

Extrusion Control

Technical Information



FEATURES

Overview of new extrusion control solutions from Maguire + Syncro, as well as modular approaches for a wide range of functions on a typical line...



PRODUCT RANGE

View the Maguire + Syncro product range...



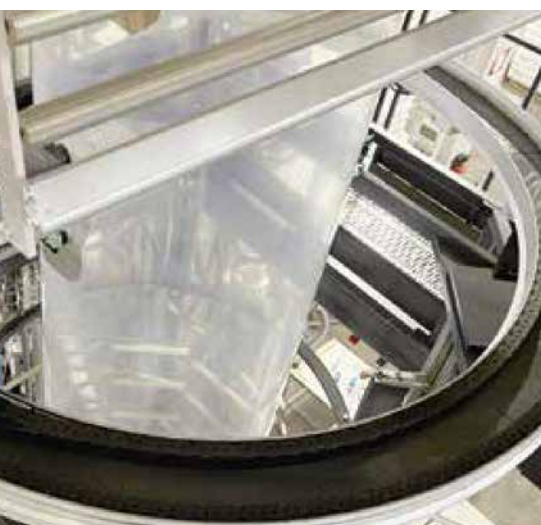
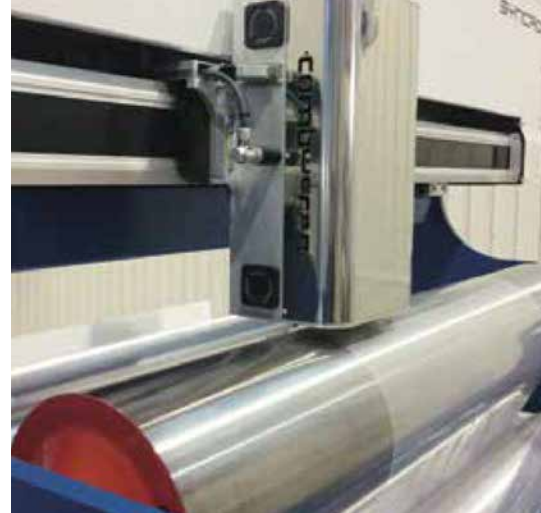
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**CUSTOMERS CAN USE
EXISTING EQUIPMENT
FROM MAGUIRE WHILE
EASILY EXPANDING
CONTROL ELEMENTS
ON BOTH EXISTING
AND NEW LINES**

MAGUIRE® + SYNCRO

THE EXPERTS IN GRAVIMETRIC BLENDING AND EXTRUSION CONTROL



PRODUCT RANGE



Gravimetric Blending – Maguire WSB Blenders

Our most popular blender, the Gravimetric Weigh Scale Blender, is capable of blending up to 12 components and easily interfaces with all of Syncro's extrusion control modules. In 2016 we sold our 50,000th blender world wide – over 60% of these are installed in all types of extrusion applications.

There are nine blender series with over 120 models, plus choices to blend up to 12 components covering throughputs from 2 kg/hr up to 5,500 kg/hr. Options are available to add on a range of feeders for pellets and powders as well as integrate liquid color.

High consistent accuracy

All materials are measured by weight and constantly monitored to ensure accuracy on every material within $\pm 0.1\%$ on a 1% setting.

Return on investment

Typical Return on Investment within 6-9 months of installation.

Automatic error correction

Every gram of material is automatically adjusted towards perfect dispense rates.

Regrind control

The WSB blender automatically adjusts regrind usage to maximize on regrind consumption, while dosing the minimum required for natural and color.

Color and additive control

Save typically 30% on Masterbatch and additive usage compared to volumetric dosing.

Quick set up

Easy for operators to setup in minutes – not hours.

Vibration management

Load cell readings that have been compromised by machine shock or vibration are detected or discarded.

Data

While raw materials can account for up to 70% of plastics processors costs, our blenders measure right down to a 10th of a gram for every material dispensed, reducing operating costs, improving efficiency and increasing profitability.

Conveying software

FlexBus Lite is integrated with our touchscreen controller for loading multiple materials into a blender.



