EXTRUSION

ISO 9001-2000

CE

SHEET EXTRUSION LINE

FONG KEE IRON WORKS CO., LTD.

FKI Offers the Most Adaptable Sheet Extrusion Lines for Various Industries - with a Wide Range of Applications:

PP SHEET MAKING MACHINE >>>

(FOR THERMO FORMING PURPOSES)

For vacuum/thermo forming purposes, disposable cups and dishes, food and fruit plates, and trays.
PP: 0.20 mm. - 1.40 mm. or 0.40 mm. - 1.40 mm.
HIPS: 0.2 mm. - 2.0 mm.

Model FK/SE/PP-125-1500

PET SHEET EXTRUSION LINE >>>

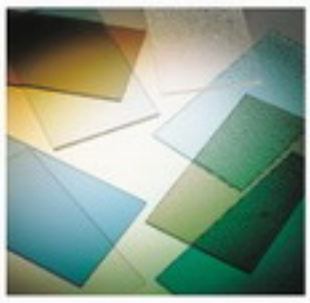
(FOR VACUUM THERMO FORMING PURPOSES)

For thermo forming purposes, blister packing and food trays.
PET: 0.1 mm . - 0.3 mm. and 0.25 mm. - 1.20 mm.

Model FK/SET-100-1500

PC/PMMA SHEET MAKING MACHINE >>>

For roofing and decoration purposes.
PC: 1.0 mm. - 6.0 mm.



Model FK/SE-125-1300-PC

Common Features for FKI's Sheet Extrusion Line:

The people, the knowledge, the experience, the strong dedication, ISO quality assurance manufacturing management and a responsible service attitude - all this forms a complete package to meet all your needs for sheet extrusion lines.

With 50 years of experience we are to offer a reliable, robust and innovative sheet extrusion line. A wide range of sheet extrusion lines are available which are flexible to cover all your needs - featuring superior design and performance to meet your specific requirements. Our sheet extrusion lines are designed and built for maximum reliability, versatility and production efficiency.

PP STATIONERY SHEET MAKING MACHINE >>>

For file and stationery usage.
PP: 0.12 mm. - 0.30 mm. and 0.35 mm. - 1.4 mm.

Model FPP-100-1300

ABS/HIPS SHEET MAKING MACHINE >>>

For thermo forming purposes, inner layers for refrigerators and bathroom closets.
ABS/PS: 1.0 mm. - 6.0 mm.

Model FK/SE-125-1500

MULTI LAYER CO-EXTRUSION SHEET LINE >>>

For cost saving on raw materials.
Generates recycled materials with a three-layer or five - layer co-extrusion system.
For special functions as barrier features five-layer or seven-layer co-extrusion system.

Model FSE-125/90/65-1500

1. Extruder and Extruder Frame

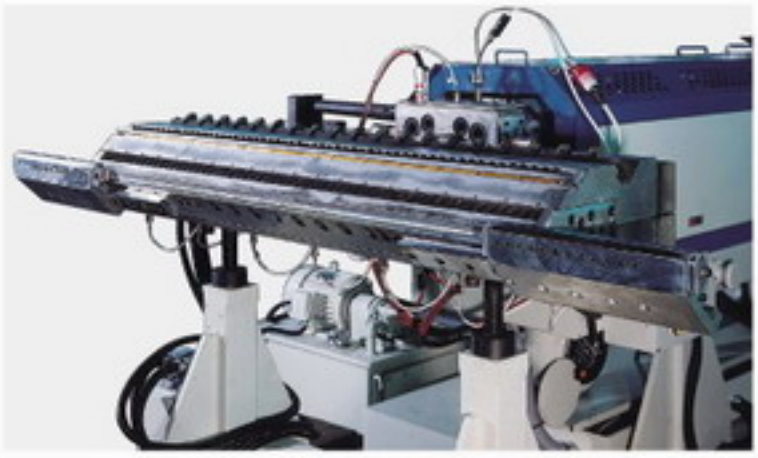
The extruder is mounted on a heavy duty and robust steel frame to ensure a stable and vibration-free performance. The extrusion unit consists of a heated and cooled screw and barrel assembly driven by a double reduction helical gear box coupled by V-belts to a variable speed DC motor or AC motor with inverter control. Heating is achieved either by electrical mica heaters or an aluminum casting heater and cooling is done either by air cooled through air fan or with a closed loop water cooling circuit.

There is a screw with grooved feed zone to enable high output rates; or venting design for hygroscopic polymers; or barrier flight design with shearing and mixing section as to achieve optimum plasticizing and homogenizing performance; or combination design to process various polymers without change.

Co-extrusion extruders sit on a common base frame which is convenient for both cable/wire piping and operator maintenance. Feed pipes connected to the feed block and extruders are neat and well arranged to allow sufficient space for operation and maintenance.

2. Sheet T-die/Flat Dies

The well mixed melting polymer from the extruder will be formed into a melt curtain through the T-die which is fed to the polishing roll stack. FKI's sheet T-die is designed based on rheology and our long years of empirical data with the right steel and machining work done on the surface to give the optimum flow channel. Flexible lower die lip is a standard design when different sheet thicknesses are to be produced. Internal and external deckling device are available upon request to reduce the slot width.



