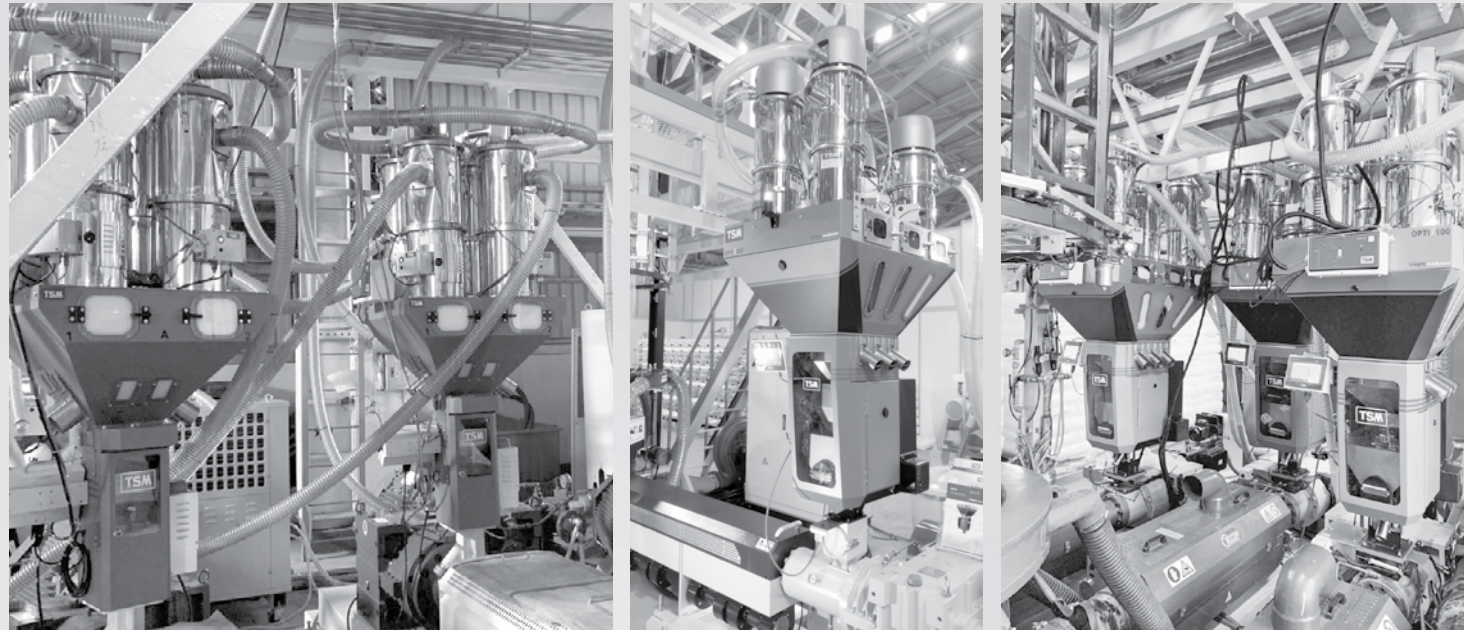


Available Models for Extrusion Control

The following models of Gravimetric Dosing and weighing systems are available from TSM to work in conjunction with your Mono or Co-Extrusion line.

Single Component Continuous Loss in Weight	Multi-Component Batch Blenders	Multi-Component LIW Blenders	Multi-Component Continuous Loss in Weight
SLIW-100 (100 kg/hr)	Optimix-150 (150 kg/hr)	OptiEx-150 (150 kg/hr)	LIW-100 (100 kg/hr)
SLIW-200 (200 kg/hr)	Optimix-350 (350 kg/hr)	OptiEx-350 (350 kg/hr)	LIW-200 (200 kg/hr)
SLIW-400 (400 kg/hr)	Optimix-650 (650 kg/hr)	OptiEx-650 (650 kg/hr)	LIW-400 (400 kg/hr)
SLIW-800 (800 kg/hr)	Optimix-1000 (1000 kg/hr)	OptiEx-1000 (1000 kg/hr)	LIW-800 (800 kg/hr)
SLIW-1200 (1200 kg/hr)	Optimix-1500 (1500 kg/hr)	OptiEx-1500 (1500 kg/hr)	LIW-1200 (1200 kg/hr)



