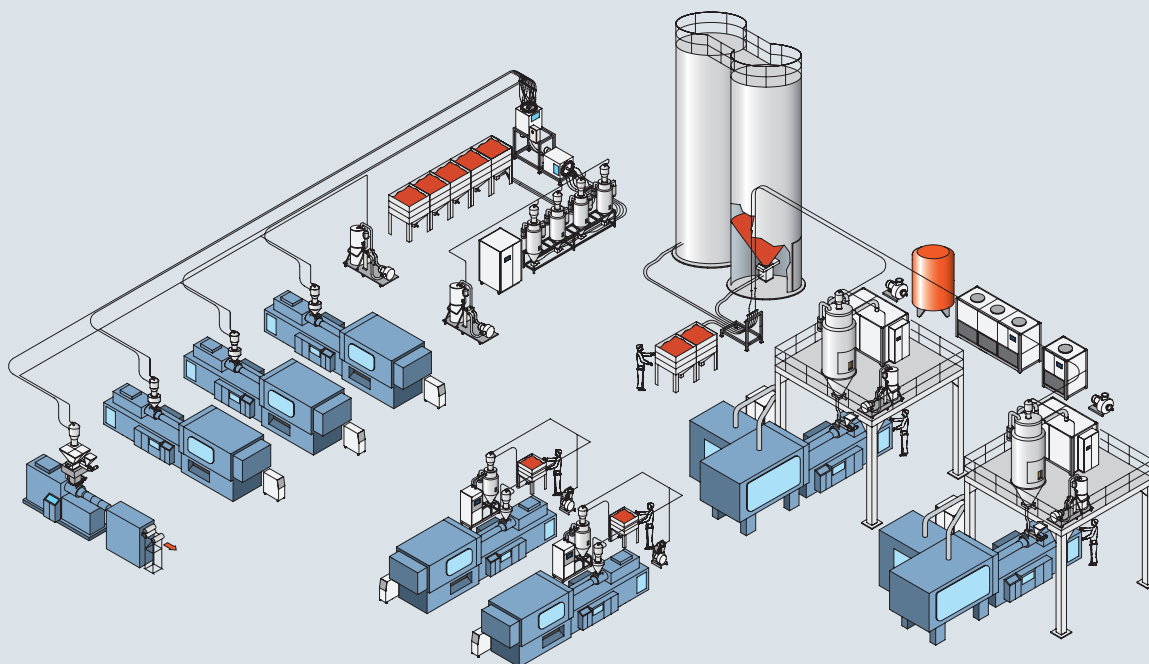
Enhanced integrated conveying technologies

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Piovan is a technological partner specialised in the development of centralised systems, thanks to over 35 years of installations in all the application sectors. It offers its consultancy for small and medium industrial realities, and for those of large dimensions. The team of engineers and professional technicians carry out accurate study and development work and, upon request, the installation and start up of the system.

Advantages of the centralised solution

- > **Flexible, quick and safe handling** of polymers without any material wastage and risk of mistake.
- > **No material degradation or formation of dust**; pneumatic conveying of granules is carried out at controlled speed.
- > A rational and organised distribution ensures **higher production rhythms and constant quality**.
- > **Optimisation of energy consumption**, thanks to the adoption of a centralised group of vacuum pumps.
- > **Opening to future enlargements** and to the creation of new work islands without the necessity to review the logic of the system.
- > **Accurate management of stocks** and **production jobs**, with the possibility to constantly monitor both storage and consumption data.



Centralised conveying systems



Conveying system of dried and raw materials to gravimetric blenders



Easy²System vacuum receivers for the drying and dosing area



Flexibility of usage

Piovan conveying systems are designed to ensure the correct functioning with granules with different bulk density, particularly dusty material, post-consumer flakes and flakes from thin thermoforming.

We also provide solutions for handling at **high temperature** keeping granule dehumidification constant up to the inlet of the injection moulding machine or into the extruder screw. In these cases, important construction and engineering details are taken into account as well as the closed loop mode.



Feeding system for 100 injection moulding machines

The Piovan technological offer is wide and also dimensioned for **large productions**. With the skills acquired in the treatment of critical materials such as **flakes**, the company realises conveying systems up to 5000 kg/h, complete with receivers specifically dedicated to flakes with a capacity of 350 litres.

