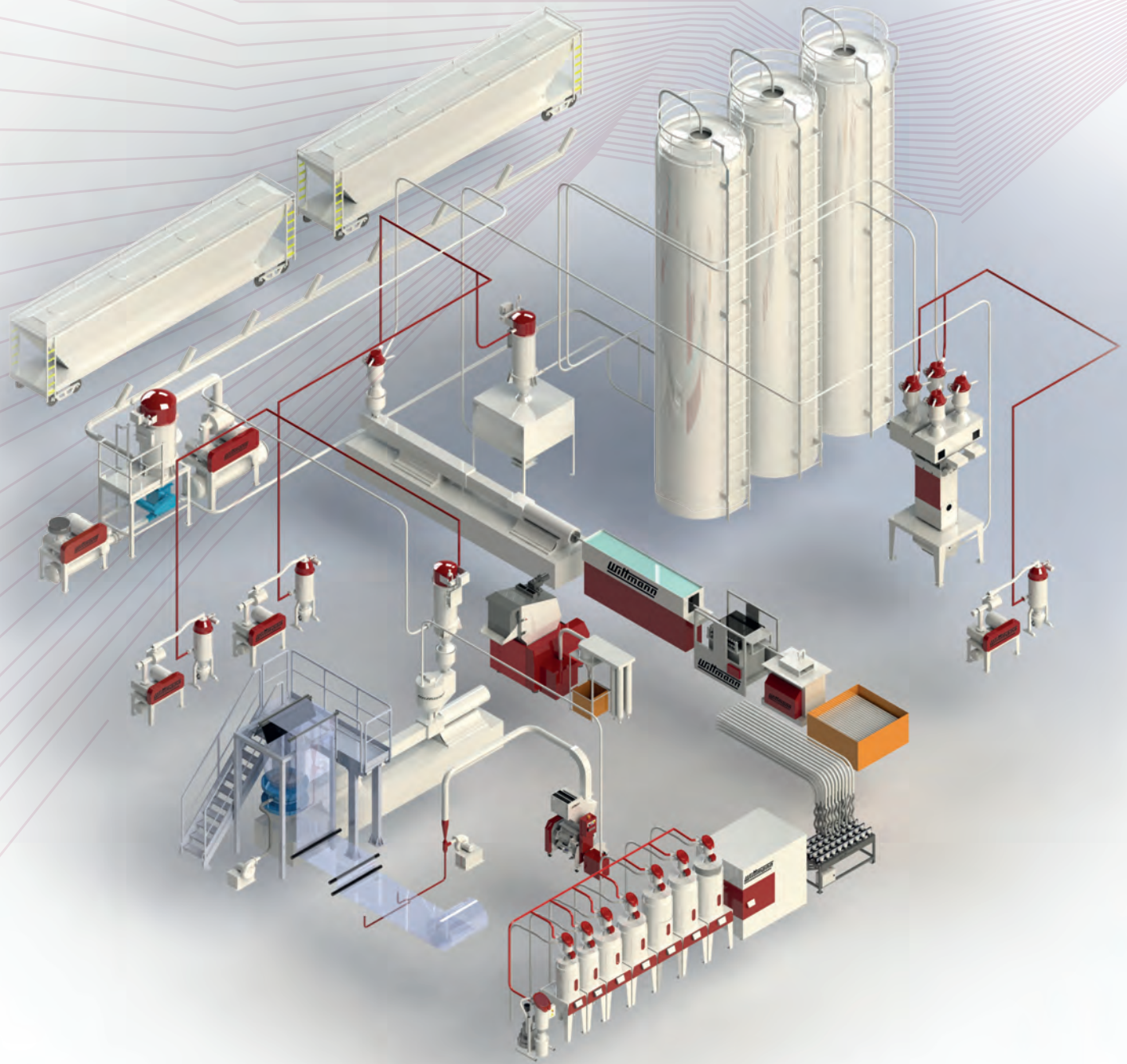


**Wittmann**

**Battenfeld**



*Turn-Key Plant Wide Systems for Extrusion*

world of innovation

**Wittmann**  
EXTRUSION 

## M7.3 IPC Network Control System



M7.3 IPC 15" XGA Touchscreen

- **Conveying and Drying System Control**  
Capable of controlling up to 320 devices and 8 vacuum systems, with 8 spares.
- **Ultimate Flexibility with Easy to Program Configurations**  
This puts the user in control of system additions and changes, or Wittmann service can assist you, it's your choice.
- **Easy to Use 15" Touchscreen and Easy to Understand Graphical Display**  
Along with Wittmann's unique and flexible user management puts you in complete control.
- **Take Advantage of Wittmann's VNC License**  
To view and control the system from a remote location via a computer or mobile device.
- **Integrate Wittmann's Controller**  
Into your ERP system via Wittmann's OPC capabilities.
- **Ultimate Redundancy with a Distributed I/O Designed Specifically for the Resin Conveying Industry**

Line Server LS-B30 T



Bus Module BM-4/4

Wittmann has developed this hardened distributed I/O control to resist static and normal plant wear and tear. The controller uses redundant components such as a central IPC and standalone Line Servers for each vacuum system. This isolates incidents to individual vacuum systems, or just the user interface. You never have to worry about a plant wide incident again.

## M7.3 IPC – Web Services



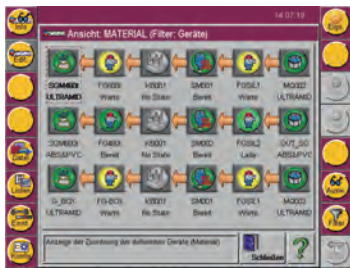
### Internet Connectivity

The optional connection to the internet can be established via the Ethernet port. This allows the mirroring of the screen of the M7.3 IPC control system on any PC.

- **Miscellaneous External Access Rights**
