

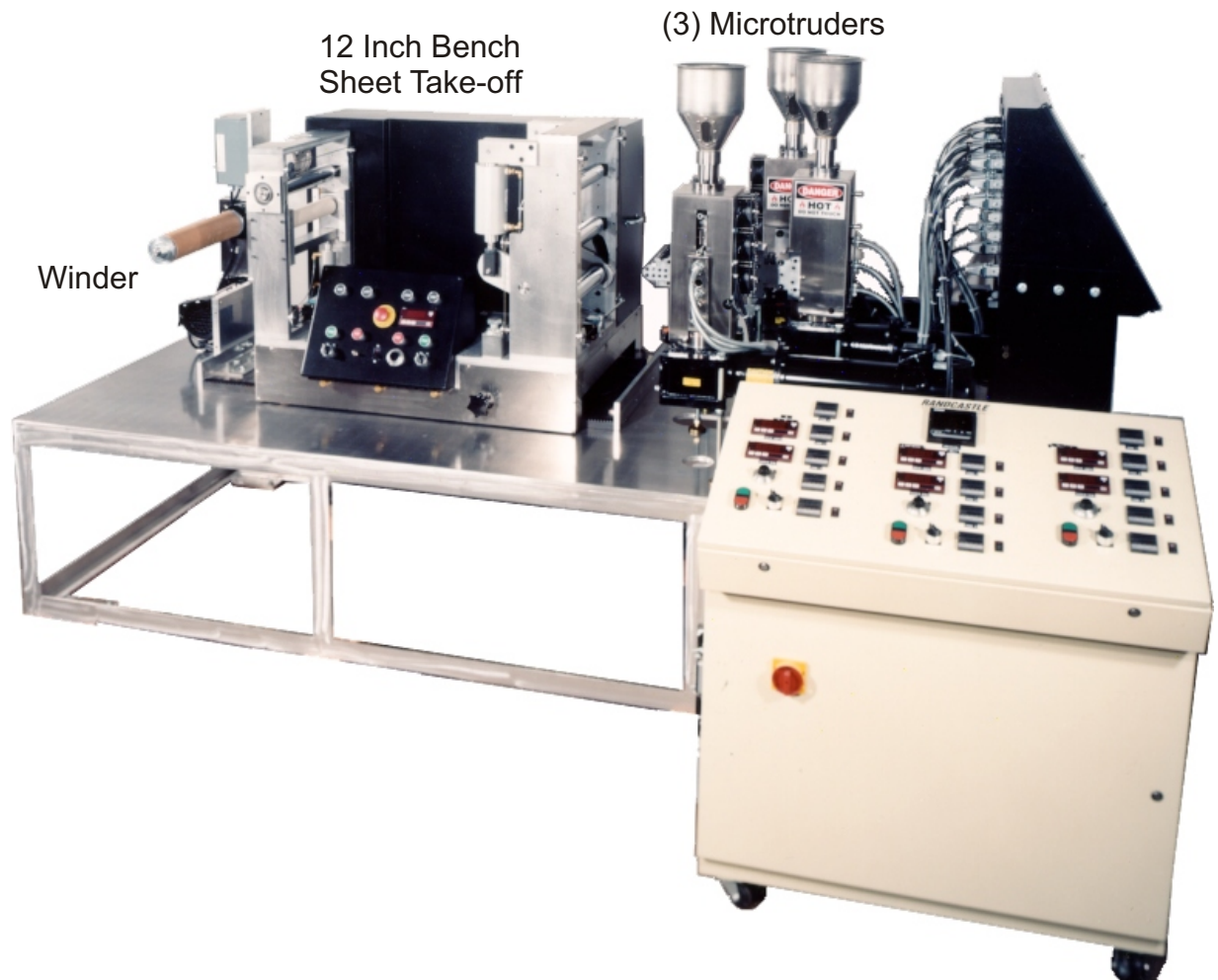
RANDCASTLE'S

Sheet Lines

2 to 12 Inches

5 LAYER ABCBA

Patents: 5,486,328
5,518,672, and
5,569,429 other US
and foreign patents



COEXTRUSION SHEET LINE

MONOLAYER SHEET LINES

UNIQUE TECHNOLOGY: Randcastle is a technology driven company focusing on small width lines. We start with the patented Microtrudervertical screw extruder with screws up to fourtimes stronger than the same horizontal extruders; they feed much better and surge far less. Our exclusive smooth bore feed sections give you unparalleled processing flexibility. Add the inexpensive on-line rheometer to measure viscosity and you can link flow and sheet properties.

