



ProTec Polymer Processing GmbH
Dosing





Reproducible Dosing Results - No Problem When Using MANN+HUMMEL Equipment!

For many years, ProTec Polymer Processing GmbH (former MANN+HUMMEL ProTec GmbH) has been known as a reliable and experienced partner to the plastics industry. The company's world renowned brands SOMOS® and OHL stand for efficient material handling and ready to use recycling plants.

We are the preferred partner for our customers because our innovative solutions and top quality at the best available price-performance ratio are absolutely convincing.

Precise dosing and efficient mixing make it possible to manufacture each product by using low-cost standard raw materials and individually adding a defined quantity of auxiliary products, in line with technical specifications and customer requirements, and in the required quality.

A wide variety of special developments meet these different requirements. Plastic is extremely flexible and can be modified to suit the relevant application. It essentially consists of low-cost commodities, such as PVC, PE, PP and PS. Adding a defined quantity of auxiliary materials, such as master batch, pigment, additives or filler, turns it into a completely unique material.

Precise dosing and efficient mixing are required for the preparation and processing of plastics. Dosing accuracy and homogeneity of the material mixture are essential criteria when it comes to quality.

The individual formula components often have very different properties. Manufacturing a mixture that conforms to the formula and is completely homogenous therefore requires specialist expertise and state-of-the-art technologies. What's more: Quality standards are continuously rising. A manufacturing process that can be documented and therefore accurately reproduced forms the basis for successful plastic production.

Our proven equipment and systems are as diverse as the raw and auxiliary materials used, and as different as the processing methods and the resulting end products.

Particularly in the area of injection molding, SOMOS® provides the complete range for volumetric and gravimetric dosing of free-flowing bulk materials.

Why not give us a call? Our team will be happy to assist you.

Two Dosing Systems for Your Advantage

Volumetric

In the case of volumetric dosing, following a calibration process, the quantity of material to be dosed is set in line with the speed of the dosing auger or the number of dosing pockets. If individual product properties such as bulk density or granule size change, the characteristic product value must be manually calculated and adjusted again.

Advantages of volumetric dosing systems:

- Designed for injection molding
- Outstanding dosing accuracy and careful calibration
- Compact design
- Low purchase price

Gravimetric

When it comes to dosing, our gravimetric inline dosing equipment will relieve the user of all his worries.

The user-friendly MINIMIX MMB dosing station delivers accurate dosing results that are based on continuous weight loss measurements (loss-in-weight) and automatic adjustment of the dosing speed. Color changes are quick and simple. No time-consuming color calibration is necessary when changing the material.

What does the operator have to do?

1. Adjusting the percentage of the added color
2. Inputting the shot weight
3. Pressing the start key – Done!

The unit will now automatically and continually check the weight and independently make the necessary adjustments in line with the formula.

Advantages of gravimetric dosing equipment:

- Regular dosing checks through the operating personnel are redundant
- Precise dosing in line with demand
- Saving on expensive dyes
- Mixtures that conform to the formula and are totally homogenous
- Material recording in relation to time and order
- Quality that can be documented and reproduced
- These significant advantages allow you to save a lot of time and money. Investing in a gravimetric inline dosing unit will always pay off with regard to return on investment and long-term system costs!

The following dosing units are designed for applications in injection molding:

- MINIMIX MM 18 (volumetric)
- MINIMIX MM 30 (volumetric)
- MINIMIX MMB (gravimetric)
- MINIMIX MMB-T (gravimetric/twin)

MM 30 Auto Calibrate

1. Set dosing station to calibrator > Input production data > Press start: Done!
2. Gravimetric calibration is now a fully automatic process. The calibration result will be saved automatically.
3. Insert dosing station into the throat > Press START: Done! Volumetric dosing begins with precise settings right from the start.



MINIMIX MMB - gravimetric dosing unit (standard)

Selecting Your New SOMOS® Dosing System is Simple

Different dosing systems may be required, depending on the designated use. The following table will give you an overview of which system is best suited to your purpose. For more detailed information, please contact us directly!

Dosing system	Granulate material	Powder material	Precision	Dosing capacity g/sec	Dosing capacity kg/h
HX	NO	YES	++	0.01 to 1.6**	0.04 to 5.8**
GLX	YES	YES	++	0.02 to 1.6*	0.07 to 5.8*
GX	YES	YES	+	0.2 to 5*	0.72 to 18.0*
A-20 Auger-conveyor	YES	YES	+/-	0.5 to 20*	1.8 to 72*
A-20 Auger-conveyor HTM	YES	YES	+/-	0.5 to 20***	1.8 to 72***
A-30 Auger-conveyor	YES	YES	+/-	2 to 50*	7.2 to 180*
A-30 Auger-conveyor HTM	YES	YES	+/-	2 to 50***	7.2 to 180***