- **Display of All Process Data**
- **Remote Service by a WITTMANN BATTENFELD technician anywhere in the world**



## M7.3 IPC – Software Features



### Material Based Representation

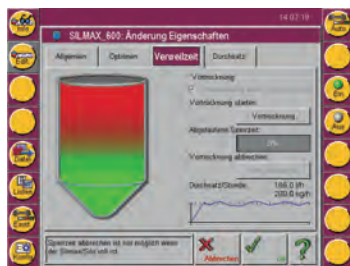
Visualization of the conveying system using lines to represent the respective material flow of the entire system.

#### ■ Clear Representation

The partially complex single material flow is displayed with a few symbols.

#### ■ Simple Changeover

Switch to vacuum line representation or other displays.



### Visualisation of the Drying Hopper Residence Time

Graphical display of the residence time for the material to be dried in the respective drying hopper.

#### ■ Residence Time

A specially developed method is used to determine the material flow in order to monitor the material residence time.

#### ■ Alarm Messages

In case the drying capacity is overextended.



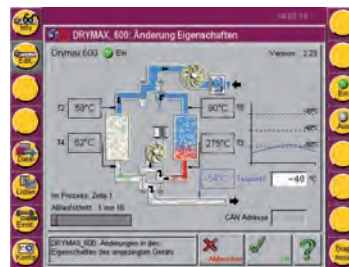
### Vacuum Loader Display

#### ■ Adjustment of the Loading Time

Adjustment can be made at any time in the edit mode.

#### ■ Conveying Sequence

In the presence of a purging valve adjustment of the optimum loading sequence.



### M7.3 IPC Networked Dryer

#### ■ Connection of up to 32 Battery Dryers with 240 Drying Hoppers

#### ■ Optimized Control

Manages internal process of the dryer with failure analysis.

#### ■ Dew Point Recording

In the presence of a dew point sensor the actual values are captured and recorded over a 12 hour time period.

#### ■ Management of Material Data

Includes all drying hoppers attached to the networked dryer.

## CODEMAX – RFID Coupling Station

The coded Coupling Station **CODEMAX** avoids the erroneous connection of the wrong material to the processing machine.