Three types of dies are available for sheet over 0.010 inches. *Adjustable lip* (2 to 4 inches) have an opening range between 0.010 and 0.090 inches. They are viscosity insensitive making uniform sheet with little intervention. Our *flexible lip* dies (6 to 16 inches) have a unique interchangeable manifold. Fixed manifold dies are built for a single viscosity. However, beyond a certain range, such dies (even with flexible lips) are incapable of making uniform sheet. Randcastle's interchangeable manifold is an economical solution. *Production* dies from several manufacturers make superior sheet but take longer to heat and clean.

Space saving bench models are made 8 and 12 inches wide. The 2 inch diameter rolls concentrate the force of the air cylinders. Floor sheet take offs are made with 6 inch diameter hardened rolls in 10, 16 and 20 inch rolls. Both bench and floor models have separately motor driven pull rolls for web tension control, hardened cored rolls, and optional winders. Floor models can mount roll temperature controls within the base.

Floor Model

1 inch Microtruder, 2.5 inch die, and floor sheet take-off.



Bench Model

Space saving design 5/8 inch Microtruder, 6 inch flex lip die and roll stack. See larger stack on cover.



Horizontal sheet take offs are best for low viscosity materials and where the nip contact must be simultaneous to avoid chatter lines. .

Horizontal Sheet Take-Off

COEXTRUSION SHEET LINES

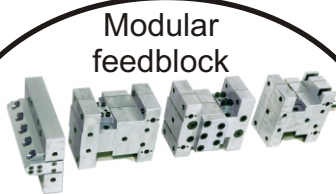
The heart of a coextrusion sheet line is the feedblock or die used to assemble the layers.

Randcastle multi-manifold dies share a short common flow path and are best where very large viscosity variations are expected and are limited to three layers. Randcastle multi-manifold dies feature the critically important interchangeable manifold. Dies without this feature may not have uniform layering even with a flexible lip.

Randcastle feedblocks are supplied as an economical unit for up to 5 layers and an expandable modular version so that you can add layers and extruders as your need expands. All our feedblocks use modular flow pin technology to make uniform layers from different viscosity materials. Additionally, the modular feedblock lets you change pins without taking the feedblock apart.

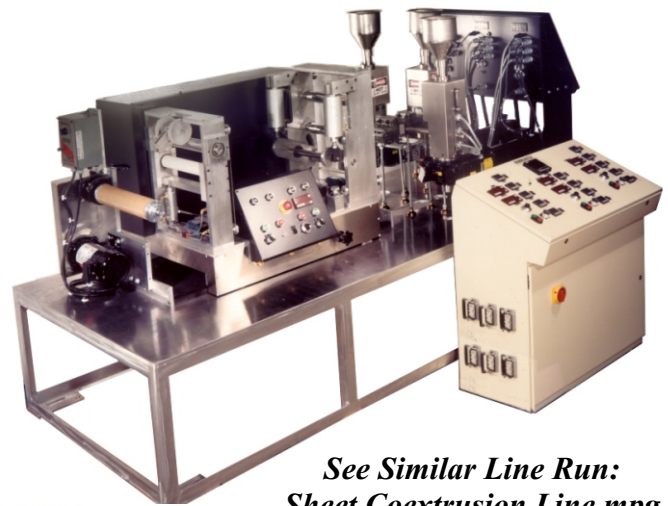
Bench Model

Five layer line shown includes (2) 3/4 inch Microtruders and one 5/8 inch Microtruder, remote control panel, modular feed block, 10 inch flex lip die, 12 inch bench sheet take off and integral 12 inch diameter winder.

