

# SAVEOMAT

The next dimension of gravimetric mass throughput control





## RECIPE FOR PROFITS: MASS INSTEAD OF VOLUME.

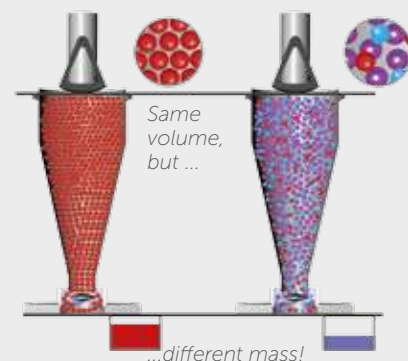
SAVEOMAT product line stands for gravimetric systems for the perfect conveyance of raw material. The system records variations in mass throughput rates and keeps values at a stable level. As such, SAVEOMAT makes sure that process values, i.e. weight per length, wall thickness and the product recipe itself are identical to set values.

SAVEOMAT systems operate with an exceptional precision, they feature a state-of-the-art command system and operation is easy. Its hardware and software were specifically designed for any kind of extrusion process and they have undergone a continuous development over the past 30 years, particularly thanks to the good



*"More than 700 SAVEOMAT installations per year are convincing evidence of the acceptance and efficiency of these systems in global markets."*

**Miguel Izquierdo Blanco**  
Director Sales and Customer Relations



Measure:

- Mass throughput
- Weight per length
- Haul-off speed

Control:

- Weight per length by extruder / dosing screw
- Weight per length by haul-off unit
- Mass throughput by extruder / dosing screw
- Wall thickening function
- Coil change recognition
- Working point changes
- Guide parameter controller
- Bleeding

# THE NEXT DIMENSION OF GRAVIMETRIC DOSING



## MONO WEIGHER

**SAVEOMAT mono weighers** for granules and powder are mounted directly above the extruder inlet. A SAVEOMAT terminal controls the screw speed and/or the haul-off speed, depending on the control loop. The production process is kept on a constant level, with exact mass throughput rates, exact weight per length and a reduced consumption of raw material.

**Reduced raw material consumption!**



## MONO WEIGHER US

**SAVEOMAT US** features a gravimetric system of different sizes with funnel weighers for the non-obstructed addition of powder into the extrusion process. Raw materials including a max. weight ratio of 20 % of chalk ( $\text{CaCO}_3$ ) can be dosed by this weigher.

