XNERGY

BATTERY EQUIPMENT PRODUCT MANUAL

R&D and Manufacturing of Advanced Battery and Capacitor Equipment

Covering Coin Cells (Half Cells), Polymer Pouch Cells, Cylindrical Cells, Electrolytic Capacitors, and Supercapacitors

One-Stop Battery Solutions Provider

Empowering the Global Battery Supply Chain

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VACUUM DRYING OVEN XN-KZ50L

Product Introduction

This product is suitable for industrial enterprises, universities, and research institutes. It is widely used for drying, sterilization, and heat treatment of materials under vacuum conditions in laboratories and cleanroom environments.

Product Features

Rectangular working chamber with large effective volume
Ideal for laboratory-scale material drying
Integrated high-temperature silicone rubber sealing ring, ensuring excellent vacuum performance
Inner chamber made of stainless steel, with electrostatic spray coating on the enclosure for durability and long service life

Main Specifications

Control System: PID intelligent temperature control with automatic tuning
Temperature Range: Ambient to 200 °C
Temperature Accuracy: 0.1 °C
Temperature Uniformity: 5 °C (between chamber center and edges)
Temperature Control Modes: Multi-stage temperature control and temperature ramp control
Functions: Programmable temperature ramp-up, holding, and air cooling
Chamber Material: Mirror-polished 304 stainless steel
Shelves: Two adjustable removable shelves
Ultimate Vacuum: <133 Pa
Power Supply: Configurable according to regional electrical standards
Power Consumption: 1.5 kW (Max. current: 10 A)
Internal Dimensions: L415 × W375 × H345 mm
External Dimensions: L730 × W560 × H550 mm
Net Weight: 70 kg

THREE-DOOR VACUUM DRYING OVEN XN-DVO-3

Product Introduction

This equipment is designed for battery manufacturing processes, including electrode sheet drying and electrolyte injection and vacuum sealing operations.

Product Features

Temperature control adopts a three-loop PID controller, delivering high control accuracy.
After reaching the preset temperature, the vacuum chamber maintains stable vacuum or inert gas working conditions.
Three-stage temperature protection system: heating automatically shuts off if the set temperature is exceeded, ensuring material and equipment safety.
Equipped with an independent timer; the drying time starts automatically once heating begins and stops automatically at the end of the cycle.
Each temperature zone can be independently controlled and activated; circulation fans can be operated independently and used after heating stops.
Utilizes SUS stainless-steel seamless heating tubes, providing fast heating and energy efficiency.
Features a circulating hot-air vacuum chamber design to ensure uniform temperature distribution inside the chamber.
Inner chamber made of high-quality SUS stainless steel, resistant to electrolyte corrosion and battery materials.
Insulated outer enclosure with precision sealing minimizes heat loss and effectively resolves issues of heat conduction between chambers and external heat dissipation.
Chamber door equipped with dual-layer toughened glass for observation, with an overpressure protection mechanism that automatically releases pressure when internal pressure exceeds limits, ensuring safety.
The vacuum system and chamber door use high-performance sealing structures to guarantee airtightness.

Main Specifications

Working Chamber Size: H330 × W660 × L750 mm × 3 layers
Overall Dimensions: L1280 × W1150 × H1900 mm
Power Rating: 3 kW per chamber (peak power) × 3, total power 10 kW
Power Supply: Three-phase power (configurable to local standards)
Process Gas Configuration:
Vacuum: −0.095 to −0.1 MPa
Compressed Air: 0.4–0.5 MPa
Dry Gas (N_2): 0.1–0.2 MPa
Operating Temperature: Ambient to 150 °C
Temperature Control Accuracy: ±1 °C
Temperature Uniformity: ±2 °C within the working chamber
Heating Rate: From ambient (25 °C) to 80 °C within 30 minutes
Heating Method: Electric heating with forced hot-air circulation; independent control for each chamber
Temperature Measurement Method: Precision temperature sensing with real-time internal monitoring
Over-Temperature Protection: Independent over-temperature protection for each chamber with separate temperature alarms
Alarm Method: Audible and visual alarm with buzzer
Chamber Leak Rate: < −0.098 MPa; vacuum retention ≥96% over 24 hours
Pressure Release Speed: Chamber vacuum and atmospheric pressure equalization time <1 minute
Chamber Material: SUS stainless steel plate
Exterior Material: Cold-rolled steel plate with painted surface finish
Net Weight: 700 kg

PLANETARY VACUUM MIXER XN-PVM-500ML

Product Introduction

The Planetary Vacuum Mixer is a high-efficiency integrated system combining mixing and degassing in a single unit. It is specifically designed for laboratory-scale preparation of battery slurries, including cathode and anode materials, as well as other high-viscosity functional materials.
By performing mixing under vacuum conditions, the system effectively removes entrapped air and microbubbles generated during slurry preparation, significantly improving slurry homogeneity, coating consistency, and final electrochemical performance. This makes the mixer especially suitable for lithium-ion battery R&D, solid-state battery research, and advanced material formulation.