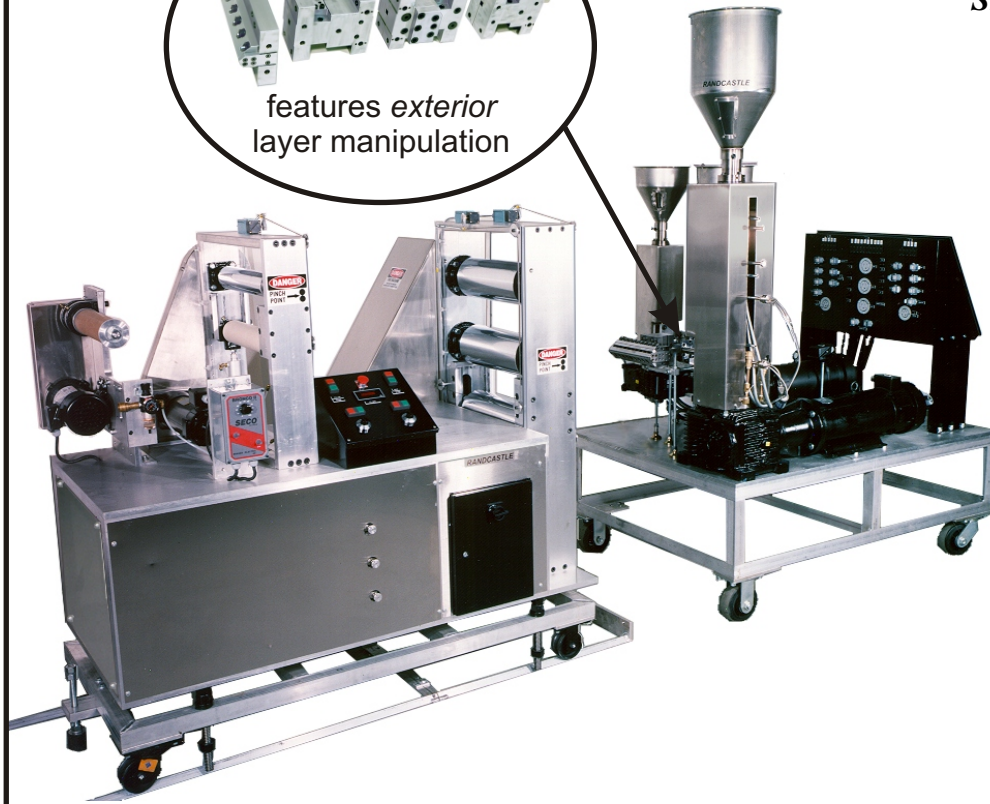


Modular feedblock

features exterior layer manipulation



See Similar Line Run: Sheet Coextrusion Line.mpg



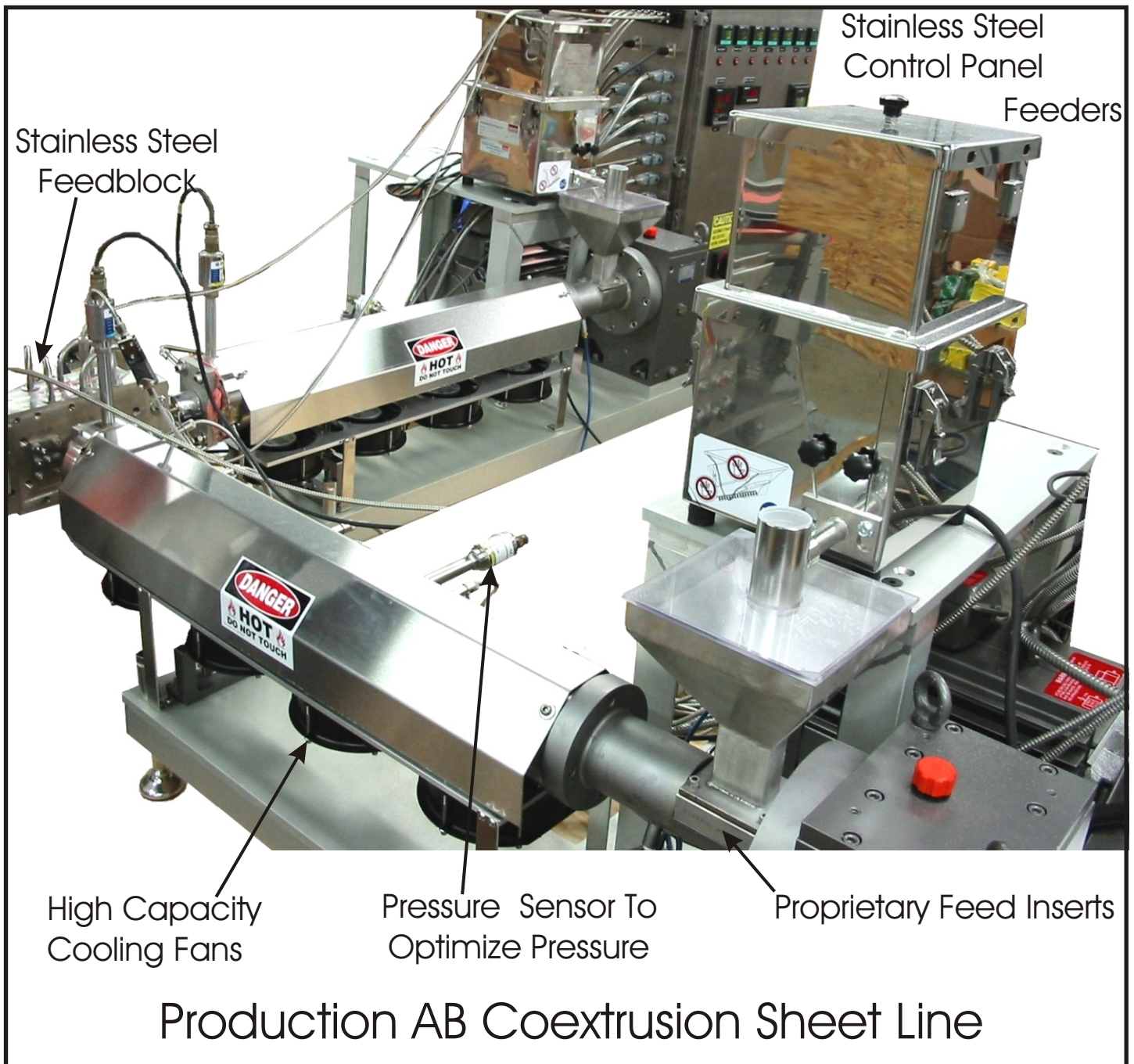
Floor Model

This 5 layer line has (2) 3/4 inch Microtruders, (1) 1 1/4 inch Microtruder, modular feedblock, 12 inch flex lip die, 16 inch sheet take-off and integral winder.

