

Single Screw Lab Extruder

Laboratory Extrusion Built to Perform Beyond the Lab

MODEL - SSLE 25/25



MACHINE HIGHLIGHTS

Designed specifically for laboratory and pilot-scale extrusion trials

Excellent melt stability and process repeatability for reliable data

Industrial-grade mechanical construction in a compact footprint

Fast material changeover with simplified cleaning and maintenance access

Operator-safe, lab-friendly design with intuitive controls

Built to support scale-up confidence with controlled, consistent sample output

[Engineered for laboratories that demand production-ready results.]

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APPLICATIONS

MATERIAL & FORMULATION DEVELOPMENT

- ♦ Polymer formulation trials (base resin + additives)
- ♦ Masterbatch and additive evaluation (stabilizers, pigments, fillers)
- ♦ Compound screening for performance testing and cost optimization

PROCESS DEVELOPMENT & VALIDATION

- ♦ Establishing processing windows (temperature profile, screw speed, output)
- ♦ Repeatability trials and process parameter optimization
- ♦ Tooling trials for tubing, profile, strand, and coating applications

PILOT-SCALE SAMPLING & SCALE-UP SUPPORT

- ♦ Producing controlled samples for lab testing and customer approvals
- ♦ Pilot runs to validate performance before production-scale extrusion
- ♦ Short-run sample production for R&D, marketing, and field testing

INSTITUTIONAL & INDUSTRIAL R&D

- ♦ University research projects and teaching labs
- ♦ Industrial development labs for new materials and process improvement
- ♦ Evaluation of PVC, PE, PP, TPE/TPV, EVA (material-dependent screw design recommended)

TECHNICAL SPECIFICATIONS

Extruder Type	: Single screw lab extruder (R&D / pilot scale)
Screw Diameter	: 25 mm
L/D Ratio	: 25 : 1
Output Capacity	: 5 - 12 kg/hr (depending on material, tooling, and process conditions)
Compatible Materials	: PVC (rigid/flexible), PE, PP, TPE/TPV, EVA (material-dependent screw design recommended)
Screw & Barrel Construction	: Alloy steel, nitrided; smooth melt-flow geometry for stable extrusion
Drive Motor Power	: 3.7 - 5.5 kW
Speed Control	: VFD-controlled screw speed for precise output tuning
Heating Zones	: 3 - 4 zones with band heaters
Temperature Control	: PID controllers with $\pm 1^{\circ}\text{C}$ accuracy (stable melt temperature control)
Tooling Interface	: Die / adaptor set suitable for lab tooling (tubing/profile/strand/coating as required)
Cooling / Calibration	: SS vacuum calibration tank with water cooling (for dimensional control on tubing/profile)
Haul-off Unit	: Precision belt / caterpillar haul-off, synchronized speed control
Cutting System	: Online cutter / manual cutter for samples and short runs
Electrical Supply	: 415V / 230V, 3-Phase, 50 Hz

Laboratory Heater-Cooler Mixer

ETHSM SERIES



Fast, Repeatable
Compounding Trials -
From Heat to Cool in
One System

MACHINE HIGHLIGHTS

- ✦ **Production-relevant mixing in a lab footprint** that helps reduce scale-up risk
- ✦ **Small-batch testing capability** to cut material consumption and development cost
- ✦ **Repeatable process conditions** for dependable, comparable trial data
- ✦ **Faster cycle turnaround** using heating-to-cooling operation for quicker iteration
- ✦ **Industrial-inspired mixing geometry** with a tapered cylindrical bowl for uniform flow behavior
- ✦ **High-shear rotor performance** for faster, more consistent blend quality
- ✦ **Digital control over RPM, temperature, and timing** for precise experimentation
- ✦ **Quick-action bottom discharge** to simplify emptying and speed up cleaning
- ✦ **Low-noise, vibration-managed drive design** for comfortable daily lab use
- ✦ **ROI-focused operation** with trial-cost reduction potential (up to ~60% versus full-scale runs, process dependent) and long service life with low maintenance

[Engineered for laboratories that need consistent blends and faster development cycles.]

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APPLICATIONS

- ♦ Masterbatch trials (color & additive dispersion)
- ♦ Pigment / filler dispersion studies
- ♦ Additive blending (stabilizers, lubricants, slip, antiblock, processing aids)
- ♦ Polymer homogenization (PE, PP, PVC, EVA)
- ♦ Biodegradable / compostable formulation trials
- ♦ Lab validation before scale-up and production trials

TECHNICAL SPECIFICATIONS

Model	ETHSM-5L	ETHSM-10L
Working Capacity	5 Liters	10 Liters
Drive Motor	3 HP	5 HP
Material Compatibility	PE, PP, PVC, EVA, biodegradable polymers	
Control System	Digital temperature & RPM control	
Mixing Cycle	Dual-stage: Heating + Cooling	
Temperature Range	Ambient to 250°C	
Mixing Speed	Variable up to 1500 RPM	
Mixing Chamber	Stainless steel, mirror finish	
Discharge System	Quick-action bottom valve	
Safety Systems	Overload protection, lid interlock, motor protection relay	

Laboratory Mono-Layer Blown Film Lines

Lab Film Trials That Translate to Production



MACHINE HIGHLIGHTS

Laboratory-scale systems designed on proven industrial extrusion principles

Uniform film thickness with stable, repeatable bubble control

Compact footprint optimized for R&D and academic environments

Flexible configurations for mono-layer blown and cast film trials

Operator-safe, research-focused machine design

Designed for fast trials, controlled sampling, and scale-up decision-making

[From laboratory trials to production-ready films.]