* Measured with ordinary granulate master batch 0.8 kg/dm³

** Measured with free-floating powder 0.65 kg/dm³

*** Only available with step motor with a large torque (4.5 A)

Overview of Dosing Equipment Functions

Model range	MM 18	MM 30	MMB	MMB-T
Work principle	volumetric	volumetric optional gravimetr. Kalibrator	gravimetric „loss-in-weight“	gravimetric/volumetric „loss-in-weight“
Calibration method	manual	gravimetric auto-adaptive or manual	fully gravimetric or manual	fully gravimetric or manual
Control functions				
Torque input	manual	automatic or manual	automatic or manual	automatic or manual
Time input	manual	automatic or manual	automatic or manual	automatic or manual
Automat. dosing time synchronization		x	x	x
Extruder „Tacho“ Modus	x	x	x	x
% additive input for injection molding		x	x	x
% additive input for extrusion		x	x	x
Additive calibration mode		x	x	x
Production storage		1,500 machine settings	1,500 machine settings	1,500 machine settings
Production data storage		2 x 24 hours	2 x 24 hours	2 x 24 hours
External communication Ethernet		x	x	x
External communication RS-232/485		o	o	o
Keyboard lock	1 level	4 levels	4 levels	4 levels
Integrated conveyor system control	x	x	x	x
Components				
Step motor	x	x	x	x
HT step motor fortified version	x	x	x	x
Control with 4-digit LED display	x			
Control with LCD display		x	x	x
„Multi-user“ machine adapter	o	o	o	o
Hopper 6-litre	x	x	x	x
Hopper 12-litre	o	o	o	o
Level indicator input	x	x	x	x
Alarm output	x	x	x	x
Extra output		x	x	x
Output 2 can be freely programmed	x	x	x	x
Accessories (optional)				
Conveyor system for ordinary granulate	x	x	x	x
Convey. system for powder + granulate	x	x	x	x
Machine adapter for PET/H ₂ O cooled	x	x	x	x
Machine adapter „multi-user“ type	x	x	x	x

x... standard

o... option

What You Should Know Before Selecting Your System

The following options are available:

- Sliding device on the output of the hopper reservoir
- Evaluation software to connect dosing control to a PC
- Dosing systems of different performance categories
- FG 200 conveying device with hopper reservoir for main component or secondary component
- Gravimetric calibrator
- ME 38 conveying device for secondary component
- Receiving container for main component
- Network compatible

Please contact our staff if you wish to discuss further options or adjustment possibilities!

The order code for your system is generated as follows:

MM _ _

Product _____

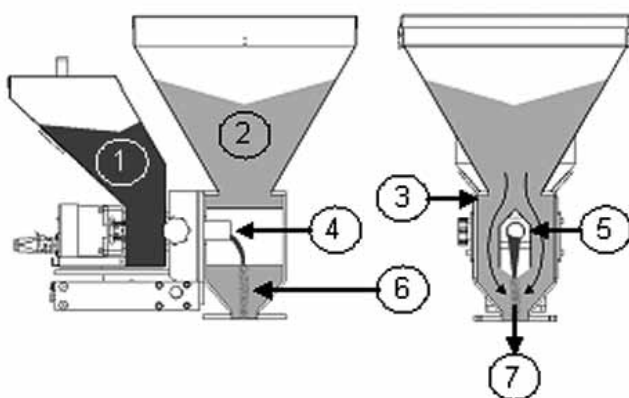
MM MINIMIX

Type of dosing _____

18 = volumetric
30 = volumetric
B = gravimetric
BT = gravimetric double station for ground material
 + master batch

Measurement principle

Combining a dosing cylinder and a step motor with fine-tuning facility ensures that additives can be accurately and evenly dosed. The throat (a mixing chamber) is designed so that the main material and the additives are dosed into the mass flow as a homogenous mixture. A large variety of throats ensures a perfect fit on almost all injection molding machines or extruders. In most cases, the throat is fitted between the processing machine and the hopper. The following figure shows a cross section of the NST40 throat.



1. Color 2. Raw material 3. Mixing stand 4. Dosing cylinder 5. Cover plate 6. Mixing zone 7. To processing machine

The step motor

- Accurate and steady steps
- Torques from 2 to 4.5 A
- Rotation speed infinitely adjustable from 0.01 to 200 rpm⁻¹
- Maintenance-free

Throat - static mixer (No. 3 in the diagram)

- Dosing directly into the main flow, parallel to the intake
- Optimum material mixing
- No blocking
- No dead corners where material can collect
- Easy to clean
- Special, water-cooled throat for PET processing
- Easy to install
- No active stirring element, therefore no material demixing

Dosing cylinder (No. 4 in the diagram)

- The dye is placed in a line before it is fed into the main material
- No pulsing
- Precise
- Reliable
- Easy to replace
- Easy to clean



We Can Dose Anything!