Benefit from over 35 years of TSM experience and make money with extrusion control



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Gravimetric Blending & Control



Extrusion Control & Supervisory Systems

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TSM Extrusion Control

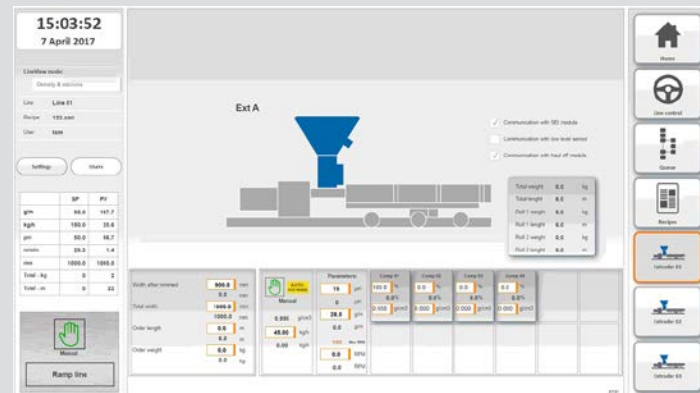
MAXIMIZING SAVINGS BY REDUCING SETPOINTS TO A MINIMUM !

TSM Gravimetric Blenders continuously monitor material throughput (kg/hr) and will optimize yield (weight per length control) on extrusion lines. As part of a job recipe entry, the extrusion / haul-off control setpoints are entered via the remote operator panel. The TSM system monitors the line speed and extruder output to guarantee precise on-specification and consistent output quality, therefore reducing waste considerably 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.



Features

- Mounted directly on extruder throat
- Tighter tolerances allowing down-gauging
- Higher yields of 2 - 3% from your production line
- Run at minimum thickness & improve consistency
- Suitable for Batch or Continuous Gravimetric Systems
- Adaptive control software allowing changes in screw or line speed
- TSM algorithms provide auto compensation for material density variations



TSM Blender on an Extrusion Line

TSM Control Options

- Kg/hr Control
- Weight per Length Control (g/m)
- Weight per unit Area Control (g/m²)
- Average Thickness Control (Micron)

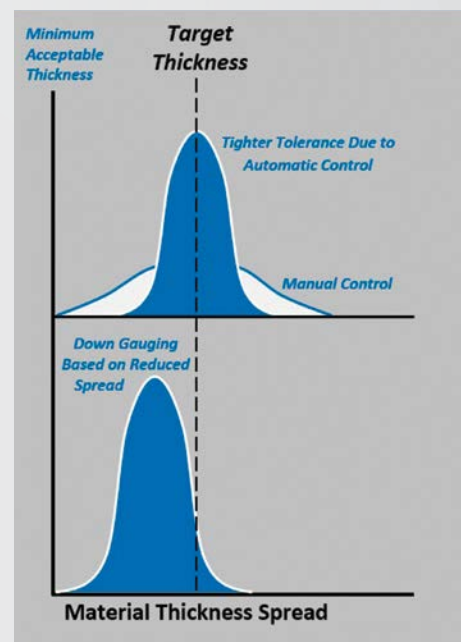
Material Down-Gauging

Normally extruder throughput is reduced gradually due to blocking at the screen filter. TSM blenders detect 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.

Furthermore the system allows the process to run at the lower tolerance values for the product while all the time monitoring the output and individual material dosing consistencies. This will result in real savings in your production costs

So, if you are selling by length, this will result in more length produced for the same initial costs. If selling by weight your customers can benefit by increased length being offered free of charge giving you a significant competitive advantage.

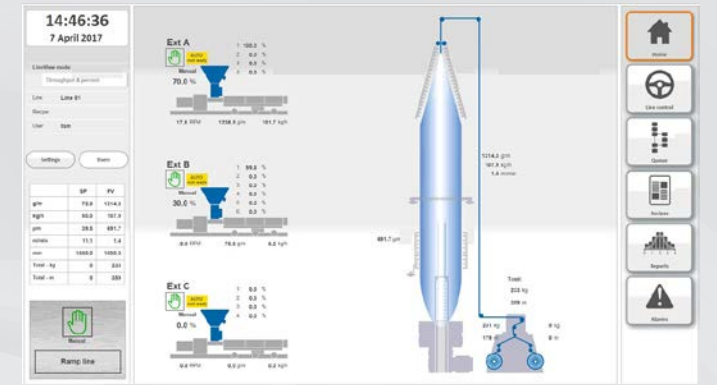
DOWN-GAUGING CAN YIELD AN EXTRA 2% OR 3% ON THE ROLL