Product Features

The planetary mixing mechanism enables complex three-dimensional material flow, ensuring uniform dispersion even for high-viscosity slurries
Vacuum-assisted mixing effectively eliminates air bubbles formed during the mixing process, improving slurry stability and coating reliability
Mixing speed and mixing time are independently adjustable to accommodate different material systems and process requirements
Integrated vacuum system simplifies operation and improves overall process safety
Modular container design allows flexible configuration for different batch volumes
Compact vertical structure minimizes laboratory footprint while maintaining high mixing efficiency

Main Specifications

Maximum mixing speed: up to 1000 rpm
Maximum slurry viscosity: up to 20,000 mPa·s
Vacuum level: down to -0.08 MPa
Standard container: 500 mL stainless steel vacuum mixing vessel
Optional containers: 250 mL and 1000 mL
Mixing time range: 0–600 minutes adjustable
Rated power: 300 W
Overall dimensions (L × W × H): approx. 330 × 290 × 570 mm
Net weight: approx. 25 kg
Power supply: Configurable according to local electrical standards

VACUUM MIXER XN-VM-500ML

Product Introduction

The Vacuum Mixer is a compact and reliable laboratory device designed for slurry mixing and degassing under vacuum conditions. It is suitable for the preparation of electrode slurries, functional coatings, and other liquid or semi-liquid materials where air removal and uniform mixing are required.
Compared to planetary systems, this mixer features a simpler single-shaft mixing structure, making it ideal for routine laboratory use, small-batch material evaluation, and process validation where operational simplicity and consistency are key priorities.

Product Features

Single-shaft vertical mixing design ensures stable and repeatable mixing performance
Vacuum operation removes trapped air during slurry preparation, improving slurry density and coating quality
Mixing speed can be adjusted to match different material viscosities and formulation requirements
Compact footprint allows easy placement on laboratory benches or inside controlled environments
Straightforward mechanical structure ensures easy operation, cleaning, and maintenance

Main Specifications

Maximum mixing speed: up to 1400 rpm
Mixing method: single-shaft vertical stirring
Vacuum level: -80 kPa or better
Standard container capacity: 250 mL
Optional containers available upon request
Time setting function: adjustable from 0 to 99.99 hours
Net weight: approx. 10 kg
Overall dimensions (L × W × H): approx. 250 × 260 × 490 mm
Power supply: Configurable according to local electrical standards

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PLANETARY VACUUM CENTRIFUGAL MIXER AND DEGASSING MACHINE XN-PVMC-300ML

Product Introduction

This planetary vacuum centrifugal mixer is designed for uniform mixing and efficient degassing of liquid and paste materials. It is widely used for battery slurries, conductive pastes, electrode slurries, adhesives, inks, resins, and other functional materials. By performing mixing under vacuum conditions, the system effectively eliminates trapped air bubbles, ensuring excellent material homogeneity and improved downstream processing performance.

Product Features

Planetary centrifugal mixing without blades ensures thorough mixing without material damage or contamination.
Vacuum-assisted degassing effectively removes microbubbles and entrapped air during mixing.
Dual-cup simultaneous operation design significantly improves processing efficiency.
Intelligent control system with programmable parameters allows flexible and precise operation.
Fully enclosed structure with safety interlock ensures reliable and safe operation.
Compact footprint suitable for laboratory and pilot-scale environments.
Efficient mixing and degassing performance for high-viscosity and sensitive materials.