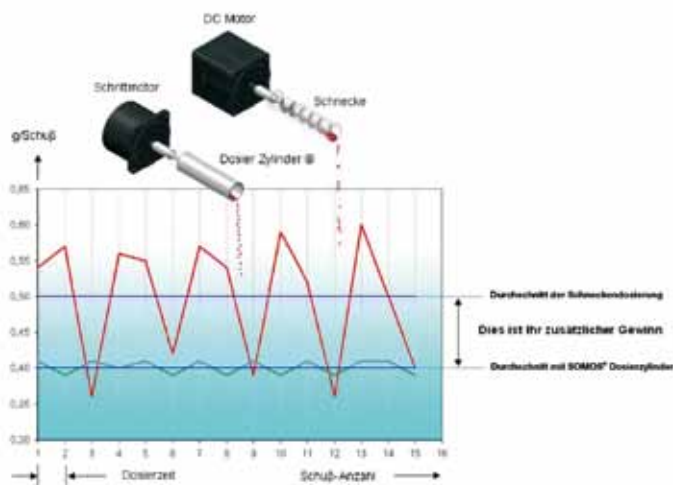


Granulate can be of normal size or micro-sized. The only criterion to achieve a perfect result: Granulate and powder must



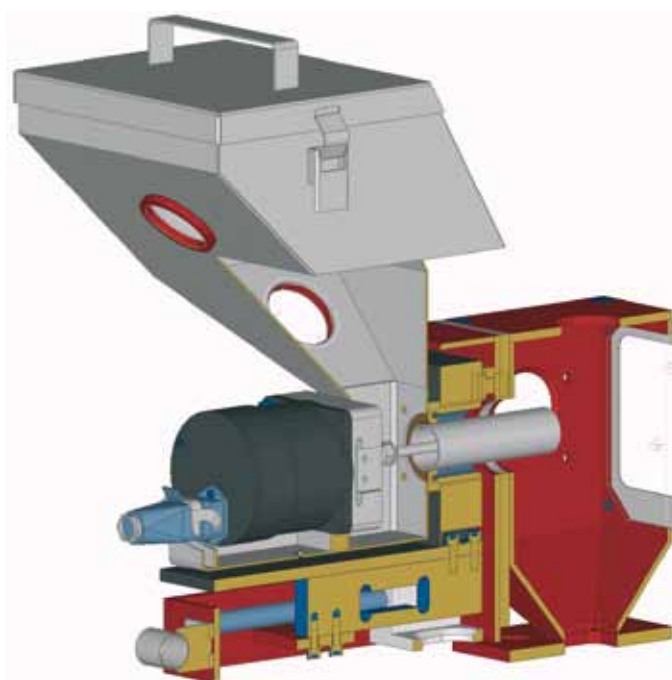
be able to flow freely and must not carry electrostatic charge or be sticky.

SOMOS®-Technology for Your Advantage



Quick „return on investment“ (ROI) thanks to safe and consistent dosing that lowers the target value

The dosing unit is permanently connected with quick-release fasteners to digital scales. Even in the case of intense vibrations, the scales always works accurately, based on the weight loss of the material to be dosed that has actually occurred and can no longer be influenced.



Cross section through the gravimetric dosing system



A glance into the static mixing chamber (throat) of the dosing system

- 1 Throat
- 2 Dosing cylinder
- 3 Cover
- 4 New material
- 5 To processing machine

MINIMIX MM 30 Volumetric Dosing Unit



Image at the top: MINIMIX MM 30 complete with Venturi conveying unit for additives and control

Image on the right: MM 30 standard unit with control



MINIMIX MMB Gravimetric Dosing Unit



Image at the top: MINIMIX MMB complete with Venturi conveying unit for additives and control

Image on the left: MMB standard unit with control



Combined Volumetric and Gravimetric Dosing System (MM 30 + MMB)



MINIMIX double station consisting of MM 30 and MMB - a combined volumetric and gravimetric dosing system

ProTec Polymer Processing - Always at Your Side

Globally networked sales and service structure

Not only do we strive to offer our customers demanding products in the highest quality, but we also strive to ensure that these products are efficiently utilized and that the optimal production conditions are created.

We advise and assess in advance, however we do not transfer responsibility once we've been commissioned. Instead we forward this to our extensively trained service team that makes an on-site visit to ensure that all equipment and systems are optimally serviced and set up.

We do not only provide this service in Germany, but worldwide as well. A network consisting of our own employees – and complemented by the well-trained staff members from our trusted representative offices – is quickly mobilized to be on-site not only when things “get dicey” but also for regular service visits from time to time.



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