



Gravimetrics Overview

Your partner for blending, dosing, batch and continuous weighing technology



GRAVIMETRICS

GAIN IN WEIGHT BATCH BLENDING

OPTIMIX Range

The benchmark in batch gravimetric blending



OptiMix Batch Blender range can accommodate **up to 12 components** while providing throughput rates from 10kg/hr (22lb/hr) - 3000kg/hr (6,614lb/hr). OptiMix utilizes TSM slide valve design and **patented reverse-flight auger mixing technology**. This combination provides superior accuracies, blend ratios and mixing homogeneity that is not achievable by competitive systems. All components are blended by weight, based on the preset blend ratios entered on the touch screen. Each component is metered separately into a single weigh hopper, which measures and controls their dosing percentage.

Benefits

- Faster Product Changes
- Patented Continuous Homogeneous Mixing
- Increased Re grind Usage
- Improved End Product Consistency
- High Accuracy Dispensing

OPTIBATCH Range

Accurate throughput measurement and totalization



The OptiBatch Totalizer provides a batch based throughput measurement / Totalization of material consumed.

OptiBatch range can accommodate up to 12 components while providing throughput rates from 10kg/hr (22lb/hr) - 10,000kg/hr (22,046 lb/hr).

Designed for single or multi-component dosing, it dispenses each ingredient by weight into a central hopper, records the total, and provides real-time material usage data. Ideal for both online and offline applications, or as an auxiliary system. OptiBatch ensures accuracy, accountability and traceability of material consumption.

Features

- Supports **single or multi-component dosing**
- Real-time **totalization and consumption reporting**
- Slide-valve metering gate for precise feeding
- Quick-change weigh hopper for simplified cleaning
- Compact design — ideal for auxiliary or low-volume lines
- Remote touchscreen control up to 100 m from the unit

OPTIFLAKE Range

Gravimetric blending of flake and regrind for every throughput



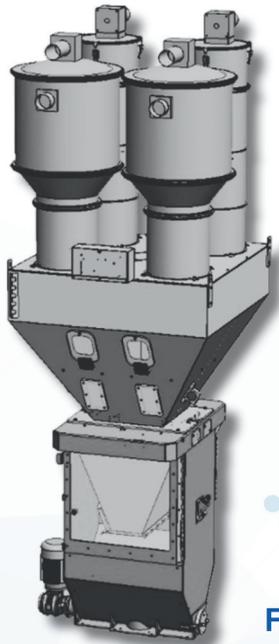
FB-S

The OptiFlake range is purpose-designed to handle the challenges of regrind and flake materials which vary widely in shape and bulk density.

Whether you're running a small recycling line or a high-volume extrusion plant, OptiFlake ensures uniform mixing of virgin, recycled and additive streams. Using TSM's patented slide-gate technology and reverse flight auger, it delivers the same accuracy and homogeneity as pellet blending, helping processors achieve circular economy goals without compromising quality.

OPTIFLAKE : FB-S, FB-M, FB-L

- Patented reverse flight auger technology
- Larger slide valve openings
- Larger blender discharge openings
- Reinforced auger bearings
- High capacity weigh hopper for low bulk density materials
- Ultrasonic non contact switching sensor (optional)
- Enhanced material flow assist solutions
- Throughput range: 50–2500 kg/hr (110-5510 lb/hr)
- Handles up to 8 components
- For online and offline prefeeding applications



FB-L

GRAVIMETRICS

LOSS IN WEIGHT BATCH BLENDING

OPTIBLEND Range



TSM's OptiBlend range of Continuous blending solutions offer total reliability, precision and process control options ensuring material homogeneity and guaranteeing consistent product quality.

It provides continuous gravimetric throughput control from 2 to 7 materials with throughputs from 30 kg/hr (66 lb/hr) to 2000 kg/hr (4410 lb/hr)

The OptiBlend controls the blend percentages and can also maintain the extruder throughput at a desired level, i.e. kg/hr or lb/hr control. Haul off speed measurement can be added to ensure that the weight per length is controlled to the desired specification (yield control).

- Patented load cell mounting technology
- Individual load cell per material
- Continuous loss in weight control
- Easy material change over and clean down
- Easy access auger feeder
- Modular expandable configuration

OPTIYIELD Range



TSM's OptiYield range of Loss-in-Weight systems offer precise measurement, total reliability and **advanced automatic extruder yield control options** to ensure consistent end product quality with optimized material usage.