Main Specifications

Standard Container Volume: 300 ml (cup size approx. Φ77 × H85 mm)
Optional Container Volumes: 30 ml,50 ml,100 ml
Maximum Processing Capacity: 300 g × 2
Operating Principle: Planetary centrifugal motion with rotation and revolution
Rotation Speed Range: Continuously adjustable up to 2000 rpm
Speed Accuracy: 1 rpm
Maximum Rotation Speed: 2000 rpm
Ultimate Vacuum Level: −98 kPa (pressure resolution 0.1 kPa)
Vacuum Hold Time: Programmable
Timer Setting: 0-600 s per step (up to 3 steps)
Control System: Dual PLC control with touchscreen interface
Mixing Mode: Programmable mixing and degassing sequence
Drive Mode: Direct motor drive
Power Supply: Configurable according to local electrical standards
Total Power Consumption: 1.35 kW
Overall Dimensions: Approx. L400 × W590 × H580 mm (excluding external components)
Net Weight: Approx. 92 kg

PLANETARY VACUUM CENTRIFUGAL MIXER AND DEGASSING MACHINE XN-PVMC-150ML

Product Introduction

This planetary vacuum centrifugal mixer is designed for efficient mixing and degassing of liquid and paste materials. It is suitable for battery slurries, conductive pastes, electrode slurries, adhesives, inks, resins, and various functional materials. Mixing under vacuum conditions effectively eliminates entrapped air bubbles, ensuring excellent material homogeneity and improved experimental reproducibility.

Product Features

Planetary centrifugal mixing without blades ensures uniform mixing without damaging sensitive materials.
Vacuum-assisted degassing efficiently removes microbubbles and trapped air during processing.
Intelligent control system with programmable parameters enables flexible and precise operation.
Compact structure suitable for laboratory and small-scale research applications.
Fully enclosed design with safety protection ensures reliable and safe operation.
High mixing efficiency for both low- and high-viscosity materials.

Main Specifications

Standard Container Volume: 150 ml × 2 (cup size approx. Φ65 × H75 mm)
Optional Container Volumes: 10 ml,20 ml,50 ml,100 ml
Maximum Processing Capacity: 150 g × 2
Operating Principle: Planetary centrifugal motion with rotation and revolution
Rotation Speed Range: Continuously adjustable up to 2000 rpm
Speed Accuracy: 1 rpm
Maximum Rotation Speed: 2000 rpm
Ultimate Vacuum Level: −98 kPa (pressure resolution 0.1 kPa)
Timer Setting: 0-600 s per step (up to 3 programmable steps)
Control System: Dual PLC control with touchscreen interface
Mixing Mode: Programmable mixing and degassing sequences
Drive Mode: Direct motor drive
Power Supply: Configurable according to local electrical standards
Total Power Consumption: 1.35 kW
Overall Dimensions: Approx. L300 × W370 × H490 mm (excluding external components)
Net Weight: Approx. 30 kg

DUAL-PLANETARY VACUUM MIXER

XN-PVM-2L

Product Introduction

This dual-planetary vacuum mixer is designed for high-viscosity material mixing and dispersion under vacuum conditions. It is suitable for a wide range of applications including battery slurries, conductive pastes, adhesives, sealants, inks, resins, and other functional materials. The system integrates planetary mixing with vacuum degassing to efficiently eliminate entrapped air, ensuring excellent homogeneity and stable material performance for laboratory and pilot-scale processes.

Product Features

Dual-planetary mixing mechanism provides strong shear and efficient dispersion for high-viscosity materials.
Vacuum mixing effectively removes entrapped air and microbubbles, improving material uniformity and stability.
Scraper-assisted mixing design prevents material buildup on the vessel wall and eliminates dead zones.
Wide adjustable speed range allows flexible control of mixing intensity and process time.
Independent control of revolution and rotation speeds ensures optimized mixing performance.
High-quality SUS304 stainless steel contact parts provide excellent corrosion resistance and easy cleaning.
Sealed mixing chamber ensures safe operation under vacuum conditions.
PLC control with HMI touchscreen enables intuitive operation and programmable process control.
Modular structure supports customization for different process requirements.

Main Specifications

Mixing Mode: Dual-planetary mixing with scraper-assisted dispersion
Effective Mixing Volume: Max. 2 L (typical operating volume 1.5 L)
Recommended Material Viscosity: Max. 2,000,000 mPa·s
Revolution Speed: Max. 70 rpm
Rotation Speed: Max. 1120 rpm
Scraper Speed: Max. 610 rpm
Vacuum Level: Ultimate vacuum –98 kPa
Vacuum Hold Time: Programmable
Mixing Time Setting: 0–999 minutes
Control System: PLC with HMI touchscreen
Mixing Vessel: SUS304 stainless steel, effective height approx. 180 mm
Discharge Method: Bottom discharge valve
Inlet and Outlet Ports: DN50 (material inlet), DN25 (vacuum port)
Sealing Material: PTFE and high-performance sealing components
Power Supply: Configurable according to local electrical standards
Total Power Consumption: 4.5 kW
Operating Environment: Recommended ambient temperature 25 ±3 ℃, humidity 30–90% RH, free from vibration and electromagnetic interference
Overall Dimensions: Approx. L1200 × W550 × H1700 mm
Net Weight: Approx. 430 kg

