TSM

MATERIAL MANAGEMENT
Blending | Control | Analytics

## Complete Turnkey Solutions

**There are many challenges facing Plastic producers including energy, material costs, waste & scrap reduction, higher productivity, consistent quality and inventory management.**

**TSM is working with its customers to address these challenges and can offer a complete solution to plastic producers utilizing our full range of products and over 40 years of expertise.**

**Of primary importance to producers is the quality and uniformity of the final product. TSM's overall solution; from silos through to the process, providing producers with a single source for all material handling and axillary equipment requirements.**

- **Silos**
- **Railcar Unloading Systems**
- **Surge Bins**
- **Gaylord Tilters**
- **Box Dumpers**
- **Vacuum Receivers**
- **Material Handling Systems**
- **Gravimetric Blending**
- **Extrusion Control**
- **Central Line Control System**
- **Automatic Air Ring**
- **Automatic Thickness (gauge) Control**
- **Bubble Sizing Cages**
- **Internal Bubble Cooling (IBC)**
- **Frost line Control**
- **Dryers**

**www.tsm-controls.com**

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World Class Automation & Blending
Solutions for the Plastics Industry

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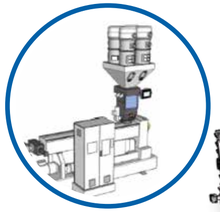
## 1 Gravimetric Blending



OPTI-X range of Extrusion Control blenders provide superior accuracies, blend ratios and mixing homogeneity. OPTI-X blenders utilize TSM's patented technologies in slide valve design and reverse flight auger mixing with continuous Loss-in-Weight measurement, result in ultra fast throughput measurement and control of the extrusion process. OPTI-X range can accommodate throughputs up to 3000kg/hr (6600lbs/hr).

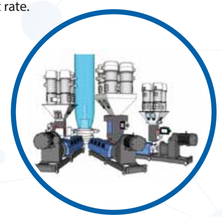
- Fast, accurate control response
- High accuracy dispensing to 0.01% of batch
- Fast throughput measurement
- Instantaneous response to process disturbances
- Superior weighing and patented mixing
- Throughput and weight/length extrusion control options
- Material usage / Inventory statistics
- Control accuracy up to +/- 0.5% of target setpoint

## 2 Vacuum Receivers

- 0.2 to 6 cuft capacities
- Stainless steel contact surfaces
- Dedicated and common material line
- High heat optional
- Modular construction for maximum flexibility

## 3 Extrusion Control

TSM has continually invested in best in class extrusion control technologies, which allow's TSM to bring to market the fastest and most accurate control technologies available on the market. Incorporated as standard in the OPTI-X extrusion control blender, producers can choose from: Throughput Control – varying the extruder speed to control output rate. Weight per Length Control – maintains product yield by adjusting the Extruder or Extruder and/or Haul-off speeds simultaneously.



- Improved quality
- Fast start up
- Reduce material usage
- Less waste
- Simple intuitive operator interface
- Comprehensive reporting
- Compensates for bulk density variations
- Tighter tolerances achievable