Blenders Available

SMALL



MB MICRO BLENDER

- 5 models available
- Up to 100 lb/hr (45 kg/hr)
- Ideal for small injection machines
- Easy flow regrind corner valve
- Removable hoppers for quick color changes
- Up to 4 components



140MP MICRO PLUS

- 5 models available
- Up to 350 lb/hr (160 kg/hr)
- Optional loader lift for fast clean out
- For injection molders, small extruders, and central blending
- Removable hoppers for quick color changes
- Up to 4 components



WSB 100 SERIES

- 5 models available
- Up to 450 lb/hr (200 kg/hr)
- For injection molders and small extruders
- Removable hopper option for quick color changes
- Up to 4 components

MEDIUM



WSB 200 SERIES

- 12 models available
- Up to 900 lb/hr (400 kg/hr)
- For injection molders, small extruders, and central blending
- Removable hopper option for quick color changes
- Up to 8 components



WSB 400 SERIES

- 12 models available
- Up to 1,450 lb/hr (650 kg/hr)
- For small to medium extruders, large injection machines and central blending systems
- Removable hopper option
- Up to 8 components



WSB 900 SERIES

- 21 models available
- Up to 4,000 lb/hr (1,800 kg/hr)
- Designed for large extruders, blown film lines and central blending systems
- 2, 4, or 6 compartment hoppers
- Up to 6 feeders

LARGE



WSB 1800 SERIES

- 21 models available
- Up to 5,000 lb/hr (2,270 kg/hr)
- Ideal for high output extruders and large central blending systems
- 2, 4, or 6 compartment hoppers
- Up to 6 feeders



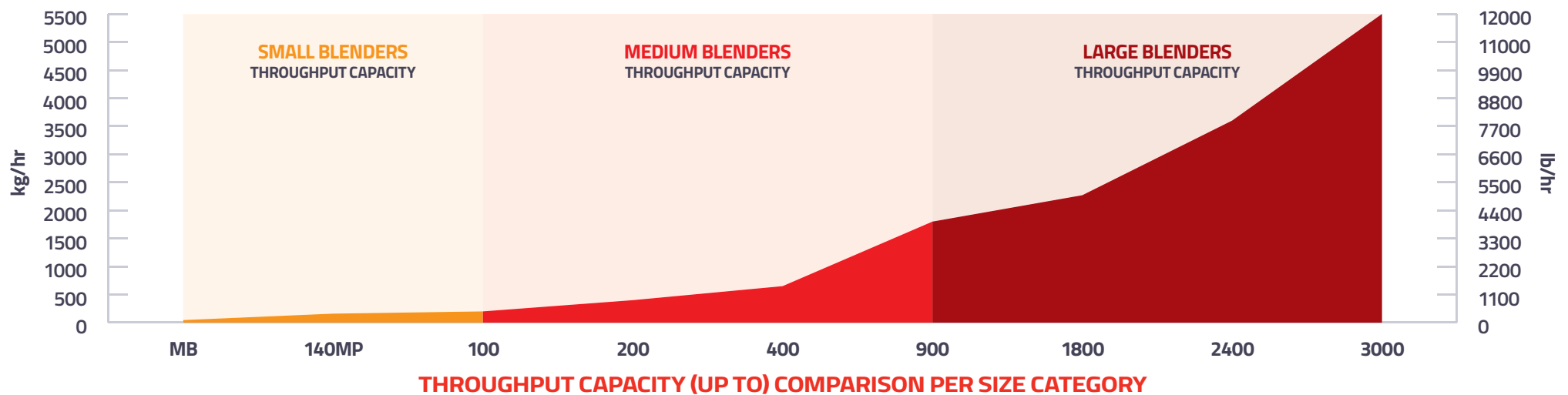
WSB 2400 SERIES

- Capable of handling bulk powders like additives and wood flour
- Up to 8,000 lb/hr (3,600 kg/hr)
- High flow dispense valve rated at 10,000 grams/second
- For as many as 12 ingredients



WSB 3000 SERIES

- Capable of handling bulk powders like additives and wood flour
- Up to 12,000 lb/hr (5,500 kg/hr)
- High flow dispense valve rated at 10,000 grams/second
- For as many as 12 ingredients



Maguire reserves the right to cancel product or change product, product specifications and data without notice to improve reliability, function, design or otherwise.

