

Breakthrough in R&D and Battery Components with

Rondol's **VERTICAL ALL-IN-ONE 10mm** Twin-Screw Extruder

Optimum Performance, Weight and Cost-Efficiency in Battery R&D

RONDOL's groundbreaking "All-in-One" vertical twin-screw extruder makes it possible to manufacture complex polymer thin films that can be used in all battery parts (*cathode, anode, electrolyte, separator or box*) in order to optimise the overall performance of the battery.

Our unique set-up **improves material flow, facilitates smoother mixing**, provides **superior temperature management** and preserves the integrity of sensitive components with varying melt degradation properties. Additionally, the vertical design decreases the machine's footprint and minimizes cross-contamination risk, offering you a high-quality pharma manufacturing solution with **lower capital and operational expenses**.

Key benefits of our All-in-One:

Compact and efficient design: Maximize productivity and space utilization with our innovative vertical orientation which reduces the extruder footprint and allows for low capital intensity.

Materials versatility and durability: Our contact parts are capable of processing a wide range of products with different physical and chemical properties while experiencing minimal abrasion and corrosion.

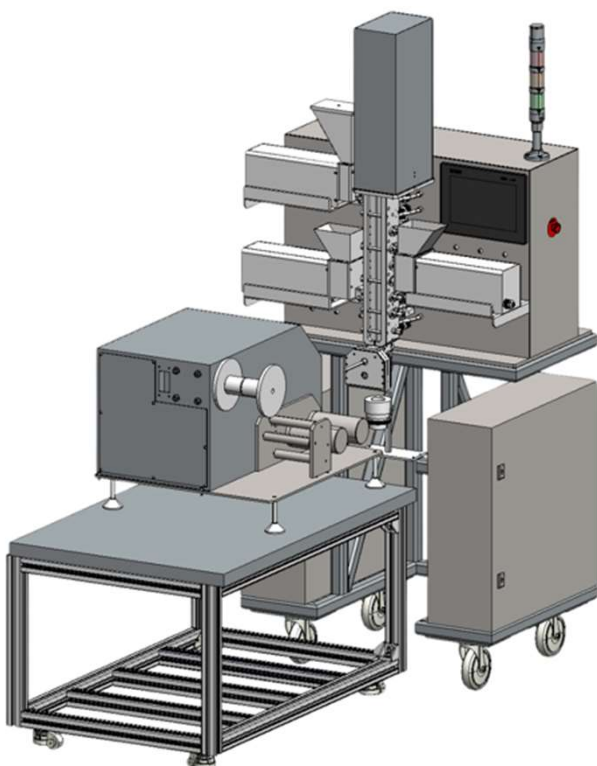
Easy to clean barrel: Ensure traceability with different sources of critical materials thanks to inside liners easy to disassemble and clean.

Integrated controls for feeders: Enhance operational convenience with our advanced control panel and compatible feeders from which you can inject in-the-barrel additional materials, additives and even gases.

Precise monitoring of process temperature with autonomous control for each of the 8 zones up to 300°C (450°C optional).

Versatile screw design and die options: Cater to diverse R&D and production applications with our flexible design features such as our cast film die with various width and thickness options.

Scalability of our continuous manufacturing process: Seamlessly transition from lab testing to industrial production with our scalable geometric proportions.



SPECIFICATIONS SHEET

Screw diameter	10.5mm
Length / Diameter	40:1 (adjustable with side feeding option)
Machine material	Full stainless steel (or high nickel optional)
Screw speed	0-300rpm (or 0-600rpm optional)
Screw configuration	Segmented screw design fully interchangeable
Footprint	0.497m ² / 5.350sq.ft
Dimensions	828.5mm x 600mm x 1960mm (1.97ft x 2.72ft x 6.43ft)
Motor power	1.5KW (or 2.85KW optional)
Electrical consumption	1.89kwh (standard's maximal temperature and speed: feeder + extruder + haul-off winder)
Torque output	14N.m per shaft maximum
Number of barrel zones	8 temperature-controlled zones (heating / cooling)
Temperature range	15-300°C (or 15-450°C optional)
Dies	Standard: strand die Options: cast film, strip, co-extrusion, swan-neck dies
Feeding	Standard: top powder or pellet feeder Options: side powder, pellet, liquid and/or gas feeders
Minimum lot size	50g
Maximum output	Up to 1kg/hr (up to 2kg/hr optional)
Maximum pressure	100 bars
Product cooling systems	Standard: air cooling ring Options: stainless steel cooling systems
Plug in downstream equipment	Standard: varicut pelletizer Options: haul off winder (filament, film or strip)
Human machine interface	10.1" touch screen with PC-controlled data logging and audit trail (tablet optional)
Electrical power Requirements	30amp, 110Vx2 + 1PE (North America) or 32amp, 230V 1ph.1N+1PE (Europe)
Water supply requirements	15°C water, 4-6 bars
Dry room option	Glovebox