It provides continuous gravimetric throughput control for a single material with throughputs from 10 kg/hr (22 lb/hr) to 5000 kg/hr (11,023 lb/hr)

Simultaneous haul off speed control can be added to ensure that the Weight per Length is controlled to the desired specification (yield control). This ensures that the end product is produced at the desired set point thickness or unit weight without operator intervention. This mode can be extended to weight per area control through entry or automatic measurement of material width.

OPTIX Range

Gravimetric Batch Blender with Loss-in-Weight Control Combined



OptiX range of blenders are specifically designed for Extrusion applications.

OptiX blenders utilize TSM's gain in weight batch based dosing, patented reverse-flight auger mixing technology in combination with continuous Loss-in-Weight measurement.

It provides continuous gravimetric throughput control from 2 to 8 materials with throughputs from 10 kg/hr (22 lb/hr) to 1000 kg/hr (2204 lb/hr)

These units deliver high accuracy batch dosing, with automatic extrusion control using Loss-in-Weight technology. This results in exceptional, ultra fast throughput measurement and control of the extrusion process.

- Fast, High Accuracy, Automatic Extruder Yield Control
- Fast Product Changes
- Patented Continuous Homogeneous Mixing
- Improved End Product Consistency
- High Accuracy Dispensing up to 0.01% of batch

OPTIFEED Range



OptiFeed's unique design, employing unique dosing cylinder combined and stepper motor, ensures that additives are metered evenly and extremely accurately. The dosing cylinder eliminates any pulsation during metering into the main plastic stream, thus offering maximum control of the process and the end product.

- Prevents additives becoming lodged between mechanical parts, i.e. less downtime and efficient use of expensive additives.
- Actively prevents pulsating, i.e. guarantees consistent output.
- Reduces additive usage due to its superior metering characteristics - direct cost reduction.
- Dosing rate ranges from 70 kg/hr (154 lb/hr) to 180 kg/hr (397 lb/hr). Higher torque motors available for metering large quantities of material.



OPTIONS

TSM provides an extensive range of options that are designed to ensure full compatibility with the onsite requirements which can vary from site to site. The range of options are designed to adapt TSM products to customer's individual process and plant situation.

Name	Description	Features	Benefits
High Accuracy Option	Additional option to achieve extremely low setpoint targets with repeatable accuracy.	<ul style="list-style-type: none"> Air pressure stabilization on units Material Flow restrictors High Accuracy dosing software 	<ul style="list-style-type: none"> High Accuracy dosing Material savings Consistent Quality Extremely low dosing setpoints achievable
Auto Clean	Allows virtually instant automatic order changes and remote cleaning of elevated OptiMix blenders using a simple touch screen.	<ul style="list-style-type: none"> Vacuum receiver filter clean Automatic Hopper Clean Automatic Easy-Drain Dosing & Mixing Chamber Cleaning Automatic Material Bypass 	<ul style="list-style-type: none"> Fast product changes Reduced downtime Reduced waste No contamination
Blender Necks	All TSM units can be fitted with additional necks below the blender, just above the extruder to provide maximum adaptability to customer process	<ul style="list-style-type: none"> Auto/manual Shutoff valve Material drain Chute Auto material bypass valve Built-in material level sensor Sight glass for system inspection 	<ul style="list-style-type: none"> Fast product changes No extruder stop for order changes Easy material cleanout Offline Blending Applications
Powder Dosing	TSM powder dosing unit mounts directly onto the side of the blender. Integrated Control allows operator to easily adjust the percentage of powder needed by the recipe	<ul style="list-style-type: none"> High Torque AC motor Std. 4 litre powder hopper Dosing range between 0.1% up to 10% (Dependent on throughput required) Built in powder agitator 	<ul style="list-style-type: none"> High Accuracy dosing Consistent mixing Simple integrated control No over dosing Easy material change
Micradose Side Feeders	TSM's Micradose Side feeders provide accurate and repeatable blend control for low percentage additives on any TSM Gravimetric batch Blending system. They can easily be retro-fitted to your existing TSM equipment.	<ul style="list-style-type: none"> Patented TSM design Robust construction Several viewing windows Retrofittable 	<ul style="list-style-type: none"> High Accuracy Dosing High reliability Integrated Control No Over Dosing
High Temperature Kits	An upgrade on the standard system components to deal with dried materials that are required to be blended at a high temperature	<ul style="list-style-type: none"> High Temp Access Hatches High Temp Loadcells High Temp Bearings 	<ul style="list-style-type: none"> Enable processing of engineered polymers Enable pre heating / drying of materials in advance of the dosing and blending process
Material Flow Solutions	These are a selection of options designed to aid the dosing and blending of difficult materials	<ul style="list-style-type: none"> Material flow assist vibration units Material flow assist agitation units Material flow assist aeration units 	<ul style="list-style-type: none"> Enable effective processing of difficult flowing materials Enable effective processing of lower cost materials
High Throughput Flake Blending	An option design to enable the processing of low bulk density flake materials	<ul style="list-style-type: none"> Enlarged slide valves Increased blender discharge opening Material flow assist vibration units 	<ul style="list-style-type: none"> Enable processing of 100% flake material Reduce production costs Enable the processing of low bulk density materials
Floor Standing Blending Kit	Optional blender kit that enables each blender to be used on a floor stand	<ul style="list-style-type: none"> Floor stand Material flow control valve Offline blending software option 	<ul style="list-style-type: none"> Enables blending to take place beside machine Reduced operator interaction Easier clean down of machine for order changes