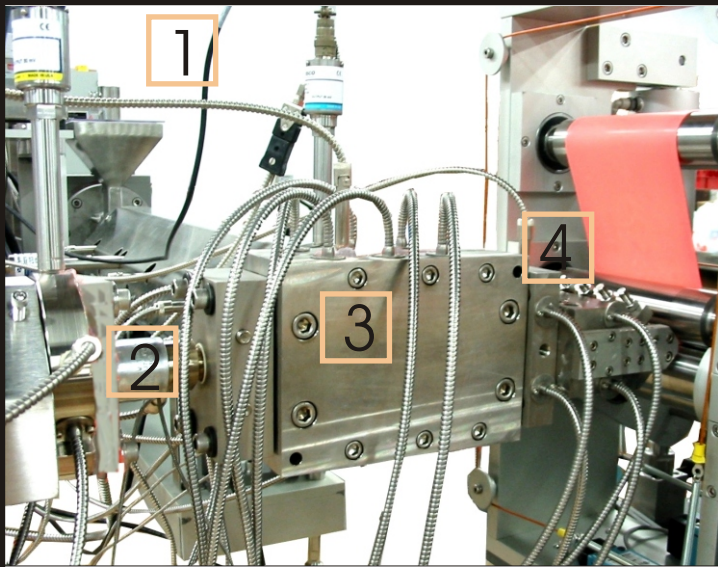
COEXTRUSION SHEET LINES PHARMACEUTICALS

This production line made AB sheet for dispensing drugs from a water soluble polymers. These bench model 36/1 L/D Taskmasters directly compounded the drug into the polymer. The line features stainless steel components, FDA approved paint and lubricants. These one inch bench model Taskmaster extruders are 36/1 L/D with three patent pending Recirculator mixing elements to compound drugs into the polymer. The Recirculator elements also improved melting performance for a substantial reduction in pressure and the surge suppression characteristics provided remarkably stable pressures.

The Taskmasters have high capacity fan cooling for precision temperature control, a pressure gage to optimize compounding, starve feeders and Randcastle's unique feed section inserts. The extruders are shown connected to the stainless steel feedblock with exterior flow control pins to match flow velocity and compensate for viscosity differences between materials. See the following page for additional pictures of the line.



COEXTRUSION SHEET LINES PHARMACEUTICALS

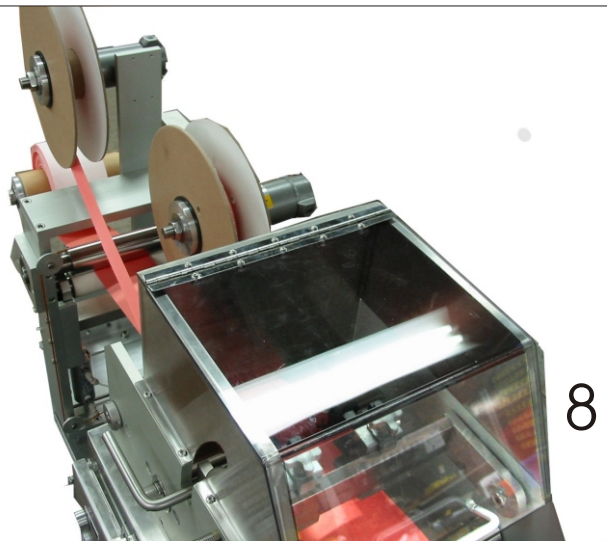


Two 1 inch Taskmaster (1,2) extruders compound the active with the polymer and pump the blend into the stainless steel feedblock (3).

After the feedblock constructs the AB structure, the layered material pumps into the push/pull type stainless steel die (4).

The material enters the stainless steel nip rolls (5) and emerge in the upstack (6).

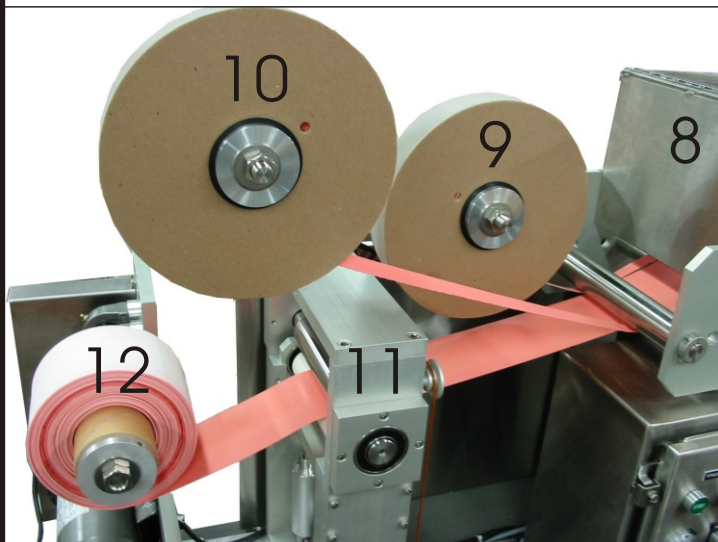
The coextruded sheet enters the stainless steel slitter station (8) where adjustable width knives trim the edges. The safety shield prevents access during operation.