TSM Layer Ratio Control

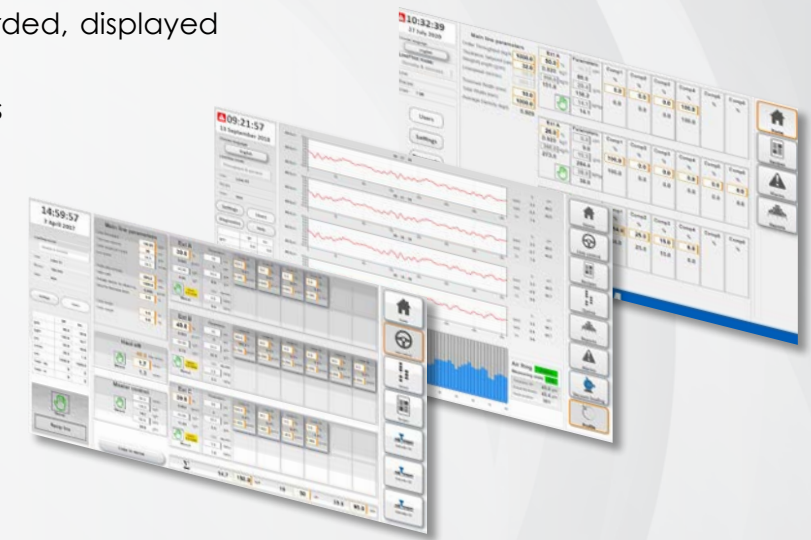
EFFICIENCY USING THE TSM CO-EXTRUSION SUPERVISORY SYSTEM

The CP 9000 provides layer ratio control and a central overview of the co-extrusion processes for up to 12 layers. It also can monitor blender data and extruder data on individual extruders of the multilayer process simultaneously.

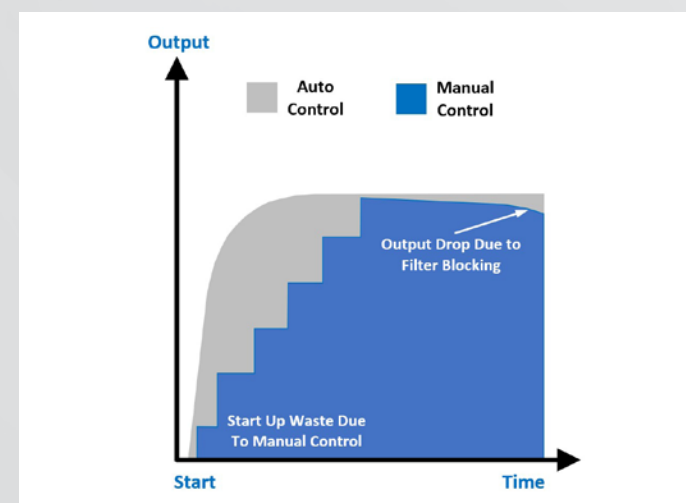


Features

- Simple touch screen interface uses intuitive graphical illustrations
- Easy to set Layer Ratio percentages
- Manage resin-blend percentages, layer ratios, & extruder throughputs
- Simultaneously or individually ramp all layers via central panel
- Download & retrieve individual layer & blender information
- Comprehensive reporting facilities allow tracking of roll, order, shift & material usage
- Time of alarm activation & reset is recorded, displayed and logged
- Incident log, material & alarm reports available for download
- Control architecture allows additional controllers to run independently
- Remote diagnostics of the entire system through an Ethernet connection
- Analysis of blending equipment connected to the CP 9000
- Remote software upgrades



Automatic Start-Up & Consistent Throughput



Using control co-ordination directly from the TSM gravimetric blender, with the CP-9000 the line ramp-up can be initiated by simply pressing the 'Increase' button on the central operator panel. This facilitates a continuous smooth ramp up of all extruders on the line, eliminating stage ramping normally associated with manual line start-ups. This combination of co-ordinated ramp-up and tighter specification control on all extruders ensures optimum product quality while maximizing savings by reducing set-points to a minimum!