



Piovan

Customers. The core of our innovation

Feeding&Conveying
Drying
Dosing
Temperature Control
Refrigeration
Granulation

Piovan Dosing and Blending Technologies: Volumetric Dosers



Volumetric dosers have been designed to dose masterbatch, additives and regrind into the plasticization screw and are typically mounted on the feed throat of the machine.

They are able to satisfy the requirements of high precision and utmost flexibility in the applications on injection moulding machines, blow moulding machines and extruders.

- Masterbatch doser with free flowing main material



Single or double dosing stations are mounted on a central block. The dosing is performed by mean of **metering screws** which ensure high performances and repeatability, carrying out exactly the same number of revolutions and fractions of revolution programmed.

In the multiple-threaded version, the dosing unit works with utmost precision and the granule flow is more homogeneous and uniform. The mechanical reliability is also ensured by the presence of special bearings on which the screws rotate.

- Benefits**
- **Flexibility:** customised configurations according to the production requirements
 - **Rapid replacement of the screw**
 - **Simplified maintenance operations**
 - **Regrind management**

The central block is entirely in aluminium and is predisposed for installation of a central hopper dedicated to virgin material. It can be easily combined with a mixer or applied directly onto the machine throat.

- Volumetric masterbatch blender for PET applications



Ideal for dosing both crystalline and amorphous masterbatch materials including low melting point micro granules and additives.

The range includes dosers for liquid colorants.

- Benefits**
- **Precise dosing:** the dosing screw is driven by brushless motor with electronic control (position control loop)
 - **Constant accuracy and dosing capability:** continuous water circulation inside the unit prevents any anticipated melting of the granule (low melting point masterbatches)

Piovan Dosing and Blending Technologies: Gravimetric Batch Blenders



All materials are metered by weight in order to create the desired blend keeping the correct ratio between the different materials on each batch. A continuous adjustment keeps the blend constant. Any dosing requirement can be satisfied choosing between three specific dosing devices: inclined slide gate, metering screw and micro-cell.



(1) Material empty device

Components are individually dispensed into the weighing hopper and controlled by a high resolution load cell. The batch is then discharged into the mixer, which creates a homogeneous blend before entering the plasticization screw. Piovan gravimetric batch

blenders can dose and weigh up to 8 granule materials, allowing to select the most appropriate hoppers capacities and dosing devices. Gravimetric batch blenders can be installed both on the feed throat of the processing machines or on the floor, over a frame with suction box.

Benefits

- Reliability:** mixer level is controlled by load cell hence assuring optimal functioning with any type of material.
- Flexibility:** specific dosing devices, different hoppers (dimensions and discharge size).
- Modularity:** customised configuration of multiple combinations of hoppers.
- No production scraps:** mixer with round bottom shape.
- User-friendly control:** through graphic full-colour touchscreen panel.



(2) Mixer on loadcell

Piovan Dosing and Blending Technologies: Gravimetric Loss In Weight Dosers

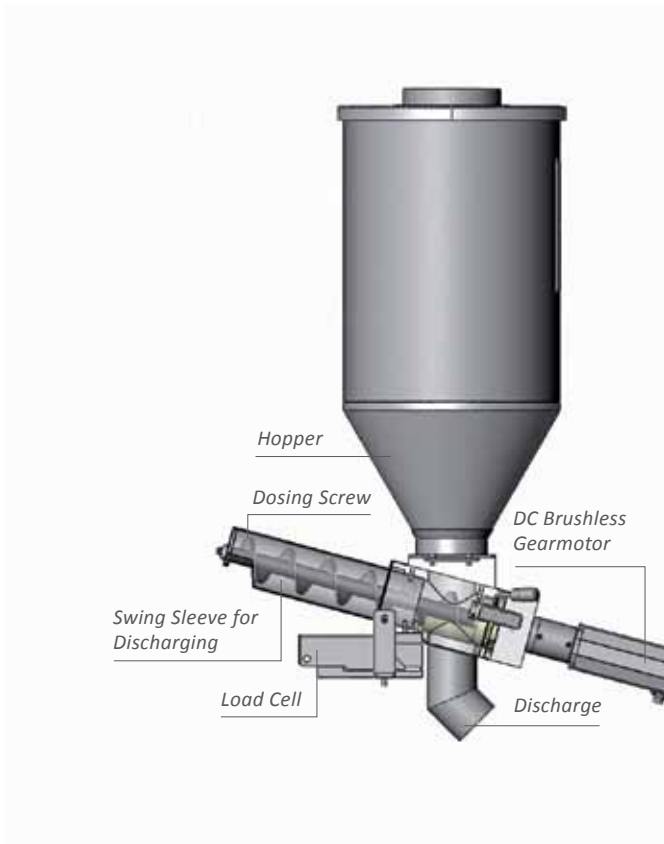


Loss-in-weight gravimetric dosers fulfil the demands of accurate dosing and constant blends in the extrusion

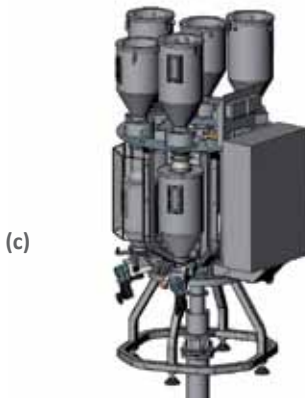
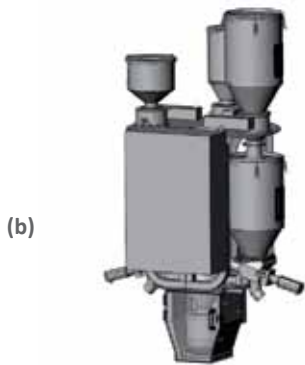
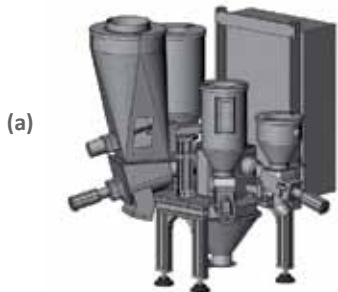
sector, in particular in the production of films, sheets, profiles, pipes and fibres.