#### ■ RFID Coding

A transponder, working on the basis of "Radio Frequency Identification" (RFID), permits remote recognition of a 64-bit identifier. By means of this technology, electrostatic charges which are inherent to the material conveying process cannot cause damage to the electrical components.



Attachment of a virtually indestructible RFID transponder on the coupling.



M7.2 Coupling Station – Visualization



CODEMAX – RFID Coupling Station

# Conveying Products

## FMX Central Resin Conveyors

- Wittmann offers a full range of resin conveyors up to 80l capacity, or 100lbs of material at 35lbs/cuft.
- Flexible range of line sizes up to 4" to accommodate your throughput.
- Easy to maintain and easy to clean design.
- Positive closing discharge valve to ensure you have the maximum vacuum and efficiency every load cycle.
- Rugged, thick gauge stainless steel construction.



Pneumatic controlled material and vacuum valves

Thick-walled stainless steel design for highly abrasive feeding applications. The valve gasket, which is located outside of the material flow, guarantees highest functionality and prevents vacuum leaks typical of gravity type flappers.



Pneumatic material discharge shut-off valve

Highest functionality guaranteed through a completely leak-proof seal every conveying cycle. The dustproof design also guarantees dust free operation at the machine hopper.



## PDR Central Powder Conveyors

- For high demand systems
- Pneumatically activated vacuum valve
- Automatic compressed air filter cleaning system
- Capacitive type proximity sensor for automatic level control
- Mild steel construction
- Saddle support allow for mounting flexibility
- Tangential material inlet and internal cyclone ring for efficient air and material separation
- Large hinged access door for easy inspection
- Spun woven polyester dacron blend pleated filter media
- Positive closing discharge valve to ensure you have the maximum vacuum and efficiency every load cycle



## PDV Vacuum Pumps

Designed for all central vacuum conveying and loading applications.

- **Positive Displacement Type Industrial Blower**  
Provides constant airflow
- **Pneumatically Actuated Vacuum Breaker Valve**  
Prevents pump from reversing direction during shutdown and allows for continuous run/idle. Saves wear and tear on pump and motor eliminating stop/start
- **In-line Pump Protection Cartridge Filter**
- **Maximum Noise reduction**  
High efficiency absorption discharge silencer reduces noise
- **Heavy-Duty V-belt Drive with Safety Guard**
- **Options**
  - 3 - 50 hp for throughputs up to 20,000 lbs./hr.
  - Standby spare pump switching manifold



## XM B and MBF Central Filters

Recommended when conveying powders, pellets and regrind with high concentration of dust and fines. Designed with tangential material inlet with internal cyclone ring and single or multi-cartridge filters for maximum dust removal.

- **Self-Cleaning**  
Automatic compressed air filter cleaning with solid state control, or implosion.
- **High Efficiency**  
Pleated filter cartridges for maximum effective area, or bag media cloth.
- **Easy Cleaning**  
Stainless steel construction and quick release bucket for fast clean-out.
- **Filter areas up to 90sqft**
- **Single and three filter unit designs**



## Tilt Tables, Storage Bins and Super Sack Equipment

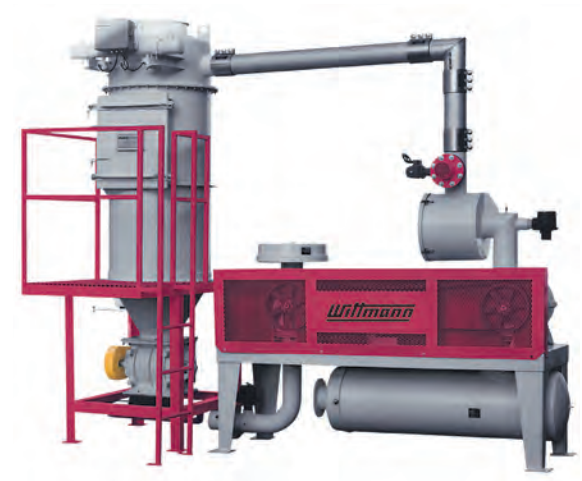
- Wittmann offers a full range of bulk handling solutions such as tilt tables, surge and indoor storage bins, and super sack handling.
- These products ensure easy and smooth operation of large through put applications and material introduction.
- Product options range from material construction, paint or special finishing, material sensing, control integration, and automate handling.