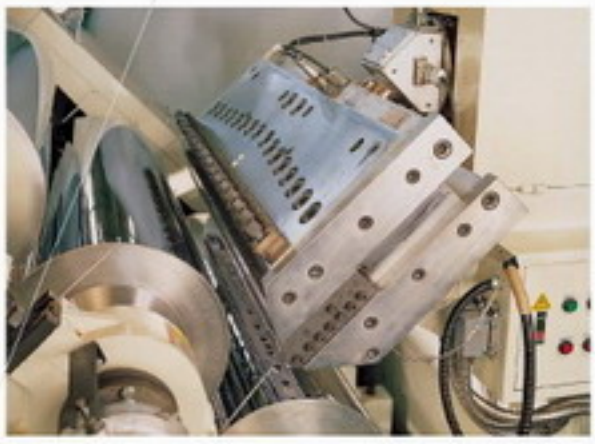
3. Polishing Roll Stack Unit

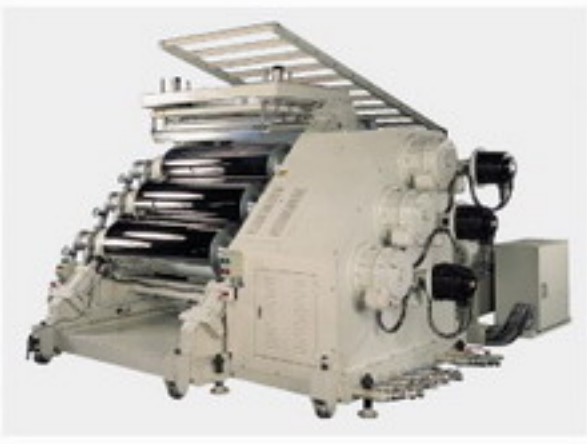
Important factors to achieve the best quality sheet surface are as following. Individual and direct drive for each roll by AC motor, with inverter control, ensures high precision speed control and fully synchronized operations - which eliminate roll marks. High precision temperature control and optimum design on cooling circuit ensure an even temperature for the whole roll width via water or oil mediums.

Roll surfaces to be highly glossy polished, semi-matt treated or texture embossed are available as options. A spacer is provided for changing the roll gap for different sheet thicknesses and features simple operation to achieve the best result.

There can be different arrangements for the roll stack, such as: vertical, horizontal, or 45 degree inclined according to the polymer and sheet thickness to be processed.

For thin sheet production, air knives can be added, along with two polish roll stacks, to achieve the best result.





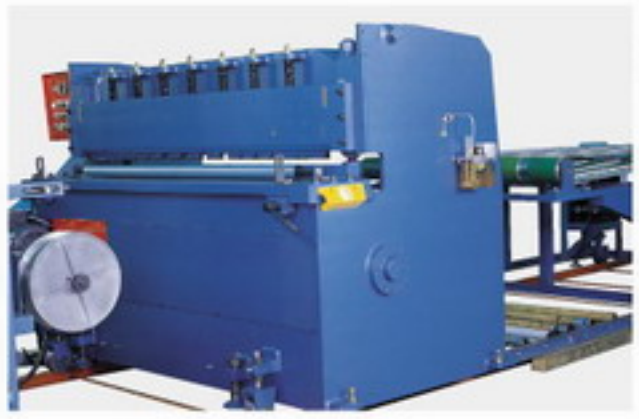
4. Winder

There are different designs available to choose from, based on the sheet rigidity and thickness, as well as the final winding diameter. Types such as, the turret-type with manual cut, fully automatic cut and change over-type and jumbo reel-type for finished reels up to 1,500 mm. in diameter. The drive is with either a DC torque motor, an AC motor with inverter control or adding load cell for accurate tension control are available for choice.

5. Automatic Cutter

Based on the polymer and sheet rigidity, either guillotine-type or saw-cutting-type will be recommended for sheet that is too thick to wind up or sheet that is required to be cut into pieces.

There is hydraulic control for cutting operations with a photo cell for measuring sheet length. Cutting knife forwarding movement is controlled by the magnetic clutch and gear rack to ensure smooth production. Backward movement is controlled pneumatically.



6. Ancillary Equipment

The melt gear pump maintains and provides a consistent pressure and volume of melt from the extruder to the die head even if there is a surge and screw beating occurs due to different polymers. There are some critical polymers that are highly recommended to use melt gear pumps, such as PP, PC and PET. We adopt melt gear pumps from leading European and American suppliers.

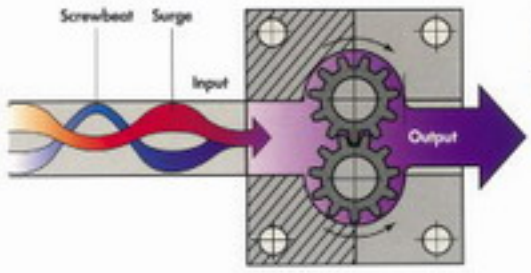
Lamination Unit

An optional device is located at either the top of or the bottom of the polish roll stack to unwind decorative film or protective paper onto the sheet surface during the sheet forming process.

6-1 Sheet Thickness Measurement Device

As an option, measuring gauges and devices can be added upon request to ensure ultimate and consistent quality control for mass production. Radio-activated sensors such as Gamma or Beta are available. Non-radio-activated sensors, such as infrared sensors are more popular these days as another choice for better convenience.

6-2 Gear Pump

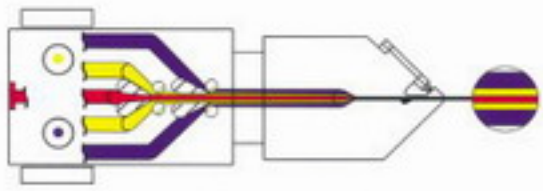


6-3 De-humidifier For PET and PC Machines

6-4 In-line Edge Trim Recycle Device

A device is used to regrind the edge trimmed wastage and feed back directly to the extruder hopper and consists of a granulator, feeding screw, silo tank and feeding pipes.

6-5 Co-extrusion Feed Block and T-Die



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AGENT:

SHEET-0-2006-1-1000E

ABS/HIPS SHEET MAKING MACHINE >>>

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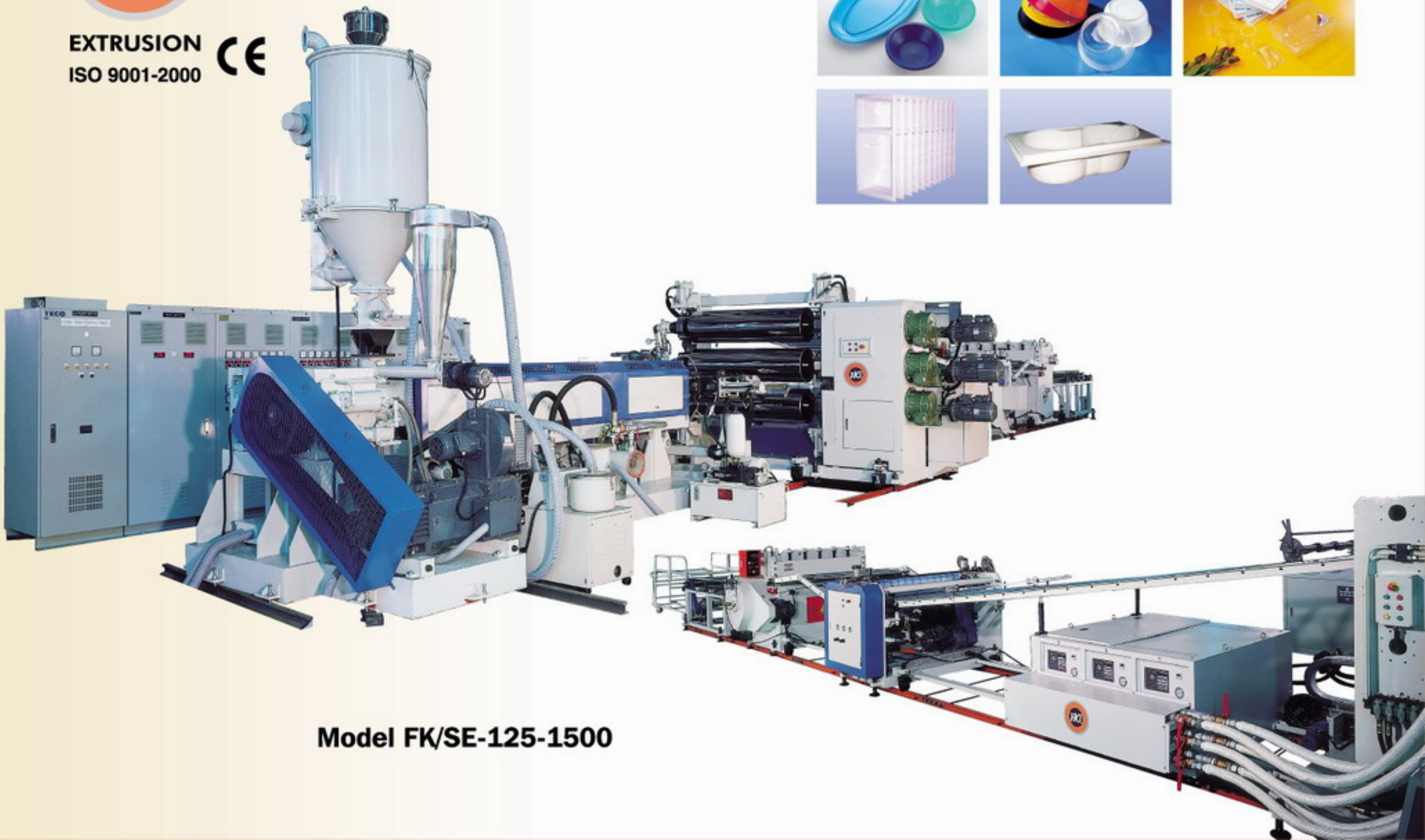
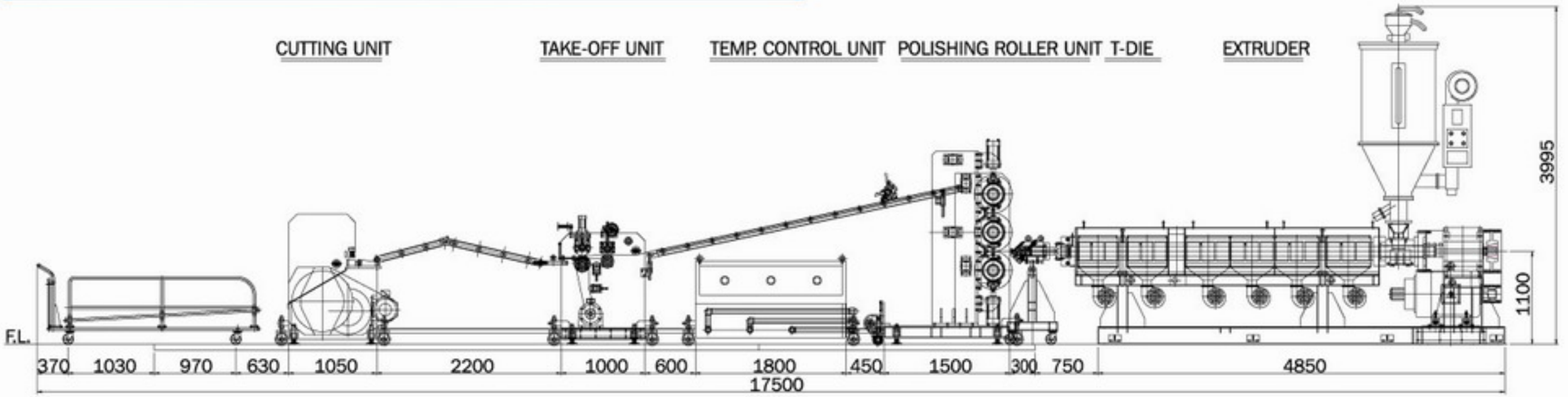


Model FK/SE-125-1500

MACHINE LAYOUT MODEL:FK/SE-125-1500



TECHNICAL DATA:

MODEL		FK/SE-75	FK/SE-100	FK/SE-125	FK/SE-150
Extruder					
Screw dia.	mm	75	100	125	150
Screw L/D		32	32	32	32
Main drive	kw	55 ~ 60	75 ~ 93	112 ~ 150	150 ~ 187
Heating capacity	kw	50	64	78	114
Temp. control	zone	5	5	6	6
Output	kg/hr	130 ~ 150	200 ~ 250	280 ~ 350	450 ~ 550
T-Die					
Lip width	mm	1000 / 1200 / 1400 / 1800 / 2200			
Product width	mm	800 / 1000 / 1200 / 1600 / 2000			
Product thickness	mm	0.2 ~ 8			
Temp. control	zone	5 / 7 / 7			
3 Roll stack					
Roller width	mm	1100 / 1300 /1500 / 1900 / 2300			
Roller diameter	mm	350 / 400			
Drive motor	hp	2+3+2 / 3+5+3 / 5+5+5			
Speed range	m/min	0.5 ~ 12			
Heat / Cool unit					
Media		water circulation			
Heating capacity	kw	18 x 3 / 21 x 3			
Temp. control	zone	3			
Pump	hp	5 hp x 3 / 7.5 hp x 3 / 10 hp x 3			
Take-off unit					
Drive motor	hp	3 / 3 / 5			
Line speed	m/min	0.5 ~ 12			
Cutting Unit					
Main drive	hp	5 / 5 / 7.5 / 10 / 10			