NEXUS

Next Generation Controller

Nexus is TSM's next generation blender controller, designed as a seamless upgrade for previous generations of controller and a future-ready platform for connected manufacturing. It combines higher throughput, improved reliability, and cloud-enabled support to deliver maximum uptime and lifecycle value.

- New ARM-based processor with increased memory
- New OS stack: improved diagnostics and reliability
- Faster ML extrusion control algorithm
- Improved blender throughput, up to 200% improvement
- OTA software/config updates & restores (support-focused)
- Backward compatible footprint & connections
- Digital links & addressing (software-controlled)
- Improved output reliability



Customer Value	
Higher Throughput	Optimized control algorithms double throughput on OptiX systems.
Smarter Support	Remote diagnostics, cloud alarms, and OTA updates reduce downtime.
Operator Guidance	Connected alarm help, integrated manuals, and simplified UI.
Upgrade Friendly	Backward compatible with previous generations of controller.
Future Proof Platform	Ready for connected services and lifecycle contracts.

Upgrade & Retrofit Path

- Upgrade Kit: Nexus controller + optional HMI panel
- Replacement Path: Backward compatible upgrade for controller
- Future-Ready: Designed for Insight service integration & cloud-enabled contracts

EXTRUSION CONTROL

TSM's extrusion control software is designed to ensure that productivity improvement and scrap reduction is achieved consistently during the production process. This is achieved by making high-speed adjustments to changes in extruder and/or take off speeds. The system also enables manufacturers to save costs by achieving tighter control tolerances over material consumption.

TSM Automatic Extruder Yield Control

Maximizing Savings By Reducing Setpoints To A Minimum!

We continuously monitor material throughput (kg/hr), (lb/hr) and optimize yield (weight per length control) on extrusion lines.

The TSM system monitors the line speed and extruder output, it then automatically controls the extruder screw speed to maintain precise and consistent end product output.

This technology reduces off spec waste while operating at optimum yields. The system also provides roll, order and shift summaries by component, allowing precise calculation of material costs and net profit margin analysis per order.



Material Down-Gauging

Extruder throughputs naturally vary while processing due to multiple variables, TSM detects when the product weight per length (yield) or throughput varies from the target setpoint and automatically adjusts the extruder screw speed to bring the throughput back on target.

This automatic control system allows the process to be set and run at the minimum lower tolerance values for the end product.

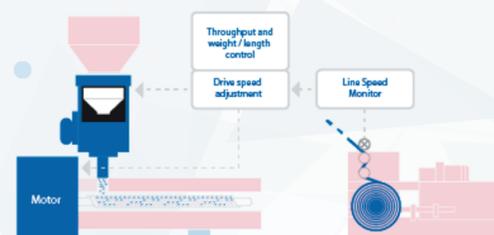
This will result in real savings in; production costs for producers who sell end product by length.