## Railcar Unloaders

- Recommended for unloading rates over 10,000 lbs./hour)
- Designed for low speed operation maximizing life of equipment, minimizing noise levels and maintaining safety and integrity of resins to be conveyed
- Independent vacuum and pressure circuits for increased control, maximum flexibility and easy of expansion.
- Each system custom designed to suit specific customer requirements
- Positive displacement lobe type blowers
- High efficiency absorption discharge silencers for maximum noise reduction
- In-line pump protection filter
- Positive acting vacuum and pressure relief valves (factory preset)
- Liquid filled vacuum and pressure gauges
- Microprocessor control with LCD digital interface
- Self-cleaning multiple bag filter receiver assembly with compressed air filter cleaning maintain maximum efficiency
- Heavy-duty multiple V-Belt driven with fully enclosed safety guard
- Painted machine enamel



### Options:

- Vacuum and pressure transducers for fully automatic operation
- Railcar pick-up nozzles with adjustable air inlet
- Railcar hatch filters
- Railcar manifolds

## Outdoor Storage Silo Solutions

- Custom built Silo designs to fit your needs and your location.
- Various sizes available to fit your storage requirements.
- Dual compartment silo designs available.
- Both 45 and 60 degree cone designs are available to fit various materials from resin pellets, to regrind and powder.
- All safety equipment is available such as ladder cages, railings, and cross walks.
- Multiple material types available such as stainless steel, mild steel painted, and aluminum.
- Various measuring options available from ultrasonic, hi/low paddle, and yo-yo style.
- Controller integration available.
- Load cell silo design and integration available.
- Wittmann offers turnkey solutions including the tanks, tank erection, all piping and measurement installation, anchor bolts, engineering, and site project management.



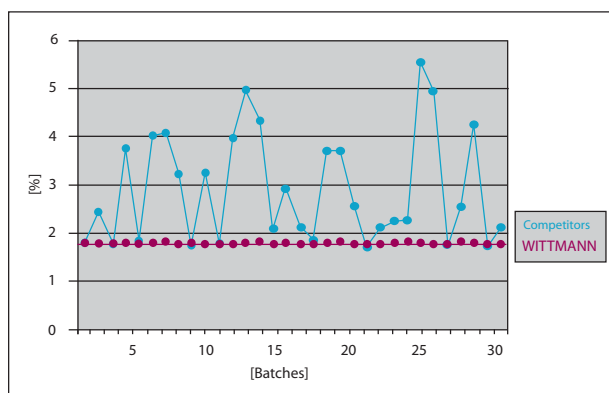
# Blending

- Wittmann offers a wide range of blending solutions up to a 60lb batch and throughputs over 4000lbs/hr based on application and up to 8 components.
- Turnkey support stands, surge bins, and equipment mezzanines.
- Easy to use touch screen control standard with entire product line.
- Real time RTLS technology coupled with Wittmann's unique valve technology weighs as you dispense, resulting in extreme accuracy saving you money on your additives.

A unique 2-stage metering method achieves the most precise dispensing for batch-to-batch consistency and accuracy. This is accomplished by using progressively smaller dispensing algorithms to approach the target weight. Only one standard high precision valve is used for pellets, regrind, additives.



Batch-to-batch accuracy means no overuse of high cost resins, optimizing the material consumption for the product requirement. Every batch is consistent and to the desired formula. No "hunting" or statistical averaging to achieve the required target.



The large easy-to-see buttons on the touch screen make it easy to operate in all types of light conditions and ensures the operator has a large surface area to make changes or adjustments in the operation of the blender.

## High-capacity microprocessor controller



## Where Do the Savings Come From?

By ensuring batch-to-batch accuracy by means of RTLS (Real Time Live Scale) technology the operator can set the percentages to the required minimum level. As competitive blending methods are constantly overdosing and underdosing the minimum needs to be set to allow any underdosed batch to still be at the requested percentage.