Gravimetric Blending – Maguire WXB Blenders

Launching in 2017, the new Maguire WXB Blender series is geared for extrusion and uses our proven Batch Gravimetric Technology combined with Loss in Weight Control.

The Maguire WXB Blender has 6 slide gates as standard for universal dispensing and uses quick connect material lines in blown film for rapid material change options.

Extrusion applications

Suited for all extrusion applications; Film, Cable, Sheet, Pipe & Profile extrusion.

Rapid material change options

Quick connect material lines in blown film.

Conveying software

FlexBus Lite is integrated with our touchscreen controller for loading multiple materials into a blender.

Range of materials loading available

Options from LoPro to FlexBus for loading single to multiple materials.

Mix chamber

Loss in Weight control is combined with our proven Batch Gravimetric technology for accurate blending.

Universal dispensing

6 slide gates as standard.

All in one integrated hardware

No computer, no separate loss in weight hopper, no separate blender.



"Controlling extrusion throughput with continuous accuracy!"

Loss in Weight Control

The Maguire LineMaster loss-in-weight control allows for faster start-up time, improved product quality and reduced scrap, while ensuring the correct amount of material is used.

Material savings

Accurate weight/length feeding, giving an average 4% materials savings.

Improved product consistency and quality

With automatic control and regulation, the LineMaster system can regulate drive outputs ensuring that the actual output meets target by regulating the extruder drive or take-off drive to the target required.

Simple and easy control

Control options and product parameters are reduced to one key point of control – the operator simply enters the target required with no need to manage other process variables.

Faster start-up time

An operator can switch from manual start-up to automatic and set the required output, without the need for further operator involvement, saving considerable time.

Change jobs quickly

Switch from one production order to another with direct online control, increasing production time and profits.

Data

Generate reports on material consumption, while controlling performance and production lines remotely assisting quality and cost control.



“The LineMaster system helps to regulate fluctuations and stabilize end product to give a more consistent output.”



Materials Conveying

Maguire has a broad range of materials conveying solutions for small, medium and large processors. Maguire's new FlexBus Lite software is idea for local systems. For larger plant-wide systems, Maguire FlexBus can operate up to 5 vacuum pumps and 240 receivers using one central control. Automate materials movements, reduce handling and gain maximum efficiency.

Maguire Loading System MLS

Provides all the benefits of a mini-central system with the added convenience of being compact, easy to reposition and low maintenance.

Full view of the material loading

Direct view of material loading makes it easy for operators to monitor operation and adjust set conveying times.

Reduction of clogging

Clogging is reduced with a patented deceleration chamber that facilitates separation of material from the air stream and a fast-action slide-gate that prevents pellet entrapment during material discharge.

Easy access for cleanout

The top cover of the receiver includes the vacuum valve, material inlet and cleanout port.

8 receivers per vacuum group

The basic MLS controller controls up to 8 receivers as standard.

FlexBus

A single wire connects all receivers in the system so the system is easily expanded to meet your needs.

Simple cleaning

Equipped with a coarse filter, fines are able to pass easily through to the central filter where it can be conveniently cleaned as and when required.

Easy filter access

The lid is free of attached elements allowing for easy filter access.

Wide range of single and twin pumps

Our vacuum pumps are available in a wide variety of single and twin pumps; our smallest (0.85 kW/1.14Hp) is capable of achieving 750 kg/hr at just 20 meters, providing energy costs per kilo conveyed versus a 2kW or 3kW pump.

48 receivers per vacuum group

The FlexBus control system is capable of controlling up to 5 vacuum groups and per vacuum group up to 48 receivers, allowing the system to grow with you.

Double filter option

The pressure differential on our double filter automatically switches to filter number 2 when full, to ensure no downtime during cleaning and the choice of more compact systems.



Air Ring and Auto Profile Control

Available in a wide range of sizes, the Typhoon and Flyer air rings are designed for efficient and controlled air flow to achieve your required film thickness.

Significant reduction of scrap

Thanks to the innovative and patented TECH 2.0 both our volume and heater controls are combined to improve profile control. This reduces scrap and increases the level of planarity.

