

GRAVITROL®

Extrusion Control Systems

The Complete System

Gravitrol® extrusion control offers the benefits of improved product quality, reduced material usage, quicker startups and product changeovers, reduced scrap, and improved product repeatability. At the same time, it reduces the operator's workload by maintaining a constant output, regardless of screen pack or material variations.

The system uses Process Control's proven Gravitrol® software to automate the control of the line and hold the extruder output to $\pm 0.5\%$ by weight. This tight control of output means that product can be made consistently within tolerance at the lowest possible cost, thereby saving thousands of dollars in resin.

Process Control X Series blenders can be equipped with extrusion control software to allow the blender to control the extruder and line speed on monoextrusion lines for consistent output by weight. Guardian® batch blenders can also be equipped with weigh hopper and extruder and line speed I/O.



Improved
product
quality,
reliability

Reduced
scrap and
material
usage

Quicker
startups
and product
changeovers

Accurate
inventory
reporting



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Gravimetric Extrusion Control

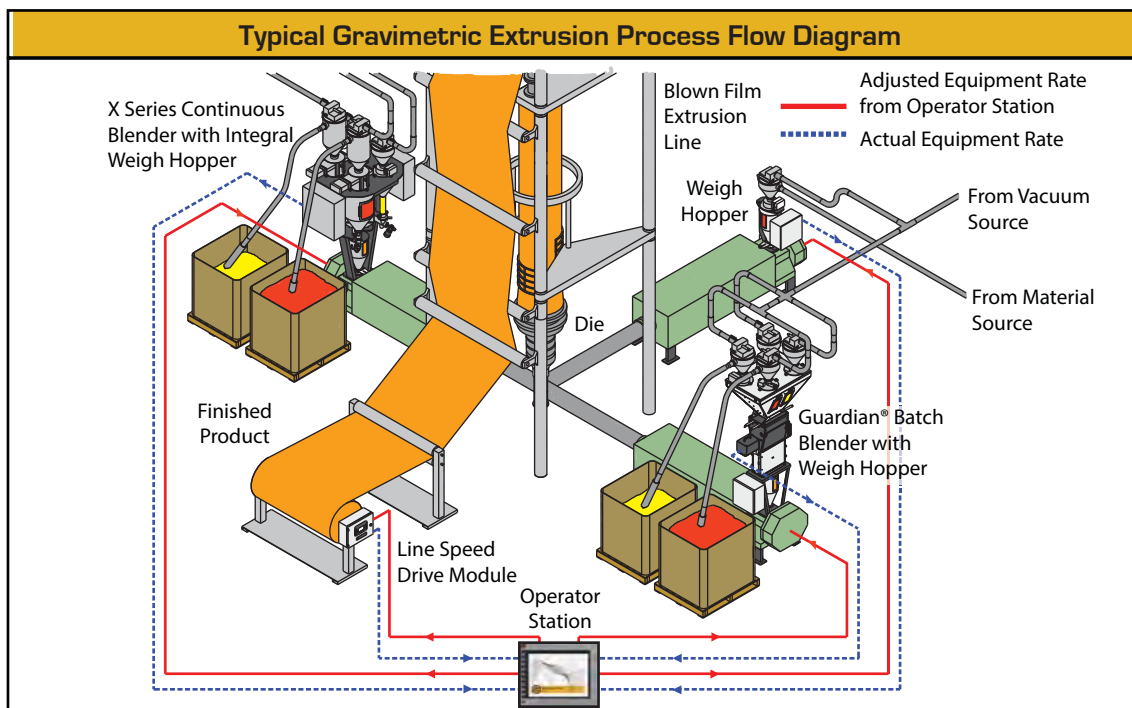


Control for X Series 2 Blenders

Process Control X Series 2 blenders monitor the extruder usage in order to follow the extruder rate and insure a consistent supply of material. In an extrusion control system, this extruder rate is used to adjust the screw speed by minute amounts to hold the overall throughput to the value entered in the blender operator station.

Because the blender already has a powerful computer and equipment necessary to measure the extruder rate, adding extrusion control on a monoextrusion line with a Process Control X Series 2 blender is a very cost-effective addition. This feature can be easily retrofitted to existing installations with X Series 2 or B Series blenders.

X Series 2 blenders can also be easily integrated into coextrusion applications with extrusion control for controlling product layer ratios and total line throughput. On coextrusion applications the blender computer reports to the EXB2 central Gravitrol® computer, which also receives weight throughput reading from HG Series 2 Weigh Hoppers mounted on single-component extruders.



Standard Features

- EXB2 Series touch screen operator station
- Quick installation on new or existing lines
- 0-10 VDC or 4-20 mA analog drive control signals

Options

- Gravitrol® Drive Speed Control Module
- Gravitrol® Line Speed Control Module
- Special Electricals

HG SERIES 2 Weigh Hopper



The HG Series 2 Weigh Hopper is a central part of this system because it precisely monitors the amount of material consumed by the extruder. In effect, the extruder becomes a gravimetric metering device.