This results in overdosing all other batches, sometimes even significantly, causing tremendous excess material usage. RTLS can pay for itself in just a couple of months!

In this example, a blend of 1.8% has been set. Real data demonstrates the difference between RTLS and other methods.

# Drying and Crystallizing

## Drying

Wittmann offers a wide range of central drying solutions with limitless possibilities including large throughput systems.

- **Wide Size Range**
  - Hopper sizes ranging up to 4000lbs or larger upon request.
  - Dryer size ranging up to 6000lbs/hr
- **Robust Stainless Steel**  
Insulated stainless steel or mild steel construction.
- **Optional M7.2 control**  
integrated automatic dryer switchover for redundancy.
- **Dry air conveying options**
- **M7.2 control integrated dryer monitoring and control**
- **Dew point controlled desiccant bed switchover options**
- **High heat options capable of up to 356°F.**



## Crystallizing

- **Partial Crystallization of Amorphous PET up to 7500 PPH**
- **Super Duty Agitated Crystallizing Hopper**
- **Efficient and fast acting Open Coil Electric air heater**  
or optional indirect gas heat available.
- **Direct drive hopper agitator and blower**  
for reduced maintenance. Several filtration options available.
- **Positive discharge control**  
via variable speed feeder or air operated gate valve.
- **Numerous safety interlocks**
- **Hopper fully insulated**  
with 3" high temp insulation and lagging.
- **Up to 350°F (175°C) heating capability**
- **No post conditioning of material required**
- **Intelligent PLC controlled process**  
with PID temperature control.
- **Open or Closed Loop configuration**  
depending on application.



Oversized agitator shaft will NEVER break

3" high temperature mineral wool insulation for efficient heat retention and personnel protection

Heavy duty agitator arms strategically placed around shaft to effectively reduce agglomerates to pellet sized pieces. Hubs are "hook keyed" to shaft and fastened with set screws -- not simply welded to shaft as with competitive systems.

Lower high temp graphite bronze bearing is protected from material contact. No grease is utilized so product contamination is eliminated.

Unique air distribution system ensures uniform flow of hot air. Air is channeled into the full cone diffuser through a series of holes to eliminate "hot spots" and uneven air flow.



# Temperature Controllers and Chillers

## TEMPRO direct C250

Equipped with a self-optimizing microprocessor controller ( $\pm 1^\circ\text{F}$ ) for temperatures up to  $250^\circ\text{F}$ . Powerful pumps (pressure up to 87 PSI) guarantee a high flow of process water and thus a short preheating time and because of its direct cooling design and high cooling capacity.

The **TEMPRO direct C250** was designed for the special requirements of specific applications. It is equipped with radial pumps for high flow volumes at different pressure ranges: an economic mold temperature controller series with high user-friendliness and an extensive equipment range for every application.



## TEMPRO basic C200/ basic C285

### — The Economic Solution

The ideal temperature controller for any application requiring exact temperature control and high user-friendliness, however without additional functions such as direct cooling.

### — TEMPRO basic C200

One circuit temperature controller for temperatures up to  $200^\circ\text{F}$  equipped with a self-optimizing microprocessor controller ( $\pm 1^\circ\text{F}$ ). Standard with leakstop function and hand selector switch for evacuating function.

### — TEMPRO basic C285

Single zone unit with pressurized system for temperatures up to  $285^\circ\text{F}$ . The economic mold temperature controller for precise temperature control up to  $285^\circ\text{F}$ .



## TEMPRO plus D200/285/320/360

### Circulating Water Single and Dual Zone Units

### — TEMPRO plus D200

- For temperatures up to  $200^\circ\text{F}$ .
- Open system with powerful, submersible pumps without pump seals.

### — TEMPRO plus D285/320/360

- For temperatures up to  $285^\circ\text{F}$ ,  $320^\circ\text{F}$  and  $360^\circ\text{F}$ .
- Pressurized system with powerful pumps and with magnetically coupled pumps for **TEMPRO plus D320/360**.