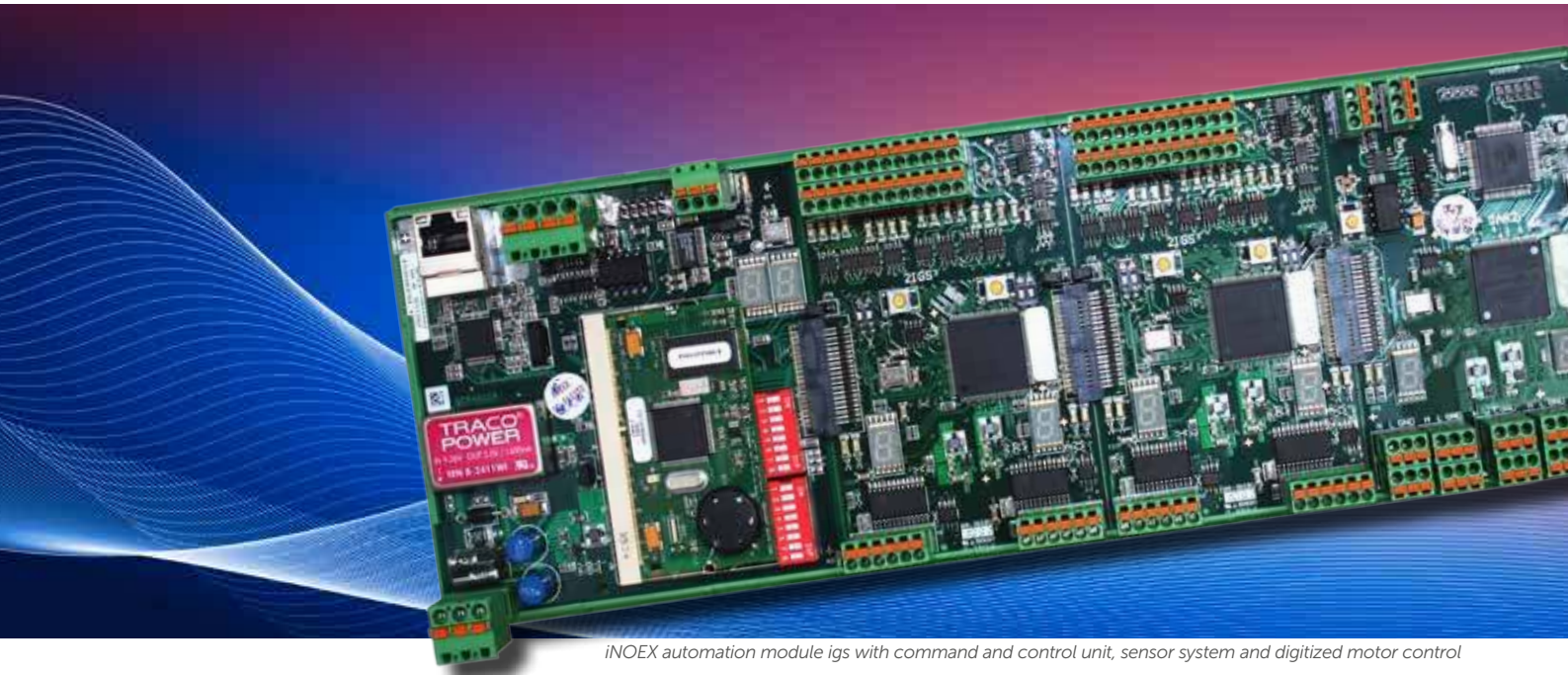
**Non-obstructed dosing of max. 20 %  $\text{CaCO}_3$ !**



## MONO WEIGHER HF

**SAVEOMAT HF** is a series of gravimetric systems with funnel weighers for the addition of hardly flowing materials. Max. weight proportion of chalk: 100 % ( $\text{CaCO}_3$ ).

**Dosing of up to 100 %  $\text{CaCO}_3$ !**



*iNOEX automation module igs with command and control unit, sensor system and digitized motor control*

## STATE-OF-THE ART MEASURING TO ACHIEVE THE HIGHEST CONTROL ACCURACY!



*SAVEOMAT switch cabinet*

### SELF-OPTIMIZATION.

The igs electronics unit developed by iNOEX is self-optimizing. The measuring electronics adapts to each material component and re-optimizes this process independently during each measuring cycle.

The latest dosing motors with large speed ranges and torques make screw changes superfluous. Sophisticated control algorithms permit the conveyance of tiny volumes of material directly on top of the extrusion line.

### CONVINCING INNOVATIONS:

- 24 bit A/D converter
- High-resolution rotational speed recording
- Easy integration by way of a VNC-Server
- Status messages for each component on a 7-segment display
- 32 bit command by micro-controller
- Software updates by Ethernet or USB
- Modular design
- Integration by Profibus DP, Profinet, Ethernet, CANopen



## SAVEOMAT: REDUCED MATERIAL USAGE!

### TECHNICAL DESIGN: FUNNEL WEIGHER.

The funnel weighers of the SAVEOMAT line are mounted directly on top of the extruder opening respectively the starved feeding screw. Depending on the control loop, recorded measuring values are used either for screw speed control or haul-off speed control. As a result, the production process is kept on a constant level, with accurate mass throughput rates or weight per length values. Plus, raw material usage is reduced to a minimum.

### USER-FRIENDLY OPERATION.

Command of the funnel weigher is either integrated into the extruder control unit or it is implemented into a SAVEOMAT operation terminal. The terminal has a touch screen.