PCC's HG Series 2 mounts directly on the throat of your extruder, requiring no additional support. Standard hopper sizes control an extruder throughput at rates from 10-10,000 PPH. Higher-rate hoppers are available on special order.

The HG2's clear polycarbonate inspection/clean out door or sight glass allows visual inspection of hopper contents. Each hopper is equipped with a touch screen PLC which connects to the load cell and precisely measures the extruder's material consumption. This information is digitized on the hopper for fast, error-free and noise-immune communications with the central Gravitrol® computer. Four-point overload protection on the hopper protects the weighing system from damage due to accidental contact.

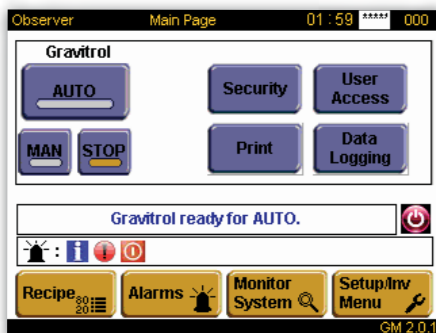
Standard Features

- Integral loader support platform
- Clear polycarbonate inspection/cleanout door [0.3ft³ and larger]
- Inspection sightglass [0.3ft³ and 0.6ft³ models]
- Butterfly drain valve [2.3ft³ and larger]
- Color touch screen control
- Mild steel construction

Options

- High temperature design
- Stainless steel construction
- Special electricals
- Positive shut-off knife-gate or swing-gate valve for gravity loading material from above
- Integral extruder and line speed monitor/control
- Integral blender support for 2.5kg & 5kg Guardian 2

EXB2 Operator Station Module



Process Control's Gravitrol Gravimetric Extrusion Control Systems automate the control of any extrusion line – monoextrusion or coextrusion – on the basis of weight. The EXB2 Operator Station is the key component of a complete Gravitrol system.

A standard coextrusion system has multiple HG Series Weigh Hoppers mounted on each extruder to measure the weight throughput. The weigh hopper reports the measurements to the EXB2 Operator Station, and then can control the extruder drives via extruder drive control / line speed control modules (in a separate panel). Based on the weight readings from the weigh hoppers, the EXB2 periodically adjusts the speed of each extruder through the drive control module (one per extruder). Each line speed control module controls a single take-off device for control of line yield (weight per length).

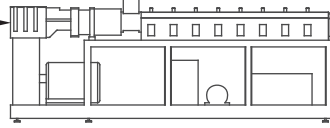
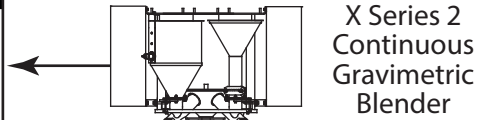
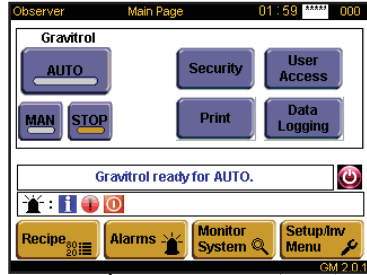
Standard Features

- Color touchscreen operator interface with off the shelf PLC
- Mono or coextrusion monitor of PCC weigh hoppers or X Series 2 Continuous blenders
- Integration with customer HMI via Ethernet port

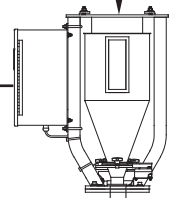
Options

- B&R PLC based extrusion and line speed control module panel for extrusion control
- Replaces existing EXB Gravitrol Operator Panel for system upgrades
- Serial communications control card
- Special software

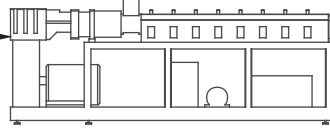
Gravitrol® Operation



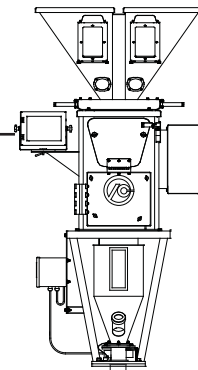
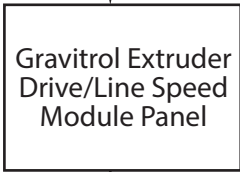
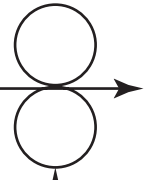
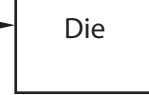
Raw Material



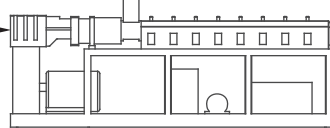
HGB Series
Gravitrol
Weigh Hopper



Product



Guardian
Series 2
Gravimetric
Batch Blender
with Weigh
Hopper



Extruder