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®

EXTRUSION
ISO 9001-2000 CE

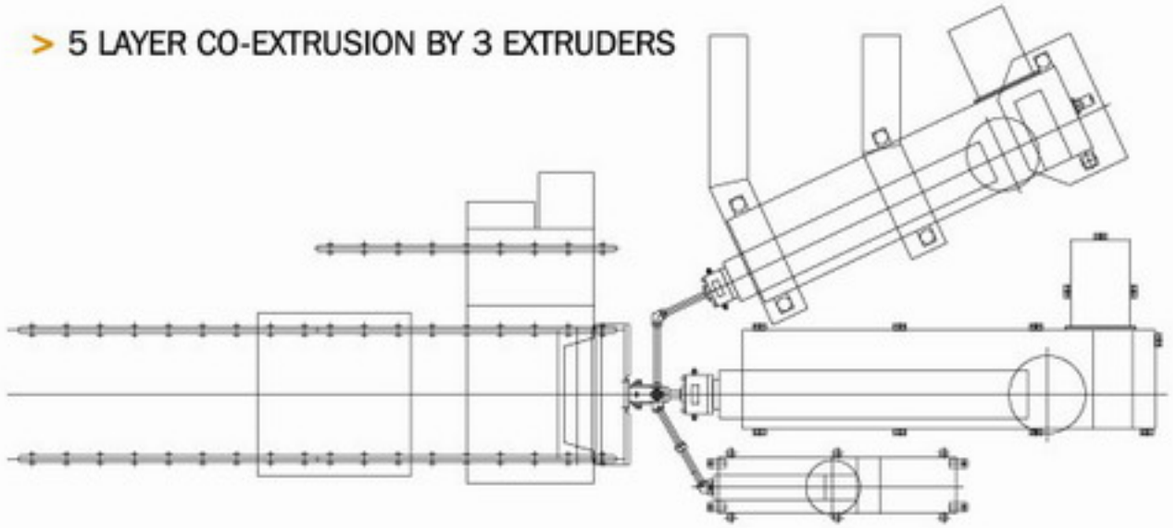
MULTI LAYER CO-EXTRUSION SHEET LINE >>>

> CO-EXTRUSION FEED BLOCK & T-DIE

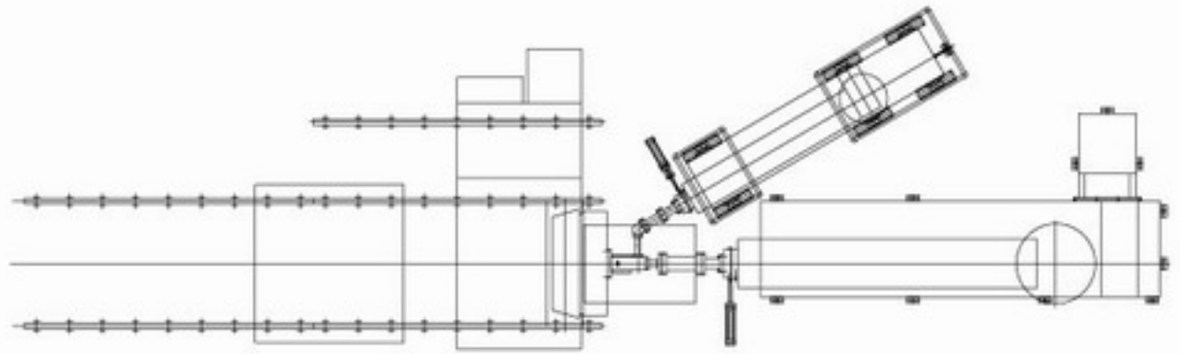
Model FSE-125/90/65-1500

MACHINE LAYOUT MODEL:FSE-125/90/65-1500

> 5 LAYER CO-EXTRUSION BY 3 EXTRUDERS



> 3 LAYER CO-EXTRUSION BY 2 EXTRUDERS



TECHNICAL DATA:

MODEL		TSE- 55 / 125- 1300		FSE- 45 / 125 / 100 -1500		
Extruder						
Screw dia.	mm	55	125	45	125	100
Screw L/D		32	32	32	32	32
Main drive	kw	30	112.5	22.5	112.5	75
Heating capacity	kw	28	76	8.4	76	52
Temp. control	zone	4	6	4	6	5
Output	kg/hr	50	450	40	450	300
T-Die						
Lip width	mm	1200		1400		
Product width	mm	1000		1200		
Product thickness	mm	1.0 ~ 6.0		1.0 ~ 6.0		
Heating capacity	kw	19		22		
Temp. control	zone	5		7		
3 Roll stack						
Roller width	mm	1300		1500		
Roller diameter	mm	400		400		
Drive motor	hp	3 / 5 / 3		5 / 5 / 5		
Speed range	m/min	0.6 ~ 6.0		0.6 ~ 6.0		
Heat / Cool unit						
Media		water circulation		water circulation		
Heating capacity	kw	18 x 3		18 x 3		
Temp. control	zone	3		3		
Pump	hp	5 x 3		5 x 3		
Take-off unit						
Drive motor	hp	3		3		
Line speed	m/min	0.6 ~ 6.0		0.6 ~ 6.0		
Winding unit						
Drive motor	hp	3 x 2		3 x 2		
Winding diameter	mm	450 (max.)		450 (max.)		