DUAL-PLANETARY VACUUM MIXER

XN-PVM-5L

Product Introduction

This dual-planetary vacuum mixer integrates low-speed mixing and high-speed dispersion into a single system. It is designed for efficient mixing of high-viscosity and functional materials and is widely used in the preparation of battery slurries, conductive pastes, electrode materials, solar materials, adhesives, and chemical formulations. The vacuum mixing process effectively removes entrapped air, ensuring excellent homogeneity and stable material performance for laboratory and pilot-scale applications.

Product Features

Dual-planetary mixing combined with scraper-assisted dispersion enables strong shear, efficient mixing, and elimination of dead zones.
Vacuum mixing effectively removes air bubbles generated during the mixing process, ensuring stable and uniform materials.
Independent control of revolution and rotation speeds allows precise adjustment of mixing intensity and process optimization.
Wide adjustable speed range supports multi-stage mixing processes with programmable time and speed settings.
High-capacity mixing volume up to 5 L with SUS304 stainless steel contact parts ensures corrosion resistance and easy cleaning.
Bottom discharge valve design enables convenient material discharge and reduces residue.
Fully enclosed structure with safety interlocks ensures reliable operation under vacuum conditions.
PLC control with HMI touchscreen provides intuitive operation and programmable automation.
Modular design supports customization for different process requirements.

Main Specifications

Mixing Mode: Dual-planetary mixing with scraper-assisted dispersion
Effective Mixing Volume: Max. 5 L
Recommended Material Density: Max. 2 kg/L
Maximum Material Viscosity: 600,000 mPa·s
Revolution Speed: Max. 70 rpm
Rotation Speed: Max. 1120 rpm
Dispersion Speed: Max. 6100 rpm, dispersion disc diameter Φ60 mm
Discharge Method: Bottom discharge valve
Material Inlet: DN50
Vacuum Outlet: DN25
Vacuum Level: Ultimate vacuum –98 kPa
Mixing Time Setting: 0–999 minutes programmable
Control System: PLC with HMI touchscreen
Mixing Vessel: SUS304 stainless steel, inner diameter Φ240 mm, effective height 180 mm
Sealing Materials: High-performance seals suitable for vacuum operation
Power Supply: Configurable according to local electrical standards
Total Power Consumption: 4.5 kW
Operating Environment: Recommended ambient temperature 25 ±3 ℃, humidity 30–90% RH, free from vibration and electromagnetic interference
Overall Dimensions: Approx. L1460 × W700 × H1970 mm
Net Weight: Approx. 700 kg

MINI SLURRY FEEDING SYSTEM XN-SFP-500ML

Product Introduction

This mini slurry feeding system is designed for precise and stable delivery of slurry materials in battery and capacitor manufacturing processes. It is suitable for laboratory-scale coating, dispensing, and material supply applications, and can also be used for ink, adhesive, and other functional liquid feeding. The system integrates a slurry storage tank and metered feeding module, enabling independent feeding for cathode and anode materials while effectively preventing cross-contamination.

Product Features

Compact and integrated design for easy installation and laboratory use.
Dual-drive feeding configuration allows independent forward and reverse material delivery.
Adjustable flow rate enables precise matching with downstream coating or dispensing equipment.
Chemical-resistant construction suitable for acidic and alkaline slurries.
Stainless steel slurry tank ensures cleanliness and corrosion resistance.
Designed to prevent slurry sedimentation and contamination during operation.
Supports customized tubing materials according to different slurry properties.
Simple operation and reliable performance for continuous laboratory use.

Main Specifications

Feeding Mode: Dual-drive pump system for independent positive and negative material feeding
Flow Rate Range: 19–65 mL/min adjustable
Tubing Diameter: 5 mm
Applicable Slurry Viscosity: 2000–12000 mPa·s
Slurry Tank Material: 304 stainless steel
Effective Tank Capacity: 2 L
Equipment Structure: Chemical-resistant material construction
Power Supply: Configurable according to local electrical standards
Power Consumption: 100 W
Overall Dimensions: L360 × W180 × H220 mm
Net Weight: Approx. 3 kg

SLURRY FEEDING SYSTEM XN-SFP-5L

Product Introduction

This slurry feeding system is designed to provide stable and continuous material supply during battery and capacitor manufacturing processes. It is suitable for laboratory and pilot-scale coating and dispensing applications, delivering high-viscosity slurry materials with controlled flow and reliable performance. The integrated design combines slurry storage, agitation, and metered feeding, enabling efficient material handling while preventing sedimentation and cross-contamination.