Receivers for flakes and granules on drying hoppers



Storage systems

For material storage, Piovan's offer for both granules and flakes ranges from **outside silos** - which can be fitted with pneumatic loading systems - to small **silos** and **bins** for installation inside the production plant. As a completion, dedicated filtering devices for the conveying air and dust separation systems are also available.



Moreover, for materials sensitive to oxygen and subject to degradation - such as PETG for optical applications, scavenger, and some typologies of polyamides ad additives - Piovan adopts **nitrogen-conditioned storage system** ensuring the correct conservation of plastic materials and keeping their properties unvaried. In addition, Piovan supplies **compressed air dryers** for PC storage silos, particularly recommended for productions of CDs and DVDs.



Material distribution from outdoor and indoor silos



Storage area with automatic coupling station and supervisory system

Optimised and controlled management of silos is carried out by means of level sensors and loading cells, which allow monitoring of the job consumption and the integrated management of material quantities. **Octabin-overturning units** and **big bag unloading stations** are also available. The latter can be equipped with a dosing station, particularly ideal in the case of critical materials.

Centralised conveying systems



Distribution devices

Material distribution in the storage area, starting from the silos, bins or big bag unloading stations, is carried out by means of **suction boxes**, designed to ensure constant and fluid flow.

The source can be selected automatically, through **pneumatic deviating valves** which operate in an alternated, sequential or mixed manner. They ensure optimised consumption of stocks according to the material used and process typology.



Material selection valves



Manual coupling station with decoded device

The distribution to the final destinations can be carried out by means of **manual coupling stations**, which include, on request, a system of material identification to trace back the route and with no possibility of mistake. In the **automatic version**, the coupling station ensures the correct combination material/final destination as well as the total absence of contamination, also thanks to pipe cleaning cycles at every loading operation.



Automatic coupling stations for material selection



Customised routes of piping shaped on site



Piping

Stainless steel piping has a diameter ranging from **40 mm** to **100 mm**, with all related components. This allows Piovan to ensure conveying flexibility and maximum adaptability to the different typologies of installations. The range comprehends specific versions for hot material, able to keep the correct temperature of the granules, and polished piping with roughness lower than 0.4 micron for the optical and medical sector. In the case of abrasive materials, the glass or enamelled bends solve any problem of wear out.



Coupling station with glass bends



Automatic distribution with ceramic bends



Big bag unloading unit with flake dedusting unit



Specific devices

Piovan has a wide vision of the conveying technology, which includes reliable material decontamination devices, such as **dedusting systems** designed in particular for recycled or dusty materials and for large volumes of flakes up to 4000 kg/h and able to considerably reduce the dust content. Moreover **metal separators** and **vibrating screening systems** are available; they carry out decontamination of material lots, ensuring constant production quality.

Centralised conveying systems

▶ Operator interface

The control of the centralised conveying system is not restricted to the single units, but rather integrates them all in a flexible manner. Both using the Piovon **Easy²System** conveying logic and the **PLC system**, the customer has at his disposal a complete vision of all the units from comfortable control stations.



The modularity of the control simplifies the integration of new conveying machinery, by reducing both installation costs and intervention timing. An 8.5" colour **touch screen** interface allows the operator to access in real time the functions of all the system components, and rapidly intervene on the settings.



Easy²System and PLC control are open to **communication with other systems**, to transfer process data and carry out elaborations. They are both perfectly integrated with the control of the injection moulding machine or of the extruder, management software or supervising systems.

Display signalling the functioning of the conveying system



Granule receivers and vacuum pumps

A complete range of vacuum receivers is available, in a variety of dimensions and configurations: for **granules**, **micro-granules**, materials with a **low melting point** and **flakes** also of the **multi-layer type**. They differ for some construction details, such as specific filtering devices that solve the problems of all the types of material and ensure constant functioning, as well as the design of the receiver and of the cone for uniform material flow.