DOWN-GAUGING CAN YIELD AN EXTRA 2% OR 3% ON THE ROLL

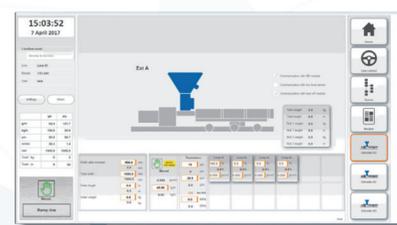
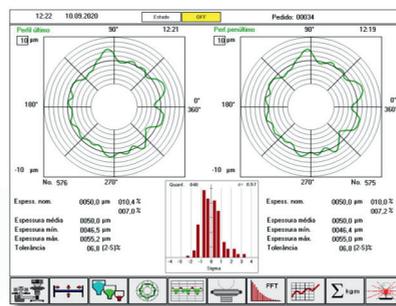
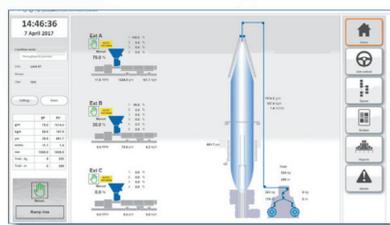
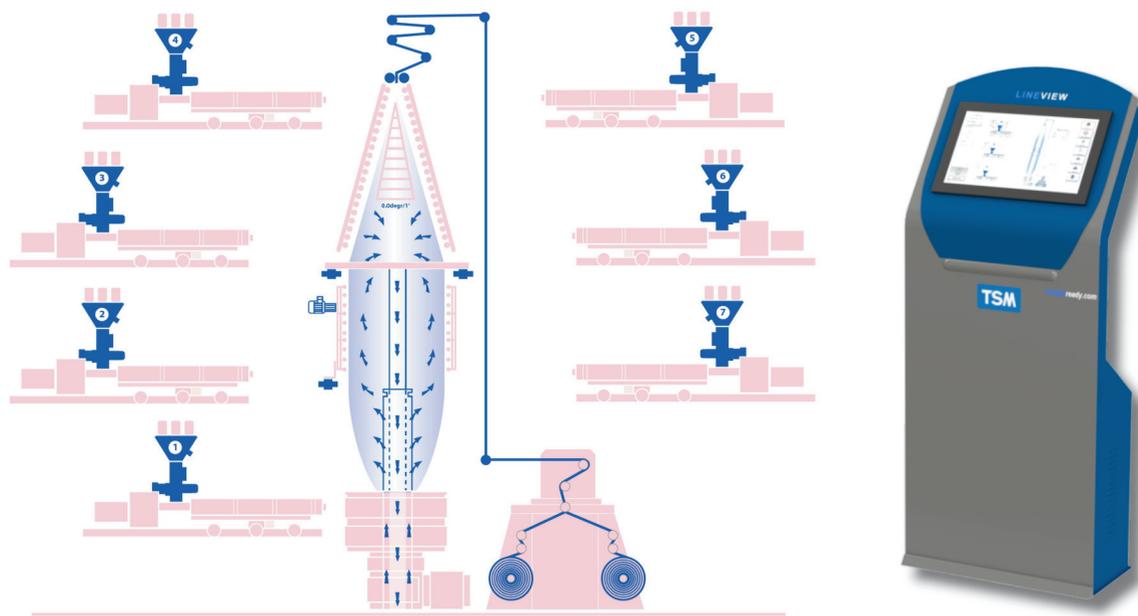
Benefits

- Improved End Product Consistency
- Reduced Off Spec End Product (Scrap)
- Increased Saleable End Product (Yield)
- Improved Process Stability
- Reduced Material Cost



CENTRALIZED LINE MANAGEMENT

The Central Line Management operator interface allows simple and user friendly monitoring of the extrusion process from a single location. The advanced flexible design permits the operator to quickly visualize the system parameters and adjust essential production settings with ease. Furthermore the compact control cabinet utilizes an Industrial PC with a 'Pinch Zoom' feature. Critically, viewing of historical production data is at the touch of a button.