### TECHNICAL FEATURES IN SHORT:

- Perfect funnel geometry for an excellent material flow behaviour
- Quick release of the weigher hopper
- Transparent weigher outlet for visual flow control
- Filling without dead zones
- Overload protection of the load cells
- Integrated cable routing
- Different sizes available for throughputs from 0.2 to 2,000 kg/h (0.44 to 4,400 lb/h)



*SAVEOMAT mono weigher for granules*

# RELIABLE POWDER DOSING. USE SAVEOMAT US OR SAVEOMAT HF.



## SMOOTH PROCESSING OF MAX. 20 % OF CHALK (CaCO<sub>3</sub>)

Do you process chalk? TW US has been specifically designed for the addition of chalk with a maximum weight proportion of 20 %. The SAVEOMAT US powder weigher prevents material deposits or blockages. An enlarged radial strip-off device (RAS) and a larger inlet further ensure that the dosing process is not obstructed. If the flow of material is slightly disturbed, turbine vibrators mounted on the weigher inlet and on the outlet of the storage hopper start acting. Conclusion: TW US funnel weighers not only ensure that a production process may run smoothly but also that quality standards are achieved!



## NO LIMITS TO MATERIAL MIXTURES: SAVEOMAT HF.

No restrictions in chalk ratios with this innovative high-filler system which eliminates all variations in material feeding from the start. So far, continuously operating gravimetric systems could only handle chalk proportions of up to 20 %. Moreover, a continuous material flow could not be guaranteed. Higher ratios frequently led to the building of material bridges because „powders act like they want“. SAVEOMAT HF is the answer. It features a double-screw dosing unit and two active mixing units. The vertical mixer in the conical weigher hopper prevents the formation of bridges and the double screw conveyor plus the z-shaped mixer ensure a regular material feeding. These are perfect conditions for the continuous and the regular dosing of powders or chalk. On account of strongly varying powder feed rates, the measuring and control frequency of SAVEOMAT HF weighers compared to standard weighers is substantially higher. All PVC-mixtures with a chalk proportion of up to 100 % can be accurately dosed.





## CUSTOMIZED DOSING STATIONS FOR DEMANDING TASKS!

PRECISE PRODUCTION ALONG COMPLEX RECIPES.

SAVEOMAT i-line series represents freely configurable, flexible dosing stations designed for the accurate blending and dosing of up to seven material components. Each dosing process is specifically adapted to the customer's requirements. And we have the flexibility to address special colour requirements. For powders and granules.

### DOSING STATION SAVEOMAT I-LINE.

The dosing station is positioned on top of the extruder. Up to 7 material components, i.e. 1 main component and up to 6 side components are conveyed to the infeed zone of the screw. Each component has got its own dosing unit. Based on the recorded measuring data, the command unit activates the control loops with all corresponding parameters. As a result, the production process is kept constant which includes mass throughput rates. Plus, raw material consumption is kept to a minimum.



SAVEOMAT i-line

# SAVEOMAT i-line AS INDIVIDUAL AS YOUR APPLICATIONS.



*Dynamic mixer with double screw dosing unit*

## INCREASED FLEXIBILITY AND EFFICIENCY.

Due to the enormous variety of materials, it becomes increasingly difficult for the raw material industry to maintain a profitable production while having to respond to the wide range of their customer's needs. At the same time order quantities become smaller. Besides, producers face the problem of having to comply with their customer's wishes to supply new and frequently changing products within very short delays. Material recipes required to this end can be ordered readily mixed or as single components which are then composed to recipes. Ready compounds may not be profitable due to minimum quantity surcharges. Additionally, short-term changes in the composition may be possible only to a limited extent.

Material processing directly on top of the extruder offers a higher flexibility. However, there remains the necessity to adhere strictly to the recipe. This means that all components need to be added in their exact set quantities. For powder and chalk dosing such as e.g. in PVC foam pipe extrusion, this is a particularly complex process. For this purpose iNOEX has developed the SAVEOMAT HF differential dosing system for the gravimetric dosing of any kind of chalk, coated or uncoated.



# MULTI-COMPONENT DOSING OF PEROXIDE OR SILANE!



*Silane injection*

## EFFICIENT MEASUREMENT, CONVEYANCE AND BLENDING.

Particularly in the PEX-a and PEX-b pipe and cable extrusion, product quality strongly depends on the accurate and controlled dosing of all components. SAVEOMAT IGS MD6 is designed for the perfect dosing of all solid and liquid components.