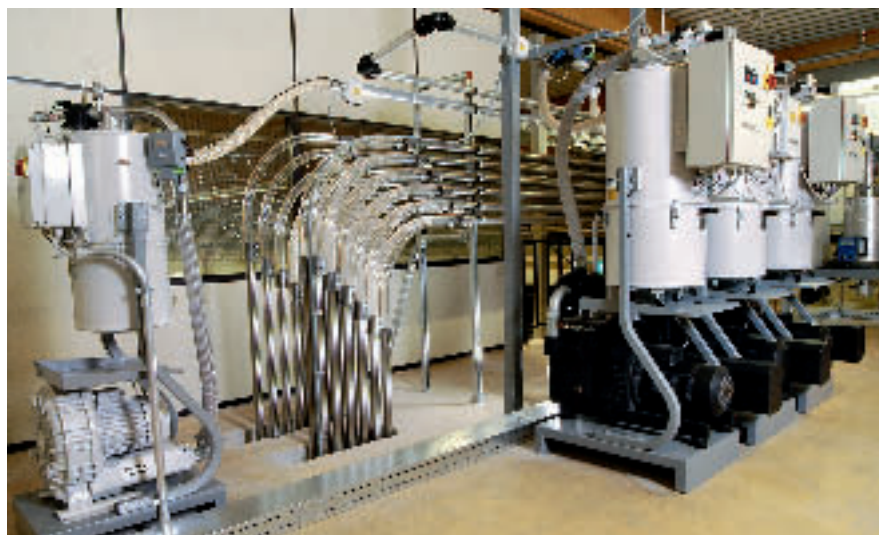
Granule receivers for high temperatures



Models of receivers for flakes

For vacuum generation, Piovan offers **vacuum units** equipped with side channel or rotary lobe pumps. They can be combined with granule receivers complete with filter or with a filtering unit with cyclonic effect, ensuring the absence of dust and preserving the granule from contamination.

For specific engineering solutions, Piovan supplies **centralised vacuum pump groups**, for granule conveying in the whole department. It is possible to include a stand-by pump, which starts up in a manual or automatic manner in the case of malfunctioning of one of the system units, thus guaranteeing production continuity. All the vacuum units can be managed either manually or automatically by using the Piovan Easy²System control or the PLC system.



Centralised group of vacuum pumps

Software Win Feeding System

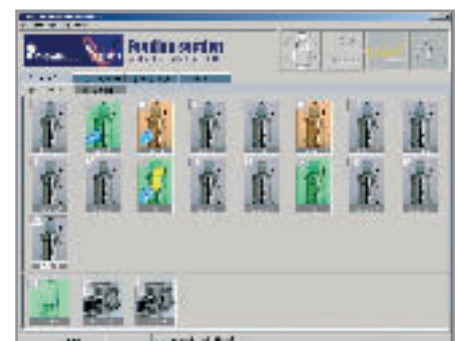
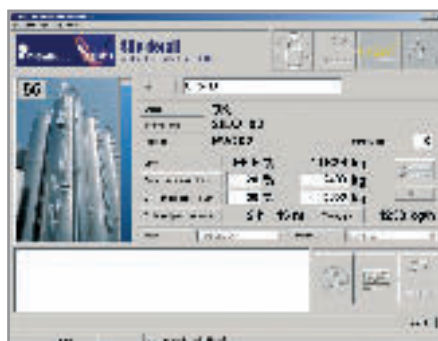
With **Win Feeding System**, the Piovan software system dedicated to conveying systems, it is possible:

- > to manage all the devices of the centralised system from **remote control stations**, including silos and individual loaders;
- > to monitor **more than 100 units**, in any technical context, automatically adapting to any plant configuration;
- > to constantly have at one's disposal a **real time picture** of the system, from the storage area to the injection moulding and blow moulding machines or extruders, as well as the historical record of the system functioning.



Win Feeding System includes advanced functions which ensure efficiency and operational simplification, such as:

- > function of **silos management**: it displays the material trend distinguished for storage units and polymer, the hourly consumption and self-sufficiency time, thus permitting accurate control of stocks;
- > **Material Drying Control** function: it offers the important advantage of signalling the plant configurations which could negatively affect the production, due to a non-optimal drying treatment;
- > function of **source management**, a fundamental tool for identifying the suction points in those systems equipped with coupling stations; it makes it automatic the setting of suction times and pipe cleaning times in line with the distance from the suction point.



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