High efficiency and high output

Elevators lift up the automatic upper four lips of the air ring, almost doubling the line throughput while improving physical properties of the film; tear, haze, elongation and dart drop.

Efficient cooling

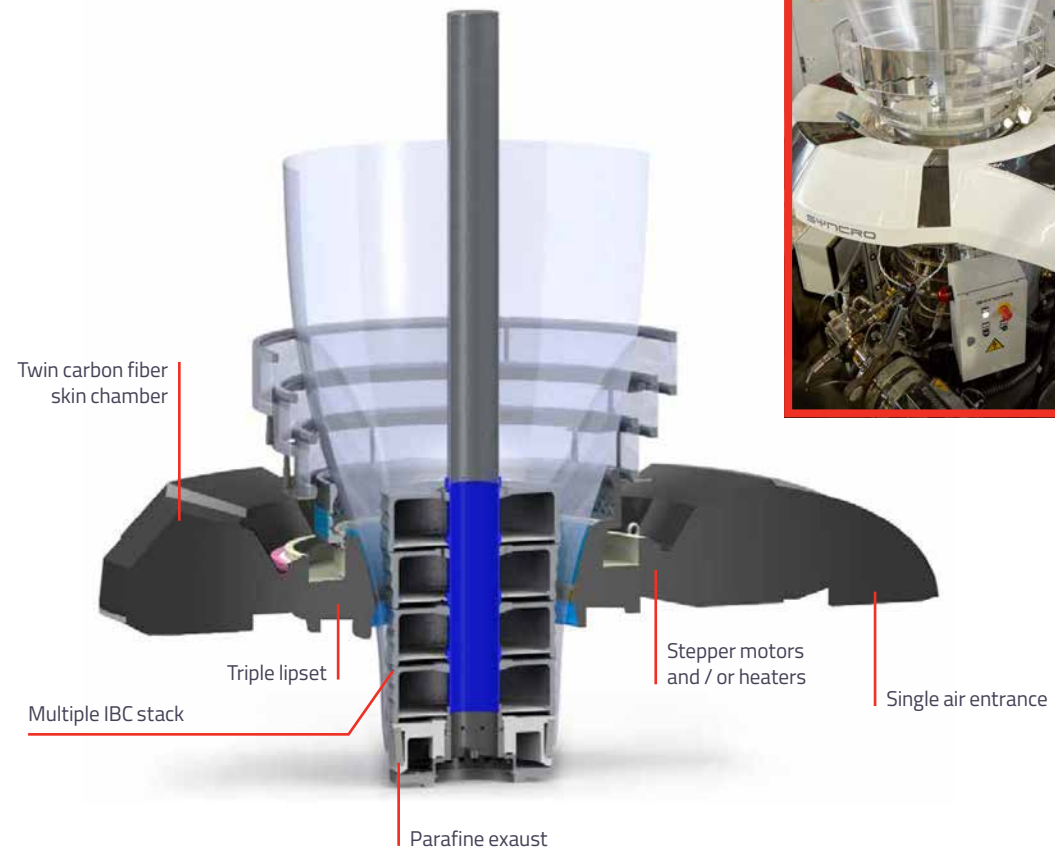
Efficient cooling is maintained throughout the process, even when the Flyer is raised to the upper position where the bubble expansion is greater.

Stabilizing file

The Flyer provides segmented airflow to localized areas around the blown film bubble through the air ring while stabilizing the film exit due to the fourth special downward lip.

Automatic reduction in film thickness

Where film thickness is higher or lower than the set tolerance, the stepper motor on the Typhoon will automatically decrease or increase the air flow in the corresponding segment, thus reducing or increasing the film thickness to the required tolerance.



IBC Control and Lay Flat Control

Syibc is designed to automatically control and manage blower balance while coordinating all blower control functions. Vortyx is an integral cooling device designed to increase the cooling capacity. Syncro provides high precision and accuracy in bubble and lay flat control.

Consistent gap

Syibc is equipped with ultrasonic sensors on the bottom of the cage, on moveable arms, to keep the gap constant between sensor and bubble. More sensors can be installed above the cage where the bubble is already formed to control lay flat and automatic opening / closing of the cage.

Compensation for ambient temperature

Ultrasonic sensors are installed at a fixed distance to provide a fixed reference to the others to compensate for ambient temperature variations.