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AGENT:

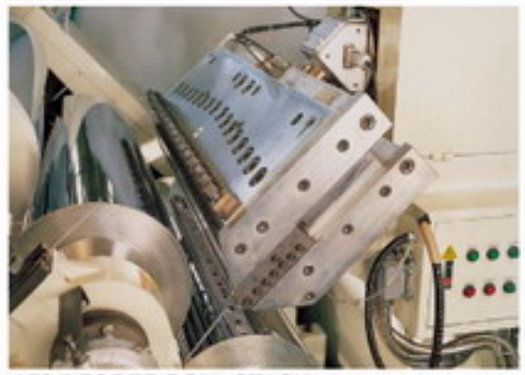
FKTSE-1-2005-12-2000E

PET SHEET EXTRUSION LINE >>>

(FOR VACUUM THERMO FORMING PURPOSE)

EXTRUSION
ISO 9001-2000 CE

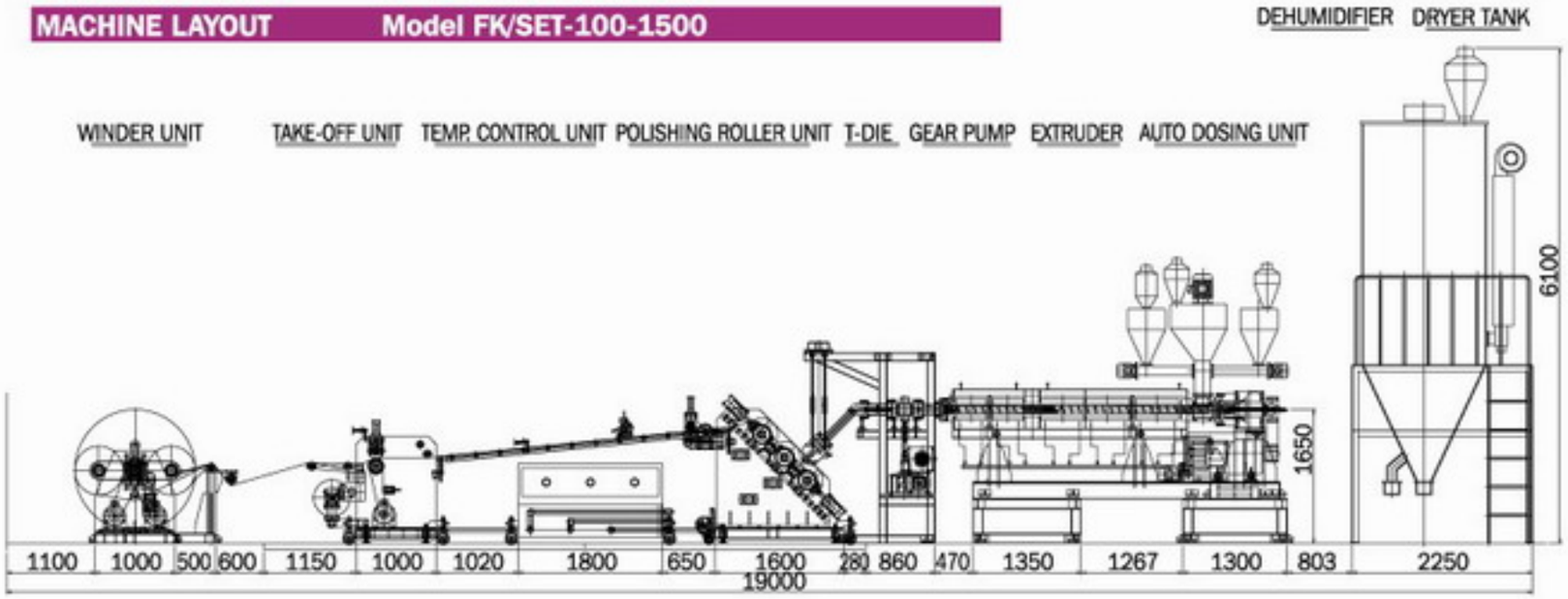
HORIZONTAL ROLL STACK



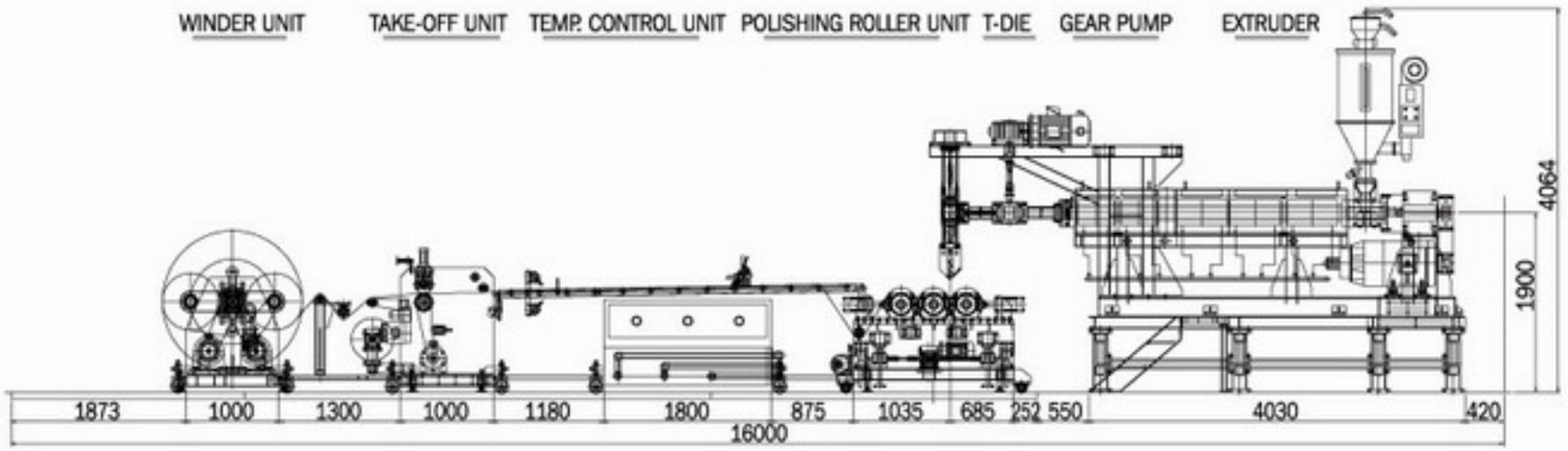
45° DEGREE ROLL STACK

Model FK/SET-100-1500

MACHINE LAYOUT Model FK/SET-100-1500



MACHINE LAYOUT Model FK/SET-100-1200



TECHNICAL DATA:

MODEL		FK/SET-100-1200	FK/SET-100-1500
Extruder			
Screw Dia.	mm	100	100
Screw L/D		32	32
Main Drive	kw	75	75
Heating Capacity	kw	70.5	70.5
Temp. Control	zone	5	5
Output	kg/hr	250	300
T-Die			
Lip Width	mm	1150	1400
Product Width	mm	950	1200
Product Thickness	mm	0.13~0.25	0.25~1.2
Heating Capacity	kw	21	28
Temp. Control	zone	5	5
3 Roll Stack			
Roller Width	mm	1400	1500
Roller Diameter	mm	400	400
Drive Motor	hp	3 / 5 / 3	3 / 5 / 3
Speed Range	m/min	2.0~20	0.6~12
Heat / Cool Unit			
Media		water circulation	water circulation
Heating Capacity	kw	18 x 3	18 x 3
Temp. Control	zone	3	3
Pump	hp	5 x 3	7.5 x 3
Take-Off Unit			
Drive Motor	hp	3	3
Line Speed	m/min	2.0~20	0.6~12
Winding Unit			
Drive Motor	hp	3 x 2	3 x 2
Winding Diameter	mm	450	450
Utilities			
Total Power Consumption	kw	340	230
Average Power Consumption	kw	150	140
Space for Machine	m	19 x 6.5 x 4.5	19 x 6.5 x 6.1

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AGENT:

PP SHEET MAKING MACHINE >>>

(FOR THERMO FORMING PURPOSE)

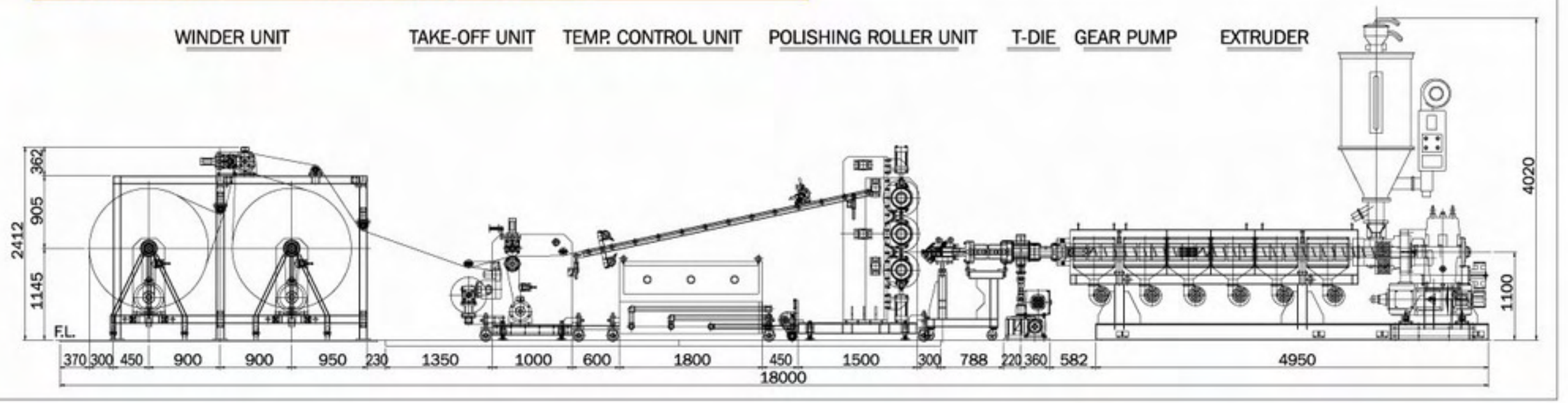
EXTRUSION
ISO 9001-2000 CE

STANDARD ROLL WINDER

JUMBO ROLL WINDER

Model FK/SE/PP-125-1500

MACHINE LAYOUT Model FK/SE/PP-125-1500



TECHNICAL DATA:

MODEL		FK/SE/PP-75	FK/SE/PP-100	FK/SE/PP-125	FK/SE/PP-150
Extruder					
Screw dia.	mm	75	100	125	150
Screw L/D		32	32	32	32
Main drive	kw	45 ~ 56	75 ~ 93	112 ~ 150	262 ~ 300
Heating capacity	kw	50	64	78	114
Temp. control	zone	5	5	6	6
Output	kg/hr	100 ~ 140	180 ~ 230	280 ~ 350	700 ~ 750
T-Die					
Lip width	mm	1000 / 1400			1700
Product width	mm	800 / 1200			750 x 2
Product thickness	mm	0.5 ~ 1.2			0.5 ~ 1.2
Heating capacity	kw	21+27 / 28+34			34+38
Temp. control	zone	5 / 7			7
3 Roll stack					
Roller width	mm	1100 / 1500			1800
Roller diameter	mm	350 / 400			450
Drive motor	hp	2+3+2 / 3+5+3			5+5+5
Speed range	m/min	0.5 ~ 12			0.5 ~ 12
Heat / Cool unit					
Media		water circulation			water circulation
Heating capacity	kw	18 x 3 / 21 x 3			21 x 3
Temp. control	zone	3			3
Pump	hp	5 hp x 3			10 hp x 3
Take-off unit					
Drive motor	hp	3 / 3			3
Line speed	m/min	0.5 ~ 12			0.5 ~ 12
Winding unit					
Drive motor	hp	3 x 2 / 7.5 x 2			7.5 x 4
Winding diameter	mm	450 / 1000			1500