Product Features

Chemical-resistant construction prevents slurry contamination and ensures long-term durability.
Stainless steel slurry tank with effective agitation maintains slurry homogeneity during feeding.
Adjustable flow rate allows precise matching with downstream coating or dispensing equipment.
Compact and mobile structure facilitates easy installation and laboratory use.
Supports a wide range of slurry viscosities for different material systems.
Designed for stable continuous operation with reliable feeding accuracy.
Easy maintenance and user-friendly operation.

Main Specifications

Feeding Method: Metered pump with adjustable speed
Applicable Slurry Viscosity: 2000–12000 mPa·s
Maximum Feeding Flow Rate: <450 mL/min
Maximum Feeding Speed: <150 rpm
Agitation Method: Paddle stirring with adjustable speed
Slurry Tank Material: 304 stainless steel
Effective Tank Capacity: 5 L
Equipment Structure: Chemical-resistant material construction
Power Supply: Configurable according to local electrical standards
Power Consumption: 200 W
Overall Dimensions: L570 × W330 × H780 mm
Net Weight: Approx. 50 kg

AUTOMATIC FILM COATER XN-VC-300

Product Introduction

The Automatic Film Coater is designed for precision surface coating of sheet-type substrates in laboratory and pilot-scale research environments. It supports multiple coating modes, including doctor blade coating and four-sided coating, making it suitable for a wide range of functional material studies such as electrode slurries, ceramic films, polymer coatings, and advanced battery materials.
The system provides stable coating speed control and high mechanical precision, enabling reproducible film thickness and uniformity. It is widely used in lithium-ion battery research, solid-state battery development, and functional thin-film preparation.

Product Features

Coating speed is continuously adjustable over a wide range to accommodate different slurry rheologies
Precision linear guide and drive system ensure smooth and stable substrate movement
Micrometer-adjustable blade gap enables accurate control of wet film thickness
Vacuum aluminum coating plate provides reliable substrate fixation during coating
Compact and rigid mechanical structure improves coating repeatability and long-term stability
Simple operation and straightforward maintenance make it suitable for routine laboratory use

Main Specifications

Coating speed range: 0–100 mm/s
Maximum coating stroke: 300 mm
Vacuum plate material: aluminum alloy
Vacuum plate dimensions: 415 × 200 × 30 mm
Blade gap adjustment range: 0.01–3.5 mm
Rated power: 300 W
Overall dimensions (L × W × H): approx. 530 × 370 × 230 mm
Net weight: approx. 50 kg
Power supply: Configurable according to local electrical standards
Optional accessories: vacuum chuck width 50–150 mm

AUTOMATIC FILM COATER WITH INTEGRATED DRYING SYSTEM XN-VCH-300

Product Introduction

The Automatic Film Coater with Integrated Drying System combines precision coating and controlled thermal drying into a single platform. It is specifically developed for applications where solvent evaporation and film formation must be tightly controlled immediately after coating.
This system is suitable for advanced electrode fabrication, functional membrane preparation, and research involving temperature-sensitive coatings. By integrating a heating module with the coating process, it enables more realistic simulation of industrial coating and drying conditions in laboratory-scale experiments.

Product Features

Integrated heating and drying module allows in-line solvent evaporation after coating
Coating speed remains precisely controllable under heated operating conditions
Digital temperature control system ensures stable and uniform thermal distribution
Adjustable blade gap supports accurate thickness control across different coating formulations
Vacuum aluminum substrate plate ensures reliable fixation during both coating and drying
Tiltable upper structure improves accessibility for sample loading and cleaning

Main Specifications

Coating speed range: 0–100 mm/s
Maximum coating stroke: 300 mm
Vacuum plate material: aluminum alloy
Vacuum plate dimensions: 365 × 200 × 30 mm
Blade gap adjustment range: 0.01–3.5 mm
Integrated heating system: included
Rated power: 1.2 kW
Overall dimensions (L × W × H): approx. 580 × 420 × 370 mm
Net weight: approx. 55 kg
Power supply: Configurable according to local electrical standards
Optional accessories: vacuum chuck width 50–150 mm

ADJUSTABLE FILM APPLICATOR XN-FAT-100

Product Introduction

This adjustable film applicator is widely used in coating research, including battery electrode coatings, ceramic coatings, crystal coatings, and special functional thin films. It enables precise control of wet film thickness and is suitable for laboratory-scale material development and process optimization.