More than just control

Syibc is designed to automatically control and manage blower balance while coordinating all blower functions.

High accuracy

The customized control valve provides the fine tuning necessary for high precision and accuracy in bubble stability and lay flat control.

System integration

Syibc can be controlled by the Maguire + Syncro supervisory system, Syntrol.



Gauging System

Wide range of scanning for film, cast and sheet, including Optylayer, Optymex, Combyscan, Optyscan and Rayxscan.

Continuous measuring of material thickness for high precision

Optylayer

Optylayer is the latest measuring solution available on the market to optically measure the thickness of a sample with a complex structure and is ideal for barrier film. Layers of different material generate an optical reflection due to the difference of the reflective index. An optical head collects all the reflections that are mixed together with embedded optics. The resulting optical signal will contain information about the position of each reflection.

The processing of the optical signals allow the reconstruction of an A-scan profile (Intensity of reflection vs. Position). The analysis of the A-scan allows extraction of information about the individual layers.

Optymex

Provides a continuous measure of material thickness. Installed on an oscillating ring it is able to refresh the profile every 2-3 minutes, unaffected by the haul off speed.

Combyscan

A patented measuring system based on non-contact inductive / capacitive technology. The inductive / capacitive sensor allows the measurement of either sheet and/or film thickness using a cylinder as a datum. Combyscan is an ideal application on all extrusion processes where rigid materials are extruded.

Optyscan

Has a much smaller measuring spot (1mm) which increases the accuracy and precision of measuring film. Optyscan will guarantee a faster response to the die especially during start-up where each meter of film extruded is important. Accuracy is down to 0.1 micron.

Rayxscan

Rayxscan is easy to install and service and is not considered a radioactive source because the tension on the anode is lower than 5 kV and thus a safety certificate is not required.

Skymex

Resting on two sliding carriages turning around the extruded bubble, Skymex automatically measures the stiffness, removes vibrations, calculates the radial measurement and maintains a minimum overall dimension during rotation. The non-contact sensor leaves no marks on your film and is ideal for non-barrier film.

Easymex

Based on capacitive technology, Easymex provides a continuous thickness measurement. It can be installed either stand alone on the collapsing frame or on an oscillating ring connected to an auto profile control and is available as either contact or as a non-contact option for materials considered sticky and / or delicate.

"Options are available to measure colored material, metal substrates or materials considered sticky or delicate."



Maguire + Syncro - Extrusion Control

The Maguire + Syncro package is modular and easy to apply; the Maguire WSB and WXB Blenders can easily be combined with Syncro's extensive range of control systems for extrusion applications.

Maguire + Syncro Extrusion Control



opxs-kit-M

Mono Layer gr/m Extrusion Control - Master PLC with 5.7" Panel Mount Touchscreen, plus I/O inputs for 2 Digital inputs; Encoder for Line speed and Tachometer for Extruder RPM. Control interface provides gr/m, Ratio Control for Co-Ex applications, standard product recipes.

opxs-linekit

Digital Encoder to measure Line speed (1m Wheel / 3000 ppm) & Digital Tachometer to Measure Extruder RPM



opxs-kit-S

Co-Extrusion Interface per Additional co-ex layer - Moxy Slave Device allows interface to Master PLC from WSB, plus digital I/O interface for RPM data on extruder



opxs-kit-M-07

Upgrade MASTER HMI Touchscreen to 7" Screen from standard 5.7"

opxs-kit-M-10

Upgrade MASTER HMI Touchscreen to 10" Screen from standard 5.7"



Mono Extrusion Application

For a mono line, you would need 1 x opxs-kit-M (a touchscreen PLC) and 1 x opxs-linekit; a digital encoder which plugs into the touchscreen to enable you to monitor line speed and RPM of the extruder.

Co-Extrusion Applications

Where you have more than one extruder, an opxs-kit-S will be needed for each slave layer to enable you to control the output of each additional extruder and monitor blender usage. This will then connect into the Master PLC.

HMI Interfaces

The Master PLC is a 5.7" panel as standard. To increase the size of your touchscreen from the standard you will need either code opxs-kit-M-07 or code opxs-kit-M-10 to increase the size to 7" or 10" respectively.