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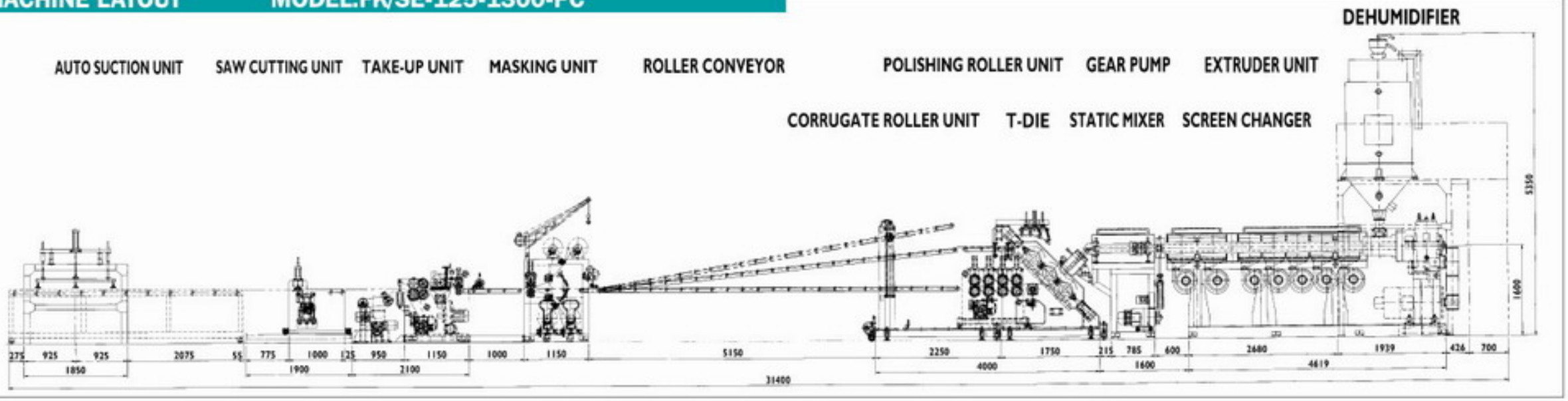
PC/PMMA SHEET MAKING MACHINE >>>

3 Roll stack at
inclined configuration

Model FK/SE-125-1300-PC

MACHINE LAYOUT MODEL:FK/SE-125-1300-PC



TECHNICAL DATA:

MODEL		FK/SE-125-1300-PC	FK/SE-150-2100-PC
Extruder			
Screw Diameter	mm	125	150
Screw L/D		35	35
Main drive	kw	150	225
Temp. control	zone	7 (PID+SCR)	8 (PID+SCR)
Output	kg/hr	220-300	500 (max.)
T-Die			
Lip width	mm	1200	2000
Product width	mm	(Plain) max.1000 (Corrugated) max.680	(Plain) max.1800 (Corrugated) max.1500
Product thickness	mm	(Plain) 1.0-6.0 (Corrugated) 0.8-2.9	(Plain) 1.0-6.0 (Corrugated) 0.8-2.9
Temp. control	zone	7	9
3 Roll stack			
Roller width	mm	1300	2100
Roller diameter	mm	400	500
Drive motor	hp	5 / 5 / 5	7.5 / 10 / 7.5
Speed range	m/min	0.6 ~ 6.0	0.6 ~ 6.0
Heat / Cool unit			
Media		water circulation	water circulation
Heating capacity	kw	30	40
Temp. control	zone	3	3
Pump	hp	10	15
Take-off unit			
Drive motor	hp	5	10
Line speed	m/min	0.6 ~ 6.0	0.6 ~ 6.0
Power Consumption			
Max.	kw	534	615
Average	kw	374	430

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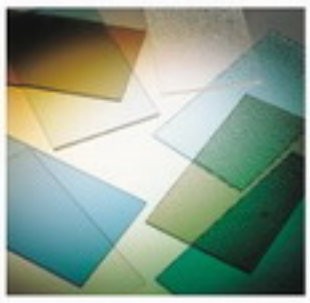

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Generates recycled materials with a three-layer or five - layer co-extrusion system.
For special functions as barrier features five-layer or seven-layer co-extrusion system.

Model FSE-125/90/65-1500

1. Extruder and Extruder Frame

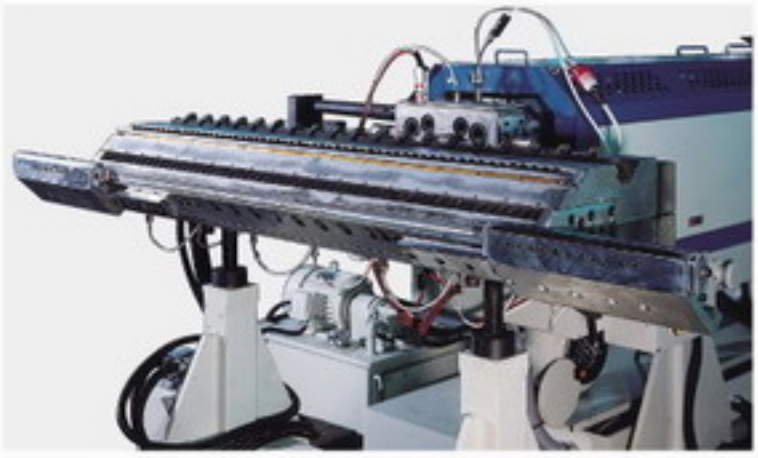
The extruder is mounted on a heavy duty and robust steel frame to ensure a stable and vibration-free performance. The extrusion unit consists of a heated and cooled screw and barrel assembly driven by a double reduction helical gear box coupled by V-belts to a variable speed DC motor or AC motor with inverter control. Heating is achieved either by electrical mica heaters or an aluminum casting heater and cooling is done either by air cooled through air fan or with a closed loop water cooling circuit.

There is a screw with grooved feed zone to enable high output rates; or venting design for hygroscopic polymers; or barrier flight design with shearing and mixing section as to achieve optimum plasticizing and homogenizing performance; or combination design to process various polymers without change.

Co-extrusion extruders sit on a common base frame which is convenient for both cable/wire piping and operator maintenance. Feed pipes connected to the feed block and extruders are neat and well arranged to allow sufficient space for operation and maintenance.

2. Sheet T-die/Flat Dies

The well mixed melting polymer from the extruder will be formed into a melt curtain through the T-die which is fed to the polishing roll stack. FKI's sheet T-die is designed based on rheology and our long years of empirical data with the right steel and machining work done on the surface to give the optimum flow channel. Flexible lower die lip is a standard design when different sheet thicknesses are to be produced. Internal and external deckling device are available upon request to reduce the slot width.