Product Features

Wide adjustable coating thickness range for flexible experimental requirements.
High-precision micrometer adjustment enables accurate and repeatable thickness control.
Constructed from corrosion-resistant materials for long service life and compatibility with various coating formulations.
Compact and robust structure with refined industrial design.
Easy to operate and suitable for benchtop laboratory use.

Main Specifications

Adjustable Coating Thickness Range: 0–3500 μm
Adjustment Resolution: 10 μm
Coating Width: 100 mm
Material: Corrosion-resistant construction
Overall Dimensions: L130 × W110 × H110 mm
Net Weight: Approx. 1.5 kg

SLOT-DIE EXTRUSION FILM APPLICATOR

XN-FAS-100

Product Introduction

This slot-die extrusion film applicator is primarily used for surface film coating of sheet substrates. It integrates slot-die extrusion coating and doctor-blade coating functions into a single device. The system is suitable for a wide range of coating research applications, including battery electrode coatings, OLED functional layers, photovoltaic materials, and other advanced thin-film processes. It enables uniform and controllable film formation with high coating precision.

Product Features

Integrated design supporting both slot-die extrusion coating and blade coating processes.
Slot-die extrusion coating provides excellent film uniformity and smooth surface quality.
Compact structure with small footprint, suitable for laboratory benchtop use.
Manufactured from high-quality corrosion-resistant materials for long service life.
Precision mechanical adjustment enables accurate and repeatable coating control.
Refined industrial design with simple operation and easy maintenance.

Main Specifications

Extrusion Die Material: SUS630
Film Thickness Uniformity: Straightness deviation ≤4 μm
Die Cavity Volume: 2.6 mL
Maximum Coating Width: 100 mm (default slit opening width 100 mm, customizable)
Maximum Adjustment Height: 5.5 mm
Thickness Adjustment Resolution: Micrometer scale, 1 μm per division
Blade Material: SUS630
Blade Flatness: ≤4 μm
Blade Coating Width: 150 mm
Overall Dimensions: Approx. L180 × W110 × H110 mm
Net Weight: Approx. 2 kg

EXTRUSION FEEDING PUMP XN-EFP

Product Introduction

This extrusion feeding pump is designed to provide stable and precise material supply for slot-die coating and film extrusion processes. It delivers controlled flow of slurry or liquid materials and is suitable for laboratory-scale coating, dispensing, and extrusion applications requiring high flow accuracy and repeatability.

Product Features

Stepper motor–driven lead screw ensures precise and adjustable flow rate control.
Compatible with coating equipment to accurately match material supply requirements.
Supports continuous and stable extrusion to minimize pulsation and improve coating uniformity.
Quick-change syringe design enables easy replacement and cleaning.
Compact structure with refined industrial design, suitable for laboratory benchtop use.
Simple operation and reliable performance for research and pilot-scale applications.

Main Specifications

Flow Speed Range: 0.05–5 mm/s (based on syringe plunger speed)
Syringe Options: Standard 20 mL,30 mL,50 mL (PP syringes)
Tubing: PTFE tubing, outer diameter 3.2 mm, inner diameter 1.6 mm
Stroke: Max. 100 mm
Drive Mode: Stepper motor
Compatibility: Can be synchronized with coating machines
Power Supply: Configurable according to local electrical standards
Power Consumption: 120 W
Overall Dimensions: Approx. L420 × W200 × H240 mm
Net Weight: Approx. 8 kg

SLOT-DIE COATING SYSTEM XN-SDC

Product Introduction

This slot-die coating system is designed for precision coating of battery electrodes, solar cell materials, OLED functional layers, and other thin-film materials. It integrates a slot-die coating head with an extrusion feeding pump, enabling uniform and controllable film formation on flat substrates. The system is suitable for laboratory research, material development, and pilot-scale process validation.

Product Features

Supports slot-die coating processes with high coating uniformity and excellent thickness consistency.
Integrated extrusion feeding pump ensures stable material delivery without pulsation or material breakage.
Dual vacuum structure (upper and lower vacuum) improves substrate fixation and coating stability.
Independent heating control system ensures uniform temperature distribution during coating.
Precise adjustment of coating gap and coating speed to meet different material requirements.
Compact structure with refined industrial design, suitable for laboratory environments.
PLC and touch-screen (HMI) control allow convenient parameter setting, storage, and operation.