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Rewinder

Ecosy is a state of the art automatic rewinder for the production of manual and machine stretch film.

Range of reels

The Ecosy is able to produce coreless reels, reels on a thin wall and conventional paper cores in both 2" and 3" diameters.

User friendly interface

The user friendly interface allows operators easy access to adjust the production parameters including: meters or weight, speed, tension, contact force and taper function.

Accurate tension control

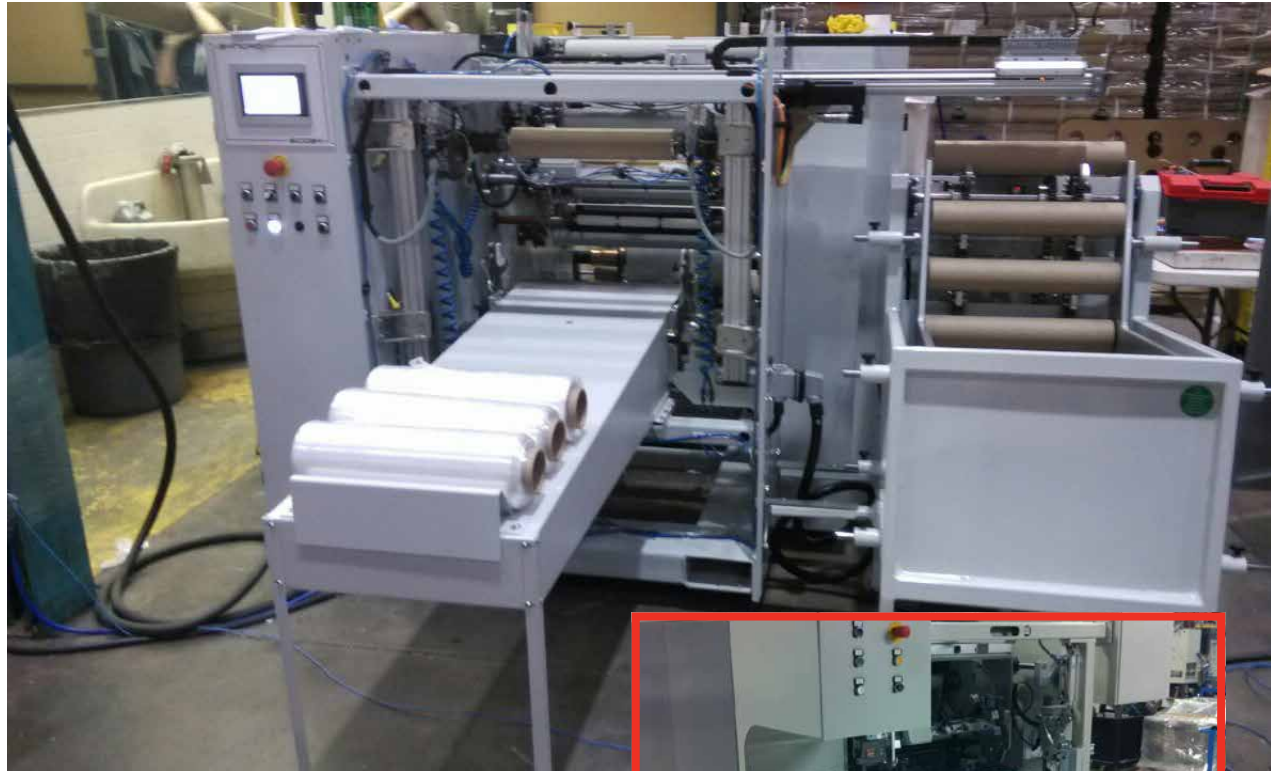
Throughout the process, the reel tension is accurately controlled using brushless motors with digital drives. The proprietary software sets the system speeds and monitors web tensions via load cells.

Options

Options for the Ecosy include edge folding, oscillating system, film break sensor, finished rolls conveyor and weight per meter control.

Collapsible shaft

The mechanical collapsible shaft is perfectly round when expanded. Once collapsed, the perimeter of the body is reduced by 10% to create zero tension so the shaft does not need to be removed.



"User friendly interface that accurately controls the reel tension."





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