

NEWSLETTER 2024 MARCH

NEW High-Speed 3D Filament Extrusion Line



**WILL BE SHOWN RUNNING
AT THE NPE 2024 EXHIBITION IN FLORIDA**

Our completely redesigned High-Speed 3D Filament Extrusion Line is built with advanced components enabling a maximum line speed of 130 m/min for most resin types such as PLA, PETG, TPU, ABS, PA, TPE and carbon fiber composite. It is capable of producing filament diameters of 1.75 and 2.85 mm (other diameters are available on request) compatible for all printer brands, and it is designed to run 24/7 giving optimum return of your investment.

This 3D Filament Extrusion Line features our 40 mm Single-Screw Extruder which can be optionally equipped with drying hopper and autoloader system. It is very compact with a total length of only 10.5 meters. This is made possible thanks to the shortened heating and cooling bath which features three independent water chambers where the filament is led in zigzag from calibration, heating and cooling.

The line also features a newly designed horizontal filament accumulator together with the wind-up unit which are fully compliant with CE safety regulations as well as all other world safety regulations. The horizontal filament accumulator can hold up to 200 meters of filament, more than sufficient to give enough time for operator to change the spool on the winder. And finally, the line features a new single-station filament winder equipped with a new lay-on system that perfectly lays the filament side by side at the spool.

Scientific 40 mm Single-Screw Extruder

Type LE40-30/C

- 4-Zone Barrel with a High-Processing Temperature of up to 300°C (optional 400°C and 450°C)
- 22 kW Vector Motor for Screw Speed of up to 200 RPM
- Special Mixing Screw Design for Filament Production
- Optional Bi-Metallic Screw & Barrel for High Wear-Resistance
- Optional Pressure Transducer & Melt Temperature Sensor for monitoring

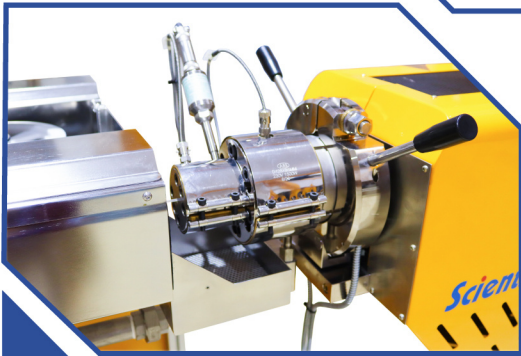
Optional Autoload Drying Hopper

- Recommended for continuous production runs to prevent moisture build-up on materials, especially ABS, PLA, Nylon, PC, & PETG
- 50 kg Loading Capacity



3D Filament Horizontal Die

- Chrome-Plated & Polished Inner Parts
- Two Heating Zones for Precise Temperature Control
- Single-Hole Die Head with Ø1.75 mm (optional Ø2.85 mm & other sizes on request)



Optional 3D Filament Vertical Die

- Suitable for low viscosity and high melt flow rate polymers like PETG, PA, PC, TPU, etc.
- It comes with a specially designed Water Bath to be connected to the existing Triple-Chamber Water Bath.

Triple-Chamber Water Bath

Type LTCW-150

Gradually cools down the extruded filaments over a longer distance within a limited space to prevent rapid shrinking and trapped air bubbles in the core, resulting in smooth and round filaments.

- Divided into three chambers with hinged steel covers
 - The two side chambers are supplied with hot water
 - The middle chamber is supplied with cold water



- Each chamber has a dedicated set of water pump and tank, with enough space in between for easy access to all components
- Two sets of large free-rolling wheels at opposite ends guide the filament through each water bath sections
- Calibration disks are equipped at every entrance and exit of the chambers for consistent diameter and alignment of the filament
- Optional three-axial handwheel allowing height, side-to-side, and longitudinal adjustments of the entire tank body

Roller Haul-Off Unit

Type LCAT-130



The extruded filament is pulled through the cooling and calibration process while the filament dimension is fully maintained.

- Equipped with two pairs of durable and high wear-resistant rubber rollers
- Pulling pressure is adjustable by handwheel

Options

- Dual-Axis Laser Diameter Measuring Gauge for monitoring the filament diameter
- Closed-Loop Feedback to the Roller Haul-Off Unit for maintaining the consistency of the filament diameter
- Other Laser Gauges can also be supplied according to customer's request



NEW DESIGN Horizontal Filament Accumulator

Type LHFA-200



The filament is alternately guided through the pulleys. During the spool changeover at the winder, the filament accumulates continuously as the shaft with many pulleys moves sideways to facilitate continuous and uninterrupted operation.

- Consists of two horizontal shafts holding all the pulleys: one fixed and one movable
- Housed within a safety cabinet supported by fixed frames that horizontally extend at operator's head level for easy and accessible threading of the filament
- Safety cabinet equipped with a transparent slide cover for easy loading and visibility
- It is also equipped with an auto-lock safety to prevent unsafe access during operation

Single-Station Wind-Up Unit

Type LWU-130



Featuring a Two-Sided Clamp Plate System to securely hold the spool and a Linear Rail Guide Base equipped with a double shaft and ball screw drive to ensure precise and stable spool movement at a high-speed operation reaching up to 130 m/min.

- Firm filament grip utilizing a spring-loaded nip roll which is synchronized to the spool winder to maintain consistent filament tension for achieving a nice and even filament winding
- The synchronized system of the winder and accumulator provides plenty of time for spool winder changeover, allowing continuous filament production and avoiding redundant effort to rewind the filament
- Integrated with safety two-hand control switches to operate the spool winding system, ensuring that the operator's hands are both kept safely away from moving parts

Technical Data

Single-Screw Extruder Type LE40-30/C

Screw Diameter	40 mm
Screw L/D Ratio	30 L/D
Screw Speed Range	0 to 200 RPM
Vector Motor Power	22 kW
Number of Heating Zones	6
Maximum Barrel Temperature	300°C (optional 400°C and 450°C)
Maximum Output of Extruder (LDPE)	45 kg/hr

Triple-Chamber Water Bath Type LTCW-150

Maximum Water Temperature	85°C
Water Bath Length	3 meters per chamber section

Roller Haul-Off Unit Type LCAT-130

Rubber Roller Diameter	100 mm
Maximum Operating Speed	130 m/min

Horizontal Filament Accumulator Type LHFA-200

Maximum Accumulated Filament Length	200 m
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Single-Station Wind-Up Unit Type LWU-130

Spool Type	RS 200	RS 300 (optional)	RS 350 (optional)
Spool Diameter	200 mm	300 mm	350 mm
Spool Width	45 mm	65 mm	90 mm
Motor Drive	0.75 kW		
Maximum Operating Speed	130 m/min		

Note: Filament Output (kg/hr) depends on the Material, Filament Diameter (mm) & Line Speed (m/min), e.g., for PLA/ABS, Ø1.75 mm at 130 m/min: 19/23 kg/hr & Ø2.85 mm at 60 m/min: 23/28 kg/hr.