Main Specifications

Coating Method: Slot-die flat coating
Maximum Coating Width: 300 mm (customizable)
Substrate Transport Mode: Motor-driven, adjustable speed
Coating Speed: 0.5–20 mm/s
Vacuum System: Upper and lower independent vacuum chambers
Vacuum Chamber Size: Approx. L415 × W200 × H30 mm
Doctor Blade Gap Adjustment Range: 0–5 mm adjustable
Syringe Capacity: Max. 50 mL
Feeding Speed: 0.05–5 mm/s (based on syringe plunger speed)
Coating Thickness Accuracy: ±3 μm (adjustable in 1 μm increments)
Heating Temperature Range: Room temperature to 130°C, digitally controlled
Temperature Control Accuracy: ±1°C
Power Supply: AC 220 V / 50 Hz
Total Power: 1.5 kW
Overall Dimensions: Approx. L580 × W420 × H370 mm
Net Weight: Approx. 65 kg

BOTTOM-HEATED FILM COATING MACHINE

XN-VCHB

Product Introduction

This bottom-heated film coating machine is designed for high-temperature coating research applications, including ceramic coatings, crystalline coatings, battery electrode coatings, and specialty functional films. The system provides uniform bottom heating and precise coating control, making it suitable for laboratory studies and process development requiring controlled thermal conditions during coating.

Product Features

PLC-based control system with intuitive parameter setting and operation.
High-precision coating thickness control with minimum resolution of 0.01 mm.
Adjustable coating speed to meet different material and process requirements.
Bottom heating plate ensures uniform temperature distribution across the coating area.
Vacuum chuck design enables stable substrate fixation during coating.
Compact structure with clean and modern industrial design.
Suitable for research and development of advanced functional films.

Main Specifications

Heating Method: Bottom heating plate
Heating Temperature Range: Ambient to 150 ℃
Temperature Control: Digital temperature control with accuracy ±2 ℃
Coating Speed: 0–120 mm/s adjustable
Coating Stroke: 0–300 mm adjustable
Vacuum Chuck: Integrated vacuum adsorption platform
Vacuum Chuck Dimensions: L415 × W200 × H32 mm
Blade Gap Adjustment Range: 0–5 mm
Coating Thickness Control Resolution: 0.01 mm
Vacuum System: Integrated vacuum unit
Power Supply: Configurable according to local electrical standards
Power Consumption: 1 kW
Net Weight: 50 kg
Overall Dimensions: Approx. L530 × W420 × H260 mm

FULLY AUTOMATIC ELECTRODE STACKING MACHINE

XN-SKME-200

Product Introduction

This machine is mainly used for Z-fold stacking of battery cathode electrodes, anode electrodes, and separators.
It features automatic unwinding, automatic separator cutting, and fully automated electrode stacking with high stacking efficiency.
Different process requirements can be achieved by adjusting fixtures, making it highly suitable for stacked pouch cell battery fabrication.

Product Features

Equipped with automatic tension control for electrode rolls and separators, and automatic separator deviation correction.
Mechanical hands enable automatic electrode pick-up, lamination, separator cutting, and tape application.
Stacking quantity and parameters can be preset and automatically controlled.
Modular fixture design allows wide adjustment range to accommodate different battery sizes.
Separate feeding design for cathode and anode electrodes to prevent material mixing.
PLC control with HMI interface, ensuring easy operation and maintenance.
Left-right movement driven by servo motors, offering high precision and convenient micro-adjustment.

Main Specifications

Stacking Method: Z-fold stacking
Operation Mode: Automatic electrode pick-up, automatic separator unwinding, automatic stacking, automatic separator cutting and collection, automatic tape application
Stacking Accuracy: Overall flatness ±0.3 mm
Stacking Size Range: Minimum: L80 mm × W55 mm; Maximum: L200 mm × W200 mm (including tabs)
Maximum Stack Thickness: 30 mm
Maximum Separator Roll Diameter: 250 mm
Separator Unwinding: 3-inch core with pneumatic expansion
Separator Tension Control: Automatic servo tension control
Separator Alignment: Automatic edge alignment control
Overall Dimensions: Approx. L1800 × W1450 × H1800 mm
Net Weight: 600 kg
Power Supply: Configurable according to local electrical standards
Power Consumption: 3 kW
Air Supply: 0.5–0.8 MPa compressed air
Operating Environment: Recommended ambient temperature 25 ±5 ℃, relative humidity 30–90% RH, free from vibration and electromagnetic interference

LABORATORY TRANSFER COATING MACHINE

XN-RTCA-300

Product Introduction

The Laboratory Transfer Coating Machine XN-RTCA-300 is a three-roll transfer coating system designed for precision coating of functional materials in laboratory and small-scale R&D environments. It is widely used for coating processes involving battery electrodes, supercapacitors, solid-state batteries, and other advanced energy materials. The system enables controlled transfer coating with excellent thickness uniformity and surface quality, making it especially suitable for process development, material screening, and pilot-scale validation.
This equipment supports continuous coating operation and integrates coating, drying, and rewinding functions into a compact platform. It is ideal for research institutions, universities, and industrial R&D centers requiring high repeatability and process flexibility.