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APPLICATIONS

- ♦ Packaging film R&D
- ♦ Polymer and resin development
- ♦ Process optimization trials
- ♦ Academic and industrial research
- ♦ Pilot-scale validation

TECHNICAL SPECIFICATIONS

MODEL	ET-20/250		ETLB-25/350	
Machine Type	Laboratory, mono-Layer Blown Film machine		Laboratory Mono-Layer Blown / Cast Machine	
Resin Type	LDPE, LLDPE, HDPE, PP		LDPE, LLDPE, HDPE, PP	
Film Width	100 - 200 mm		100-300 mm	
Film Thickness	15-150 µm		30 - 150 µm	
Extrusion Capacity	6 Kg/hr		8 Kg/hr	
Extruder	Size	20 mm barrier screw	Size	25 mm barrier screw
	Design	Universal screw	Design	Universal screw
	Drive	2.2 kw	Drive	3.7 kw
Die Head	50 mm Vertical spiral die to ensure uniform distribution		50 mm spiral die mandrel (Blown), 350mm Coat-Hanger (Cast)	
Cooling Ring	Type	Single Lip	Type	Single Lip
Haul off	Type	Stationary	Type	Stationary
	Nip roll face width	250 mm	Nip roll face	350 mm
	Speed	Up to 25m/min	Drive	AC Induction Motor
Winder	Winder type	Center	Winder type	Center
	Drive	AC Induction Motor	Drive	AC Induction Motor
	Max. roll diameter	300 mm	Max. roll diameter	300 mm
	Speed	50m/min	Speed	50m/min
Total Power	5.5kw		15.5 kw	
Dimensions	Length	2000 mm	Length	2500 mm
	Width	700 mm	Width	1000 mm
	Height	2200 mm	Height	2200 mm

Laboratory Multilayer Blown Film Plants

Pilot Multilayer Film Development
That De-Risks Production Investment

AVAILABLE CONFIGURATIONS

3-Layer Pilot Blown Film Plant -
Optimized for multilayer structure development, barrier evaluation, and cost-performance studies.

5-Layer Pilot Blown Film Plant -
Designed for advanced film engineering, functional layer optimization, and high-barrier packaging research.



MACHINE HIGHLIGHTS

Pilot-scale systems designed on full industrial blown film architecture

Supports complex multilayer film structures with precise layer ratio control

Stable bubble formation and uniform thickness across wide film widths

High-output capability suitable for realistic process validation

Modular design allowing future upgrades and customization

Operator-safe layout with research-focused accessibility

Built for repeatable trials to support dependable data and decisions

[Where multilayer innovation meets production reality.]

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APPLICATIONS

- ♦ High-barrier packaging film development
- ♦ Multilayer structure optimization
- ♦ EVOH / tie-layer evaluation
- ♦ Sustainable and biopolymer film research
- ♦ Pilot-scale validation before production investment

TECHNICAL SPECIFICATIONS

Model	ETLB-3-32/400		ETLB-5-32/400
Machine Type	Pilot Three-Layer Blown Machine		Pilot Five-Layer Blown Machine
Resin Type	LDPE, LLDPE, COPA, EVOH, Tie Resin, Biopolymer		LDPE, LLDPE, COPA, EVOH, Tie Resin, Biopolymer
Film Width	250 mm		250 mm
Film Thickness	14-140 µm		14-140 µm
Extrusion Capacity	10-15 Kg/hr		20-25 Kg/hr
Extruder	Size	3 x 25 mm barrier screw	5 x 25 mm barrier screw
	Design	Universal screw design with pineapple & maddock mixing section	Universal screw design with pineapple & maddock mixing section
	Drive	11 kw	19kw
Die Head	50 mm stack die to ensure uniform distribution		50 mm stack die to ensure uniform distribution
Cooling Ring	Type	Dual Lip	Dual Lip
	No. of ports	4	4
Haul off	Type	Stationary with height adjustment system	Stationary with height adjustment system
	Nip roll face width	350 mm	350 mm
Winder	Winder type	Center	Center
	Drive	AC Induction Motor	AC Induction Motor
	Max. roll diameter	300 mm	300 mm
	Roller Width	350 mm	350 mm
	Speed	Up to 50m/min	Up to 50m/min