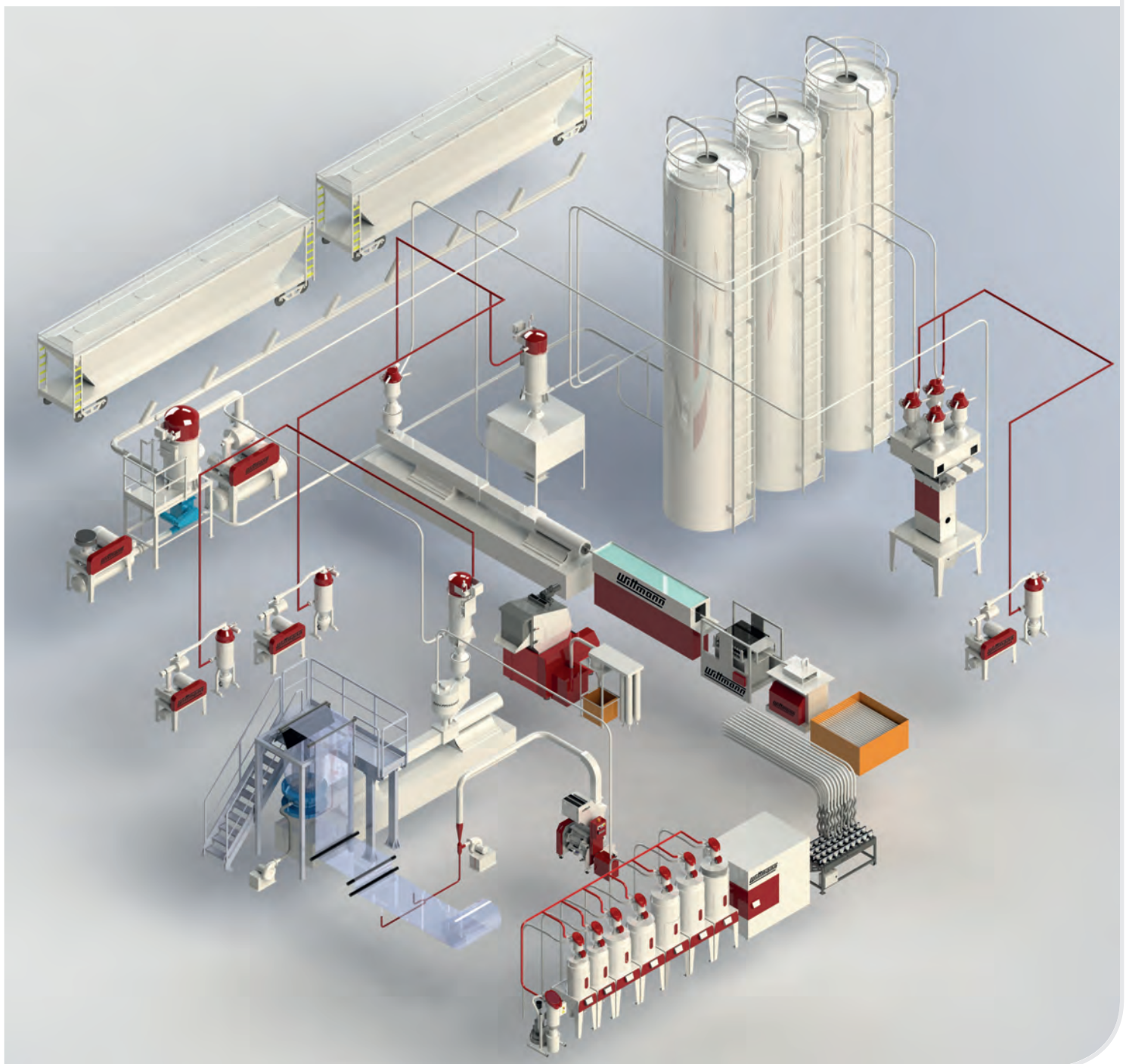


# Turn-Key Systems

*Wittmann offers all of the critical services needed to make your large, plant wide project completely turnkey.*