Continuous loss in weight

Materials are constantly dosed by means of dedicated metering screws, while the weight of each component is continuously monitored by load cells (400 time per second). This allow to adequate the quantity of each component introduced into the mix according to the extruder capacity, guaranteeing constant proportions.



The gravimetric dosing system can be connected with a collecting bin (Picture a). As an alternative the doser can be provided with a dynamic mixer (Picture b) or with a cylindrical collecting bin for application of the unit onto a mezzanine (Picture c).



Benefits

- **Accuracy and homogeneous blend:** continuous reading of the throughput and automatic adjusting of the speed of rotation.
- Coverage of different production needs by the **automatic control of the rotation speed** of the metering screws.
- **Modularity of dosing stations quantity** (up to 5) and **typology** (for standard granules, insulated for high temperature materials, specific for flakes).
- **Vibration immunity:** the frame protects the stations from extruder vibrations and allows the installation of the unit directly on the extruding machine or over a mezzanine.
- **No extrusion process interruption:** quick discharge device for the material change and recovery of each component/material without stopping the machine.
- **Quick maintenance and cleaning operation:** simplicity of opening and disassembling of the dosing elements.
- **Guarantee of continuous functioning:** the refill valve (patented) allows the interception of any type of plastic material (including critical materials like flakes) without blocking.

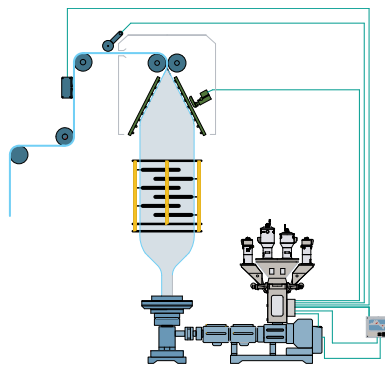


Piovan Dosing and Blending Technologies: Gravimetric Loss In Weight Dosers

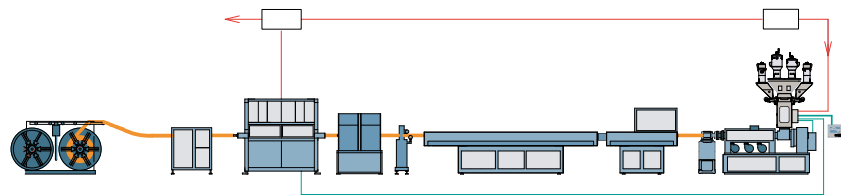


Hybrid Gravimetric batch + loss in weight

Hybrid Gravimetric batch + loss in weight combine in one single machine the advantages of batch dosing with precise and rapid throughput adjustment of the loss-in-weight technology. They represent the ideal solution to satisfy the requirements for dosing and process control in the extrusion field, specifically in the production of pipes and single/ multi-layer blown or cast films.



(1) blown film extrusion



(2) cast sheet extrusion

Components are individually dispensed into the weighing bin by pneumatically operated slide gates or dosing augers, and weighed till the set batch is achieved. The batch is discharged into the mixer, which creates a homogeneous blend. The transfer from the

mixer to the plasticization screw is controlled by a high resolution load cell. The constant monitoring of the extrusion line's parameters combined with the dosing control data, allows to adjust the functioning of the extruder (screw speed, haul-off speed and thickness) and the blending unit.

Benefits

- **Immediate processing of the information from the line and consequent adjustment of the dosing functions and the extruder control.**
- **Rapid start-up procedure:** the blender immediately starts dosing after selecting the recipe and it works in automatic mode.
- **Constant production features:** continuous auto-adaptation of the production process and of the dosing unit functioning.
- **Independence of dosing precision from polymer features:** weighing each single component, the dosing process is not influenced by variations of bulk density.

Piovan Dosing and Blending Technologies: User-friendly control instruments



A series of highly performing colour touch screen panels combined with an accurate graphics design ensure excellent visualisation and a really user-friendly use of the dosers and of the data charts.

- The operator can access the following functions:
- dosing management control
 - recipe database
 - alarm & historical event management
 - management of the line production data
 - trends visualisation
 - production reports
 - management of material consumption totalisers



Win Factory is a standard supervisory software that can self-configure to accommodate application needs, with no specific tasks needed for customizing. It's able to host all Piovan machines and exploit interaction between them: they are no longer stand alone units, becoming a system.

The WinFactory modules for dosing and blending concerns work recipes, setting the percentages of individual stations and monitoring them.

The gravimetric blender can be programmed for a work recipe selected from a central data base and then sent to the machine. It is also possible to set a recipe locally from the machine control unit, and save it in a central database also for later uses on the

same or on other blenders. Further information on dosing functions and details on management modules are available on WinFactory Catalogue.



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