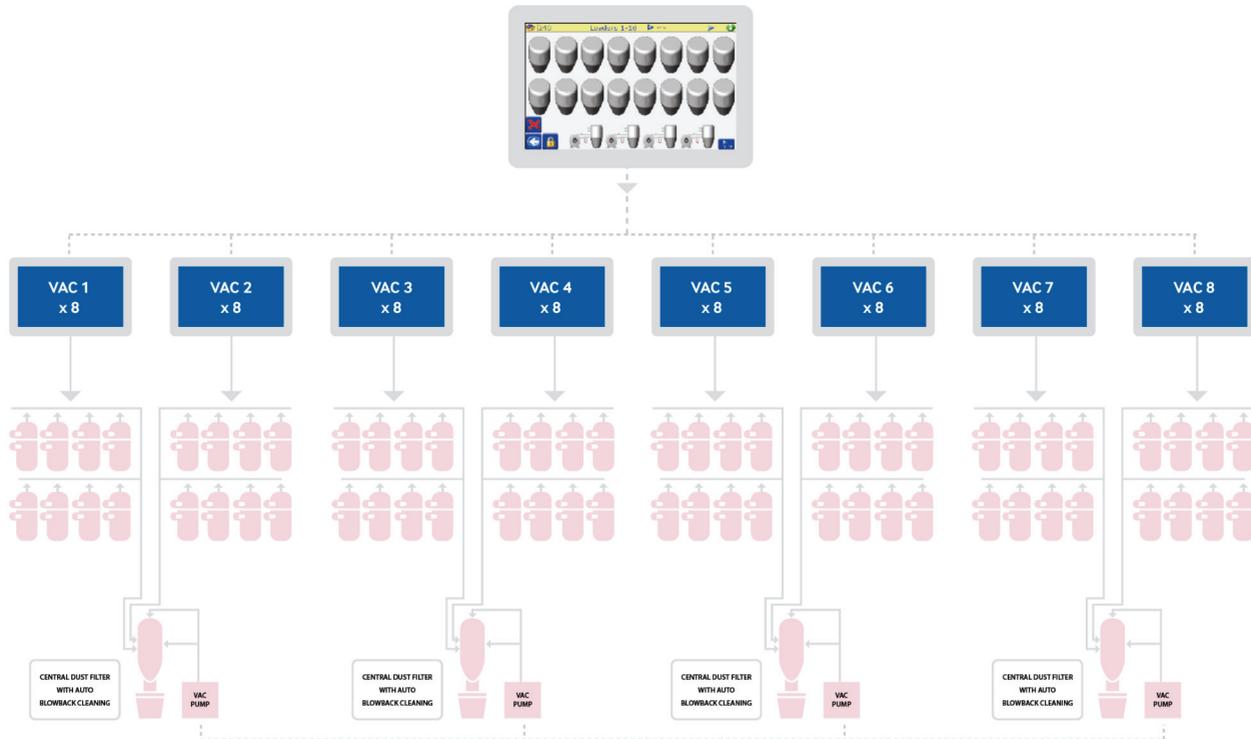


- Central overview of the co-extrusion processes
- Design to monitor up to 12 layers
- Monitor blender data and extruder data on individual extruders of the multilayer process simultaneously.
- Manage resin-blend percentages & extruder throughputs Simultaneously
- Individually or simultaneous ramp all layers
- Download & retrieve individual layer & blender information
- Incident log, material & alarm reports
- Time of alarm activation & reset is recorded, displayed and logged

- Linear & polar charts with parameters for gauge profile measurement & control
- Remote modem assistance for diagnostic of the entire system through a network connection
- Monitor the process in real time
- Trending and profile statistical analysis
- Process parameter storage databases so as to create, modify or store recipes for on-the-fly download.
- Availability of Job orders containing useful data for identifying and tracking each order
- Recording of raw material quantity used in the process.

CENTRAL VACUUM CONVEYING

Smart HMI, multi-protocol connectivity and modular expansion via VAC-8 receiver modules



Central Vacuum Loading System

The central control panel communicates to TSM VAC8 remote I/O modules that supervise up to eight vacuum receivers each and all associated pumps and controls. Additional VAC8 modules can be connected simply allowing multiples of 8 receivers to be connected to the system.



SYSTEM CAPABILITIES	MIN	MAX
Pump(s)	1	4
Vacuum Breaker Valve(s)	1	4
Central Dust Filter(s)	1	4
Vacuum Receivers	1	64
Vacuum Receivers Per Pump	1	64
VAC8s per System	1	8



Solutions Through Partnership

TSM is a global leader in blending and control systems for the plastics industry, with over 45 years of innovation, patented technologies, and proven performance.

With more than 30,000 installations across 75 countries, our solutions deliver reliability, precision, and efficiency 24/7, backed by local service and spare parts support.

We offer throughput capacities up to 3,000 kg/hr (6,600 lbs/hr) and blending of up to 12 components, ensuring maximum flexibility to meet the industry's most demanding requirements.

Operating from Ireland, USA, Taiwan, and China, and supported by a strong sales partner network, TSM provides world-class expertise wherever it's needed. Our latest technology introduces IIoT-enabled intelligence, turning process data into valuable business insights on materials, energy, downtime, and OEE.

With this capability and our commitment to turnkey system solutions, TSM continues to help processors worldwide optimize performance and transform operations.



- *Regional Offices in Ireland, USA, Taiwan and China*
- *Global TSM Sales Network & Partners*



Solutions Through Partnership

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