With installation contractors around the country, staffed engineers and project managers, and partnered material suppliers, Wittmann provides a one stop solution for all of your material handling system needs. The following is just some of the services we offer:

- Scope of Work
- System Flow Schematics
- Plant Layout Drawings
- Equipment Stack Up Drawings
- Utility Requirements Schematics
- Equipment O&M Manuals
- Isometric Piping Drawings
- On-Site Project Managers
- Project TimeLine Gant Charts
- Mechanical & Control Wiring Installation Contractors
- Start-Up & Commissioning Service Technicians
- Aftermarket Service Technicians
- Spare Parts Packages
- Project Manuals
- Preventative Maintenance Programs
- Consignment Parts Programs
- On-Site & In-House Training Programs



# Extrusion Yieldmax

## Self-regulating additive feeding system for extruders

Measure actual feed capacity of an extruder using the Yieldmax.

The Yieldmax is specially designed to measure the actual feed capacity of an extruder and tracks even the smallest capacity variation of the extruder and adjusts the feed rate accordingly. All in a simple and compact design.



The automatic mode can run in 3 different configurations (these settings needs to be changed by certified Wittmann Battenfeld engineer)

1. Fixed extruder speed
  2. Fixed puller speed
  3. Extruder controlled, and puller controlled (separately)
- For modes 1 and 2 the product weight per meter can be entered and will be kept constant.

The load cells are well protected against mechanical damage and high temperatures. The weighing hopper can be removed easily for cleaning.



100 kg/h



500 kg/h



1000 kg/h



# Continuous Blending

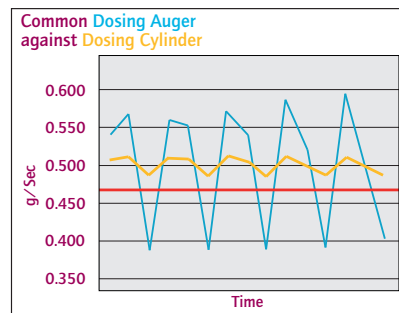
## Dosing up to Five Different Additives for Your Extrusion Process

Extrusion plastic producers & processors who use multiple additives or a mixture of powders and granulates at the same time can opt for a multi-component Wittmann Extrusion continuous dosing system. One system can dose up to five (different) additives full fed or starve fed on the extruder allowing the producer to optimize the recipe of the extruder feed and eliminating pre-blending requirements.

One of the major advantages of the modular concept of the Wittmann Extrusion continuous dosing units is that it allows you to combine several (different) type of gravimetric dosing systems. Adjustment or upgrading is easy and you don't have to buy a complete new dosing unit. Multi-component systems are always customized in the way that it is depending on your production process which combination will work for the best.

### Technical Features

- Continuous loss-in-weight measuring
- Automatic material calibration
- Integrated hopper loader control
- Warning and alarm output
- Recipes storage function
- Communication TCP/IP, Modbus and Profibus, Analog
- 8 inch full color touch screen for simple operation of single and multi-component systems
- Control for extrusion: % setpoint adjustment, auto synchronization to extruder speed
- Dosing capacity up to 1000kg/hr



### Advantages

- Dosing multiple additives or a mixture of additives
- Easy adjustment or upgrading
- Stable production process when it comes to coloring the plastic products
- Return on investment less than a year (six to nine months is not unusual)
- Saving on additives up to 50%
- Steady flow with the dosing cylinder dosing directly in the main material
- Easy to operate and easy to clean
- Color changes can be realized within 30 seconds
- Warranty up to 5 years

# Granulators



## *Complete Solution According to the Customer's Requirements*

- Manual feed.
- Robot feed (optional).
- Conveyor belt feed (optional) either with metal detector plate or tunnel style metal detector (optional) or with soundproofed tunnel (optional).
- According to the customer's application different evacuation and dedusting systems are available (optional).

Save up to 50% on capital equipment cost by buying a smaller granulator to meet your cycle scrap needs and still be able to process the bulky thin wall scrap parts.