*Capillary tube for peroxide injection*

## COMBINED STATIC AND DYNAMIC BLENDING.

SAVEOMAT IGS MD6 features both static and dynamic blending techniques. The static blender merges all solid components and spreads the main component to prepare for all side components to flow in. In the second blending stage, a dynamic blender ensures that the material mix is entirely homogeneous. Directly on top of the extruder, either peroxide is added by a capillary tube or silane is injected through an injection nozzle attached inside the dynamic blender. Like this, peroxide or silane are evenly sprayed on the flowing granules.

## SAFETY TECHNOLOGY:

- Overflow container for leakage. In case a tube is defective, the leaking liquid is directly led into the collecting tank
- Sensor in the collecting tank releases an alarm
- Sensor for leakage control in explosion-proof design
- Measurement and monitoring of the protective gas
- Side components can be completely switched off by a butterfly valve
- Leakage control from the feeding room to the dosing station





## INNOVATIVE VALVE TECHNOLOGY FOR A PERFECTLY DISTRIBUTED VACUUM!

### SMOOTH CONVEYANCE OF RAW MATERIALS.

The smooth conveyance of raw materials is a key element for an efficient production process. A potential for value creation lies hidden here. SAVEOMAT SATELLITE suction conveyance by iNO-EX addresses both aspects: a profit from a higher cost-efficiency because conveying processes are optimized and at the same time a reduction in energy- and maintenance costs.

### ECONOMIC CONFIGURATION BASED ON CENTRAL VACUUM GENERATION.

The proven de-centralized suction valve technology permits to change air cross-sections by way of which the conveying speed can be adapted to individual parameters such as the conveyance route, the conveyed volume and the conveyed material. This way an individual vacuum can be generated for each material separator.

### CONCLUSION.

SAVEOMAT SATELLITE is able to generate a vacuum for complete extrusion lines or even complete production halls via single vacuum generators or several vacuum generators switched in parallel. Depending on the mass throughputs, the number of lines and the different raw materials, specific system types are on offer to create an economical solution.



*SAVEOMAT i-line with  
SATELLITE*

# VISUALIZATION CONCEPT.



The cross-platform concept headed for the future permits the visualization as a Website by way of an easy integration through a browser. This way the iNOEX user interface can be visualized on all systems, which are Internet enabled. The multi-touch surface permits an intuitive operation by gesture command (zoom, swipe).

Operation is carried out through installed Widgets, which can be freely configured by the user, independent of their size or information, they can be added or removed as required. This allows the user to have permanent access to the most important applications (favorites).

## FAST CUSTOMER SUPPORT WITH TEAMVIEWER.

- Worldwide support via remote control
- Easy configuration, no VPN gateways
- In accordance with the highest safety standards



# YOUR PROFITS.

Your profit is measurable. SAVEOMAT systems allow enormous material and cost savings. Payback periods of sometimes only a few months lead to a fast amortization of a SAVEOMAT system.



## SAVEOMAT MONO WEIGHER

Output	Production time	Savings	Material costs	Savings p.a.
1000 kg/h	16 hrs/day x 350 days/year	3 %	1.30 €/kg	218,400 €



## SAVEOMAT i-line (3 COMPONENTS)

Output	Production time	Savings	Material costs	Savings p.a.
800 kg/h	16 hrs/day x 350 days/year	3 %	1.30 €/kg	174,720 €
250 kg/h	16 hrs/day x 350 days/year	3 %	1.30 €/kg	54,600 €
50 kg/h	16 hrs/day x 350 days/year	3 %	3.00 €/kg	25,200 €
				<b>254,520 €</b>



## SAVEOMAT MD

Output	Production time	Savings	Material costs	Savings p.a.
250 kg/h	16 hrs/day x 350 days/year	3 %	1.40 €/kg	58,800 €
12.5 kg/h	16 hrs/day x 350 days/year	3 %	6.20 €/kg	13,020 €
5 kg/h	16 hrs/day x 350 days/year	3 %	24.00 €/kg	20,160 €
				<b>91,980 €</b>



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