The trimmed AB sheet emerges from the slitter station (8).

Trimmed edges are wound on separately controlled winders (9-10).

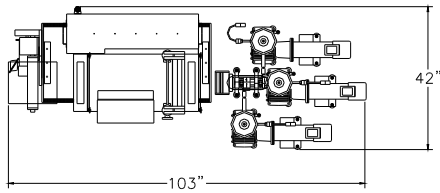
The product is pulled by the nip rolls (11) made of FDA approved rubber and stainless steel and wound. The AB product (12) is white on side and orange on the other side.



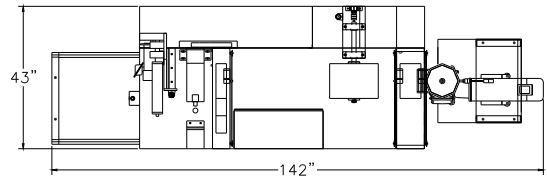
Other Randcastle Lines

In addition to the sheet line, a sample of Randcastle products are shown in the drawings below. These include our exotic 11 layer blown film lines and state of the art 50:1 L/D compounders. Many other standard lines are available and new lines are constantly under development. We welcome calls for custom built machinery.

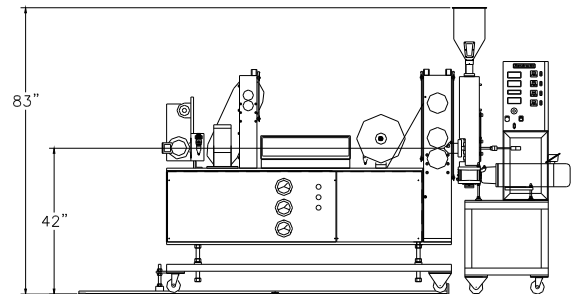
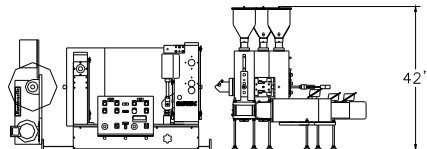
Top View
Coextrusion Line



Top View
Monolayer Line

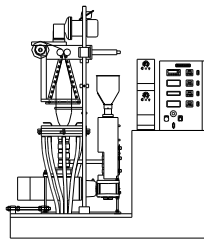


This ABCBA line
is shown with 3
5/8 inch Microtruders

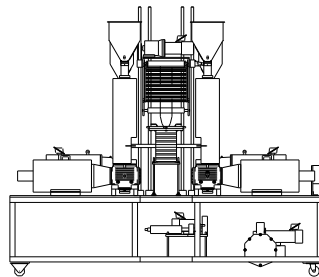


Coextrusion Sheet
5 Layer Bench Line

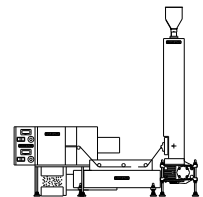
Monolayer Sheet
Floor Model With Laminating Payoff



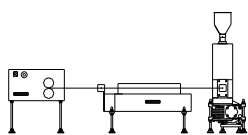
Blown Film
3/4 Inch Dedicated Line



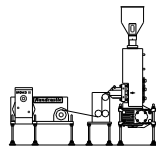
Coextrusion Blown Film
Six Extruder, 11 Layer Line



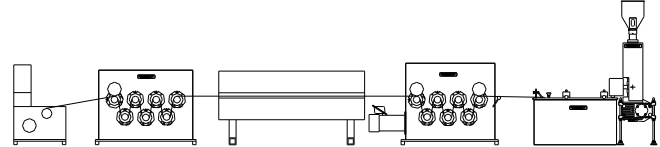
**50/1 L/D
Compounder**



Tubing
Up to Three Layers



Cast Film
Up to 7 layers



Monofilament

SHEET BRO2000.CDR

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