### **Other benefits of a smaller granulator than would normally be required:**

- Reduced sound levels
- Reduced energy consumption
- Reduced footprint
- Reduced feed height
- Easier to cleanout and maintain



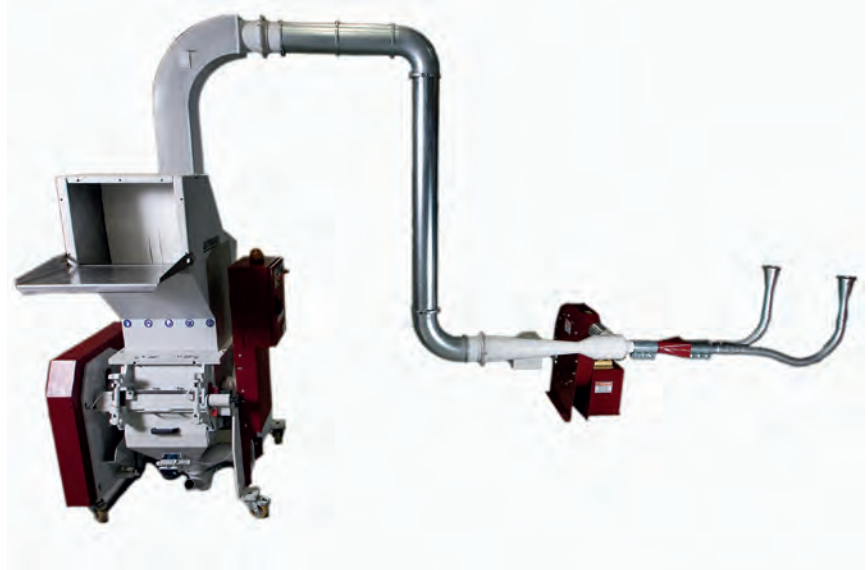
# Edge Trim and Fluff Handling

## Edge Trim Conveying System

The Edge Trim Conveying System is designed to collect continuous flow edge trim from an extrusion or conversion line. By conveying the edge trim to a size-reduction or storage center, the generated scrap can be reclaimed, saving money and valuable material.

The heart of the system is our trim venturi. Its' unique design provides an efficient method of collecting the edge trim and conveying it to the next step in your processing line. The Relief Head, an integral part of the system, is designed to expel the air before it enters the size reduction or storage center.

Available in different sizes to accommodate many systems, we offer the following options to better meet your individual needs.



## Surge Stopper/Fluff Hoppers

### Edge Trim Conveying System

- Direct edge trim and roll scrap recycling without densifying or pelletizing.
- Closed loop film reclamation for reduced risk of contamination.
- Consistent ratio of virgin resin to reclaimed fluff.
- Custom fitted to the extruder to provide maximum reclaim benefits without surging or "loss of feed".
- Simultaneous feed of edge trim and roll scrap.





# Downstream Extrusion



Wittmann Battenfeld has partnered with CDS (Custom Downstream Systems) to offer a broad range of extrusion downstream equipment such as tanks, pullers, combination units for pulling and cutting, cutters, haul offs and medical equipment. This partnership has helped to bring a superior product and service to Wittmann Battenfeld customers in their typical turnkey fashion.



## Cooling and Sizing

Spray Cooling Tanks  
Water Cooling Tanks  
Vacuum Sizing Tanks  
Profile Air Cooling Tables  
Vacuum Calibration Tables

## Pulling

Belt Pullers  
Cleat Pullers  
Pipe Pullers  
Slab/Rod Pullers  
Roll Pullers

## Cut-To-Length

Traveling Saws  
Fly-knife & Rotary Cutters  
Guillotine Cutters  
Planetary Saws & Cutters  
Cross-cut Saws

## Auxiliary Processing

Embossing Stands  
Brush/Scouring Tables  
Annealing Tables  
Cutter-Punch Units

## Collection and Packaging

Tilt & Collection Tables  
Take-away Conveyors  
Coil Winders





Technology working for you.

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