

# Scientific

## Laboratory Film Blowing Line

*Co-Ex Film Blowing lines  
Please see separate catalogue*



Extrusion film blowing line  
type LF-400 with  
extruder LE25-30/C

LF-600 with 45 mm  
extruder blowing  
LDPE



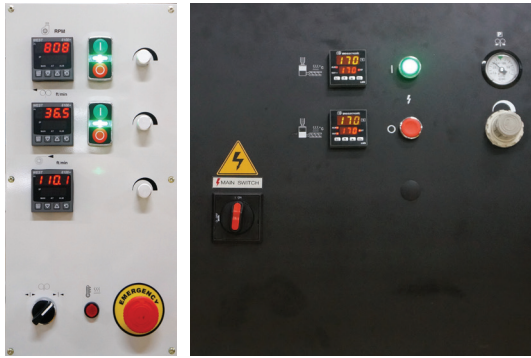
Compact Film Blowing Line  
type LF-250 with  
extruder LE20-30/C



## Labtech Engineering

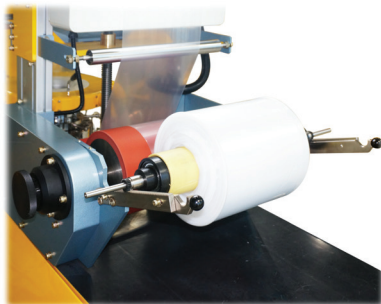
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## Film Blowing Tower Control Panel Features

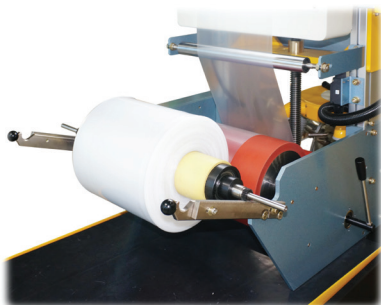


- Two temperatures controllers for film die zones.
- Digital Display for film speed (meter per minute) with scroll buttons to regulate the individual infinite variable speeds of nip-gap rolls and windup.
- Stop/Start buttons for Nip-Rolls, windup and air blower for cooling ring.
- Selector switch for opening and closing of the pneumatically operated nip-roll gap.

A dual channel ring cooler, with airflow created by a 1 HP (high-pressure) turbo blower, is connected to the ring cooler through five hoses, ensuring a very even airflow around the film bubble. The ring cooler is further equipped with two adjustable cooling channels where air at the lower channel makes contact with the film in close proximity after it emerges from the die. The air from the second channel will surround the film upwards over the critical area where the blow up process is completed. The airflow in both rings is easily adjustable by turning the respective ring handle.

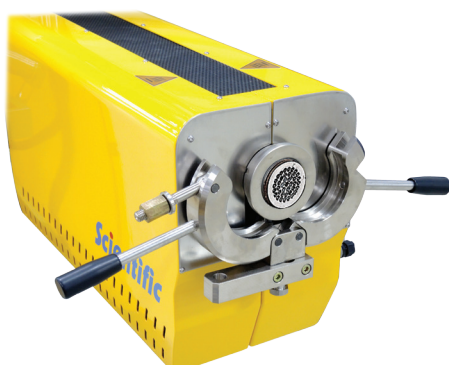


The film wind up device features quick changeover capability of film rolls. The supporting rubber roll can be easily released from the driving roll by pushing the handle shown to the left.

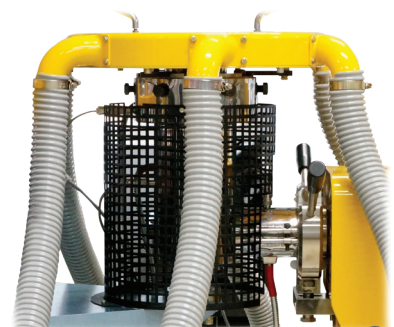


Other windup systems can be supplied optionally, for instance with pneumatic gripping of the bobbins, or with quick expanding bobbins core where the bobbins are fastened with an expansion shaft. It is also possible to use this expansion shaft for a bobbin-free windup system.

The windup nip-rolls are driven with a variable speed AC motor and the tension is regulated with a slip clutch which can be adjusted by turning the knob shown here to the right.



The film blowing die and tower is connected to the extruder with a C-Clamp system. An adaptor is connected the die, which enables a lower position of the die, saving space in height for the film tower. It also gives a more convenient operating position for the die.



## The film blowing line is designed for LDPE, LLDPE and HDPE and comprises of: Film blowing attachment type LF-400 and LF-600 equipped as following:

- Large film tower with twin pillars of rigid extruded aluminum profiles. Sub cabinet of modern pleasing design, which incorporates the control cabinet as well as the blower for the cooling ring. Whole assembly is fitted with four heavy-duty casters where two casters are equipped with brakes.
- Roll width 400 mm for LF-400 and 600 mm for LF-600 that can accommodate film lay flat widths of up to 350 mm for LF-400 and 550 mm for LF-600.
- Pneumatically operated film nip rolls with infinitely variable speed drive and with controls on sub cabinet.
- Optional water cooling of Nip-Rolls
- The die is mounted on the two tower aluminum pillars, adjustable in height to fit extruder flange.
- with a diameter from 40 to 75 mm. For LF 600 the die diameter is available from 80 to 120 mm all based on LLDPE and LDPE.
- For HDPE the line will be supplied with a special die with die diameter around 35 mm for tower LF-400 and a diameter of around 50 mm for tower LF-600
- The film die mandrel is equipped with spider fed spiral flow channels for uniform distribution of polymer melt around entire die area. All internal die parts are hard chromed with high polish. Easy adjustable outer die ring for accurate adjustment of die lip gap centerring.
- Three digital self-tuning temperature controllers for the film die. The controllers are mounted on the sub cabinet to the film tower.
- The film tower equipped with a High Efficiency Dual lip (Duplex) air ring which is recommended for this line where a large output is required for instance when the die is connected to our 40 and 45 mm extruder. The air ring is equipped with air pressure and temperature gauges. Available with inserts for various die diameters. Cooling air is supplied with a large 3 HP variable speed blower.
- The Duplex air ring is designed for LDPE and LLDPE and can be equipped with optional steady flow inserts designed for HDPE.
- Film bubble stabilizing rods as well as synchronous adjustable film collapsing gates are supplied as standard with polished teak rods. Optionally it can be made with smooth carbon fiber rollers or with Teflon rollers.
- Optionally the tower can be equipped with a cage like film guide equipped with Teflon or Carbon Fiber rollers and with central quick adjustment to follow the required film bubble size.
- Friction type surface film wind-up with easy removable bobbins.
- A multitude of guide rollers for downside movement of film.
- Inspection cabinet with lamps placed on downside of film tower. The lamps will shine through the film for easy inspection of film quality.
- The sub cabinet to the film blowing line contains all the electric components for the film tower and a separate control box is mounted on the aluminum pillar, containing temperature controllers for die, up/down motorized height adjustment of tower, speed adjustment of nip rolls and wind up unit, blower speed etc.
- Optionally all towers as well as extruder controls are regulated from a computerized touch screen.
- **Motorized adjustment of film tower height** where the height can be regulated from 3.2 to 4.2 meters. The regulation is done with a geared motor, coupled to a lead screw placed in the center of the tower pillars. The top film tower assembly with the Nip-Rolls are here mounted on nylon slides along the two heavy duty aluminum tower pillars and it will move very steadily up or down.



Tower Down position

Tower Up position

## Compact Film Blowing Line type LF-250 With 20 mm, 30 L/D extruder Type LBE20-30/C

This new line is designed to produce a professional film with optimum dispersion of colourants. The small internal volume of the die coupled to our smallest 20 mm extruders also gives minimum resin usage with fast colour changeovers.

The film blowing attachment is connected to our single screw bench top extruder type LBE20-30 with a C-clamp on the flange to the extruder. The attachment is built up on an individual self-supporting frame with lockable casters and thus can be easily removed from the extruder.



### Film blowing attachment type LF-250 is equipped as following:

- 2.05 meter high film tower with twin pillars of rigid extruded aluminum profiles. Sub cabinet of modern pleasing design, which incorporates the control cabinet as well as the blower for the cooling ring. Whole assembly is fitted with four heavy-duty casters where two casters are equipped with brakes.
- Roll width 250 mm that can accommodate film lay flat widths of up to 200 mm.
- Pneumatically operated film nip rolls with controls on subcabinet. Standard distance between Nip-Roll and Die is 1 meter
- Straight in line adaptor between extruder and die
- Standard die lip sizes of either 30 or 40 mm
- Standard die lip opening is 0.8 mm. Can also be equipped with any opening from 0.6 to 1.2 mm
- Film die where the mandrel is equipped with spider fed spiral flow channels for uniform distribution of polymer melt around entire die area. All internal die parts are hard chromed with high polish. Easy centering of die opening for accurate film thickness control. The die is made for optimum ease of cleaning, using minimum resin for purging when changing over from one colour to another.
- Two digital self-tuning temperature controllers, one for film die and the other for the flange for the extruder. The controllers are mounted on the sub cabinet to the film tower.
- Single channel cooling ring with optimum cooling efficiency. Air supplied from a 1 HP turbo blower.
- Film bubble stabilizing rods as well as synchronous adjustable film collapsing gates with polished teak wood gate rods.
- Infinitely variable speed drive of nip rolls
- Three guide rollers for downside movement of film.

### Brief Technical Data On Film Blowing Attachment

	LF-250	LF-400	LF-600
Maximum film lay flat width :	200 mm	350 mm	550 mm
Film speeds, meter per minute :	Haul Off Nip-Rolls 0 to 15 Wind-Up 0 to 15	Haul Off Nip-Rolls 0 to 35 Wind-Up 0 to 40	Haul Off Nip-Rolls 0 to 35 Wind-Up 0 to 40
Standard film die diameter : (others on request)	30 mm (giving a film diameter of 50 mm)	50 mm (giving a film diameter of 76 mm)	100 mm (giving a film diameter of 90 mm)
Standard cooling ring, for die diameters :	20-30 mm (others on request)	40 to 70 (others on request)	80-120 mm (others on request)
Height from die to Nip-Roll :	925-1185 mm (others on request)	950 -1210 mm (others on request)	2,000 - 3,000 mm (others on request)
Total height of film tower :	2050-2310 mm (others on request)	2,400-2660 mm (others on request)	3,200 - 4,200 mm (others on request)
Total electrical power :	4.9 kW	5.0 kW	11.0 kW