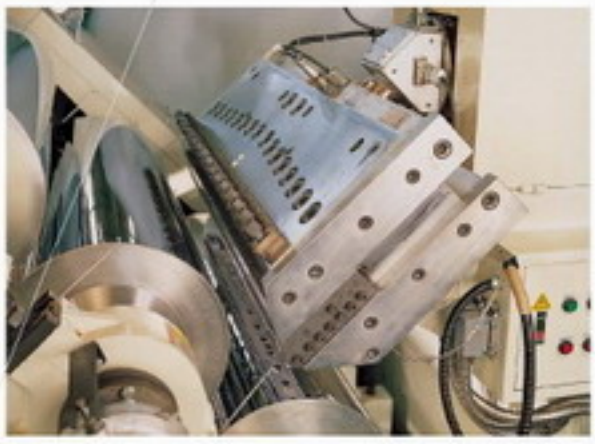
3. Polishing Roll Stack Unit

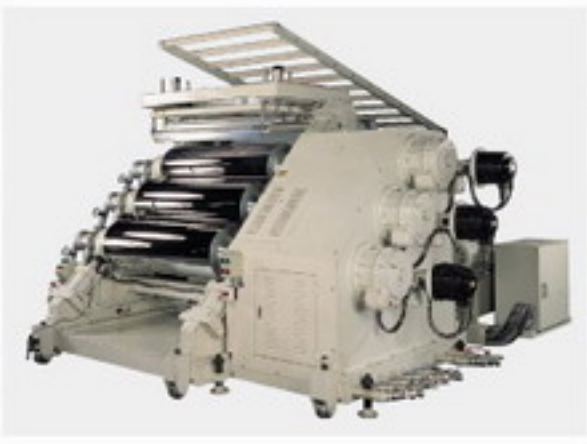
Important factors to achieve the best quality sheet surface are as following. Individual and direct drive for each roll by AC motor, with inverter control, ensures high precision speed control and fully synchronized operations - which eliminate roll marks. High precision temperature control and optimum design on cooling circuit ensure an even temperature for the whole roll width via water or oil mediums.

Roll surfaces to be highly glossy polished, semi-matt treated or texture embossed are available as options. A spacer is provided for changing the roll gap for different sheet thicknesses and features simple operation to achieve the best result.

There can be different arrangements for the roll stack, such as: vertical, horizontal, or 45 degree inclined according to the polymer and sheet thickness to be processed.

For thin sheet production, air knives can be added, along with two polish roll stacks, to achieve the best result.





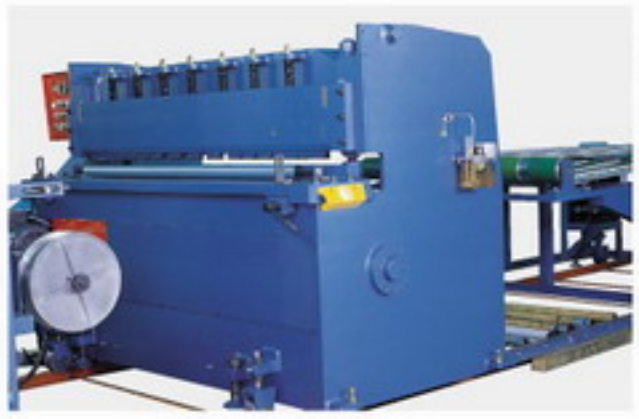
4. Winder

There are different designs available to choose from, based on the sheet rigidity and thickness, as well as the final winding diameter. Types such as, the turret-type with manual cut, fully automatic cut and change over-type and jumbo reel-type for finished reels up to 1,500 mm. in diameter. The drive is with either a DC torque motor, an AC motor with inverter control or adding load cell for accurate tension control are available for choice.

5. Automatic Cutter

Based on the polymer and sheet rigidity, either guillotine-type or saw-cutting-type will be recommended for sheet that is too thick to wind up or sheet that is required to be cut into pieces.

There is hydraulic control for cutting operations with a photo cell for measuring sheet length. Cutting knife forwarding movement is controlled by the magnetic clutch and gear rack to ensure smooth production. Backward movement is controlled pneumatically.



6. Ancillary Equipment

The melt gear pump maintains and provides a consistent pressure and volume of melt from the extruder to the die head even if there is a surge and screw beating occurs due to different polymers. There are some critical polymers that are highly recommended to use melt gear pumps, such as PP, PC and PET. We adopt melt gear pumps from leading European and American suppliers.

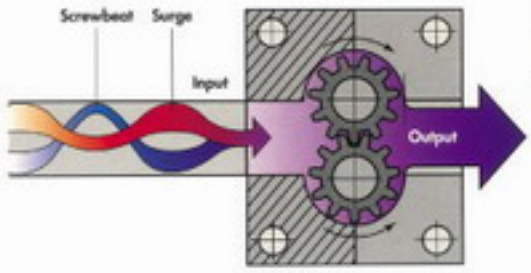
Lamination Unit

An optional device is located at either the top of or the bottom of the polish roll stack to unwind decorative film or protective paper onto the sheet surface during the sheet forming process.

6-1 Sheet Thickness Measurement Device

As an option, measuring gauges and devices can be added upon request to ensure ultimate and consistent quality control for mass production. Radio-activated sensors such as Gamma or Beta are available. Non-radio-activated sensors, such as infrared sensors are more popular these days as another choice for better convenience.

6-2 Gear Pump

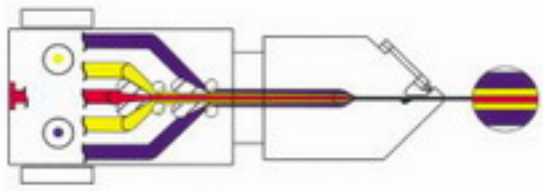


6-3 De-humidifier For PET and PC Machines

6-4 In-line Edge Trim Recycle Device

A device is used to regrind the edge trimmed wastage and feed back directly to the extruder hopper and consists of a granulator, feeding screw, silo tank and feeding pipes.

6-5 Co-extrusion Feed Block and T-Die



An ISO 9001-2000 Company

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