PLASTICOLOR

MIXING STATIONS

VOLUMETRIC MIXING STATIONS

GRAVIMETRIC MIXING STATIONS

GRAVIMETRIC DOSING-/MIXING STATIONS

WOYWOD
PLASTICOLOR MIXING STATIONS – OVERVIEW

The quality of end products consisting of different material components like main materials, regrinds and additives, for example, is highly dependent on precise dosing, high levels of consistent mixing quality and compliance with the recipe as well as avoiding external influences.

In the case of materials whose size and density are very different, in particular, a driven mixer with moving parts frequently results in a poor quality mixing result and possibly even in separation processes. When manufacturing high-quality, technically demanding products, this can lead to considerable variations in quality.

With PLASTICOLOR volumetric and gravimetric mixing stations, the main component is also dosed and all of the components that are involved in mixing are fed together to a static mixer at the same time. This ensures both that dosing is exact and that the individual components are mixed well - regardless of the variations in the amount of material that the processing machine takes in.

In a project meeting with exact analysis of the requirements profile, we work out whether a volumetric or gravimetric system based on the loss-in-weight principle is most suitable.

Standard mixing stations consist of 2 to 8 PLASTICOLOR units. Special mixing stations for more than 8 components can be designed and supplied. In the same way as with all PLASTICOLOR units, mixing stations have a modular structure. You can extend existing mixing stations and change them over from volumetrics to gravimetrics at any time.

You can operate PLASTICOLOR mixing stations in “starve feeding mode” as well as “from a full hopper”.

In starve feeding mode, the fill level is controlled by means of manual set value specification or by synchronising with the processing machine.

Operating from a full hopper is possible with a neckpiece tube. In this connection, appropriate sensor technology keeps the amount of pre-mixed material as low as possible while maintaining consistently high mixing quality - regardless of the variations in the amount of material that the processing machine takes in.

Depending on your intended purpose, a number of different control variations are available that we have developed ourselves. PLASTICOLOR mixing stations and systems are basically simple, convenient and easy to operate on an intuitive basis.
PLASTICOLOR
VOLUMETRIC MIXING STATION

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GRAVIMETRIC DOSING-/MIXING STATIONS
PLASTICOLOR MIXING STATIONS – STRUCTURE

The main components of PLASTICOLOR mixing stations are the mixing station neckpieces, PLASTICOLOR dosing units, the material conveying and, with gravimetric mixing stations, a weigh hopper assembly. Different variations of all of the components are available. Depending on your application, you can combine them and match them to your individual production process in an optimum way.

PLASTICOLOR NECKPIECES

There is a large selection of different neckpieces, depending on the material which is to be mixed, the ratio between the materials and the required output.

PLASTICOLOR DOSING UNITS

PLASTICOLOR dosing units are mounted at the neckpiece. Four PLASTICOLOR dosing units are available that have a wide range of accessories and a dosing capacity ranging from 70 g to 3,500 kg/h.
PLASTICOLOR MATERIAL FEED
The material storage and feed, e.g. the storage hopper or the hopper loader, are mounted onto the PLASTICOLOR device.

PLASTICOLOR WEIGH HOPPER ASSEMBLIES
Gravimetric systems are additionally fitted with a weigh hopper assembly. Depending on the production requirements different weigh hopper assemblies are available. Some of them are patented.
PLASTICOLOR VOLUMETRIC AND GRAVIMETRIC MIXING STATIONS

Volumetric mixing station
1 - Production maschine
2 - Neckpiece
3 - Min/Max Sensors
4 - Static Mixer
5 - Dosing unit
6 - Storage hopper

Gravimetric mixing station
1 - Production maschine
2 - Neckpiece
3 - Min/Max Sensors
4 - Static Mixer
5 - Dosing unit
6 - Weigh hopper assembly
7 - Storage hopper
8 - Hose connector (as an alternative to 7)
With **volumetric mixing stations**, PLASTICOLOR devices dose all of the materials including the main material simultaneously. This makes dosing independent of changing throughput rates of the production machines. Depending on the fill level, two sensors in the neckpiece switch all of the devices on and off at the same time by means of a ramp. An integrated colour change system is possible.

**Gravimetric mixing stations** have the same basic structure as volumetric ones. Each PLASTICOLOR unit is additionally fitted with a weigh hopper assembly.

PLASTICOLOR gravimetric mixing stations work according to the loss-in-weight principle. In this connection, the system collects the weight of each individual component by means of an installed electronic load cell. Each of the components is regulated permanently at the same time to the desired percentage share of the overall mixture. In this way it is possible to produce high-quality products while minimising the materials that are used. Quantity tests are not necessary. The loss-in-weight process is considerably more precise compared to gain-in-weight systems (batch gravimetric). In these systems, every single component is weighed **one after the other in one container**.

In the case of gravimetric mixing stations, the system acquires material consumption and saves recipes. In addition to this, log files record any machine standstills, parameter changes and faults. This documents the complete production process and it can be archived.

**The PLASTICOLOR mixing station concept including dosing of the main component offers processing companies**

- homogeneous pre-mixing by means of a static mixing insert that is designed for material types and output capacity.
- **constantly consistent feeding** of the set recipe components. The mixing station runs independently of the processing machine’s current material consumption.

**Controls for volumetric mixing stations:**

PDC modular controls series / PPM Control System

**Controls for gravimetric mixing stations:**

PPM Control System; possible to connect to any common bus systems, e.g. Modbus, Profibus, TCP/IP, Profinet, CANopen, EtherNet/IP etc.
PLASTICOLOR MIXING STATIONS - EXAMPLES
BENEFITS OF PLASTICOLOR MIXING STATIONS

- High dosing precision by state-of-the-art electronics and mechanics (approx. +/- 0.5% or better)
- Extremely few premixed material residuals during sudden production changes
- No separation
- Extreme mixing rations possible, e.g. 1 : 2,000
- A very good reproducibility
- Recipe storage
- Extensive monitoring functions, e.g. level alarm, monitoring of throughputs, an informative alarm system
- High reliability, even under the toughest conditions
- Field-tested and practicable options for many applications
- Complete listing of all operational data and faults
- Exact recording of all consumption data and production processes
- All standard mixing station components and spares immediately available from stock
With gravimetric dosing/mixing stations, the main component flows freely into the extruder. The system is continuously dosing each additive by an individual PLASTICOLOR dosing unit into the freely flowing main material. This means that you can exactly dose very small amounts in gravimetric operation.

**Controls** for gravimetric mixing stations:
PPM Control System; possible to connect to any common bus systems, e.g. Modbus, Profinet, TCP/IP, Profinet, CANopen, EtherNet/IP etc.

The PLASTICOLOR mixing station concept without dosing of the main component offers processing companies the following benefits:

- Achieving a homogeneous pre-mix by closely combining the materials to be dosed by optimizing the neckpiece heads based on the respective materials and output capacities.
- The mixing station runs in dependence on the processing machine’s current material consumption. The wide RPM range motors of the stations with a wide control range follow the throughput rate of the production system. This means that precise compliance with the set recipe components is guaranteed at all times.
- Separation is avoided by bringing together the materials just before they are fed into the production machine.
- Contamination of the material mixture is prevented by means of a metal or magnetic separator that can be integrated.
- Very compact structure
MOUNTING POSSIBILITIES OF PLASTICOLOR MIXING STATIONS

... mounted directly on the machine feed opening

... next to the production machine*

... as a central mixing station

* not for gravimetric dosing/mixing stations