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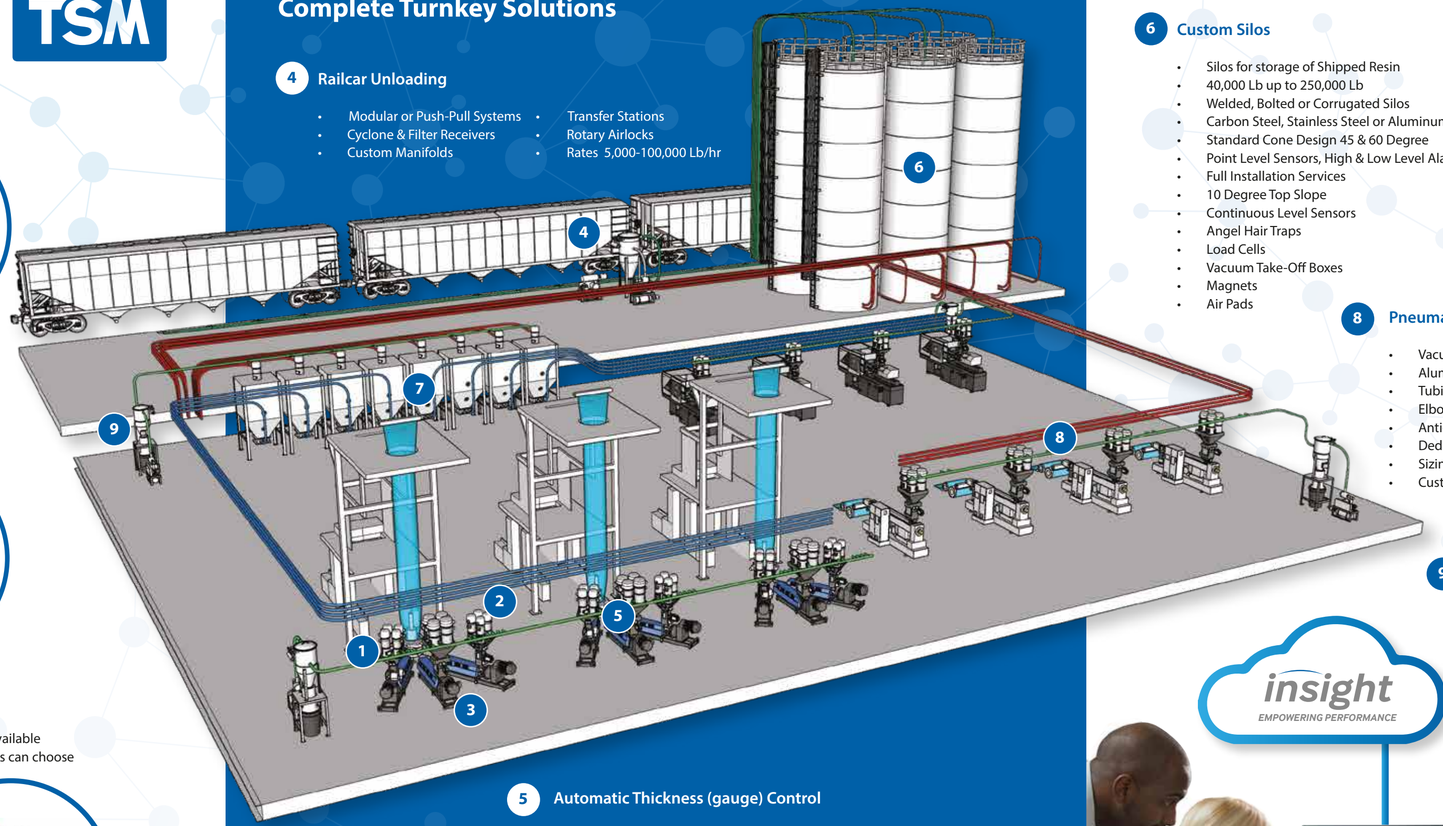
## 4 Railcar Unloading

- Modular or Push-Pull Systems
- Cyclone & Filter Receivers
- Custom Manifolds
- Transfer Stations
- Rotary Airlocks
- Rates 5,000-100,000 Lb/hr




## 5 Automatic Thickness (gauge) Control

The Automatic Gauge Control System, VARIOcool, alters the volume of cooling air to provide a uniform thickness around the bubble. TSM-Kdesign VarioCool ensures uniformity in machine and cross directions of blown film. The profile is measured using either a contact or non-contact thickness measurement sensor. Capacitive or Radioactive thickness sensors are available. The system maps the bubble to specific control zones on the air ring. Any deviation in film thickness is corrected by automatic adjustment of these control zones.

- Increased output (25-60%)
- Fast return on investment (ROI)
- Remote diagnostics
- Uniform cross direction thickness profile
- Contact and non-contact profile measurement systems

## 6 Custom Silos

- Silos for storage of Shipped Resin
- 40,000 Lb up to 250,000 Lb
- Welded, Bolted or Corrugated Silos
- Carbon Steel, Stainless Steel or Aluminum
- Standard Cone Design 45 & 60 Degree
- Point Level Sensors, High & Low Level Alarms
- Full Installation Services
- 10 Degree Top Slope
- Continuous Level Sensors
- Angel Hair Traps
- Load Cells
- Vacuum Take-Off Boxes
- Magnets
- Air Pads

## 7 Surge Bins

- Custom capacities
- Aluminum, Stainless Steel & Carbon Steel
- Standard Cone Design 45 & 60 Degree
- Point Level Sensors, High & Low Level Alarms
- Angel Hair Traps
- Vacuum Take-Off Boxes
- Magnets
- Air Pads

## 8 Pneumatic Conveying

- Vacuum & Material Lines
- Aluminum, Stainless Steel & Carbon Steel
- Tubing 1" to 14" OD
- Elbows, Laterals, Wyes, Couplers, etc.
- Anti-Static Flexible Hose 1" to 10" ID
- Dedicated and Common Material Lines
- Sizing & Installation
- Custom Manifolds

## 9 Positive Displacement Pump Packages

- Vacuum & pressure pumps available
- 3 - 60 HP TEFC MOTORS
- 500 - 50,000 Lb/hr capacities
- Positive displacement lobe blower
- Inlet safety filter standard
- Exhaust filter and silencer standard
- Liquid filled vacuum gauge standard
- Optional sound enclosures
- Central dust collection
- Pump, filter & material lines sized for application

insight
EMPOWERING PERFORMANCE

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