Product Features

Supports continuous three-roll transfer coating for stable and uniform film formation.
Adjustable coating speed and coating gap enable precise thickness control.
Integrated drying oven with adjustable temperature for efficient solvent evaporation.
Upper and lower hot-air circulation drying improves drying efficiency and coating quality.
High-precision tension control ensures smooth substrate transport and coating stability.
Modular structure allows easy parameter adjustment and process optimization.
PLC control with touchscreen HMI provides intuitive operation and reliable automation.
Optional solvent recovery system available for environmentally friendly operation.

Main Specifications

Coating Method: Transfer coating, continuous operation
Coating Width: 330 mm
Coating Speed: 200–900 mm/min
Wet Film Thickness: Adjustable, typical range 40–300 μm
Drying Length: Standard hot-air drying section
Rewinding Roll Diameter: Max. Φ250 mm
Coating Thickness Accuracy: ±0.5 μm
Tension Control Range: Max. 60 N, adjustable
Coating Uniformity: ±1 μm
Drying Temperature Range: Ambient to 120 ℃
Compressed Air Supply: 0.5–0.7 MPa
Power Supply: Configurable according to local electrical standards
Maximum Power Consumption: 5 kW
Overall Dimensions: Approx. L1800 × W1030 × H1340 mm
Net Weight: Approx. 800 kg
Optional: Solvent recovery and treatment module

DUAL-ZONE TRANSFER COATING MACHINE

XN-RTCA-500

Product Introduction

The Dual-Zone Transfer Coating Machine XN-RTCA-500is an advanced three-roll transfer coating system equipped with independently controlled dual-temperature drying zones. It is specifically designed for high-performance coating processes requiring staged drying profiles, such as lithium-ion battery electrodes, supercapacitor electrodes, and other functional thin-film materials.
By enabling independent temperature control in each drying zone, this system allows optimized solvent removal and film formation, significantly improving coating quality, adhesion, and process stability. It is an ideal solution for advanced research, pilot-scale development, and process scale-up studies.

Product Features

Dual drying zones with independent temperature control for optimized drying performance.
Modular drying chamber design with adjustable length per zone.
Continuous transfer coating with excellent coating uniformity and repeatability.
Upper and lower hot-air circulation drying enhances solvent evaporation efficiency.
Precision tension control system ensures stable substrate transport.
Three-roll transfer coating structure delivers smooth surface finish and accurate thickness control.
PLC control with touchscreen interface enables easy parameter setting and recipe management.
Optional solvent recovery system available to support environmentally compliant operation.

Main Specifications

Drying Zones: Dual independent temperature zones, 1 m per zone (customizable length)
Temperature Control: Independent control for each zone with precise heating regulation
Drying Temperature Range: Ambient to 150 ℃ adjustable
Coating Method: Transfer coating, continuous operation
Coating Width: 330 mm
Maximum Coating Width: 300 mm
Coating Speed: 200–1500 mm/min
Wet Film Thickness: Adjustable, typical range 40–300 μm
Rewinding Roll Diameter: Max. Φ250 mm
Coating Thickness Accuracy: ±0.5 μm
Tension Control Range: Max. 60 N adjustable
Coating Uniformity: ±1 μm
Compressed Air Supply: 0.5–0.7 MPa
Power Supply: Configurable according to local electrical standards
Maximum Power Consumption: 10 kW
Overall Dimensions: Approx. L2900 × W1030 × H1380 mm
Net Weight: Approx. 1200 kg
Optional: Solvent recovery and treatment module

SEGMENTED TRANSFER COATING MACHINE

XN-RTCA-300-3

Product Introduction

The Segmented Transfer Coating Machine XN-RTCA-300-3 is a pilot-scale continuous coating system designed for precision surface coating of various functional materials. It is especially suitable for lithium-ion battery electrode fabrication, enabling uniform slurry coating and controlled drying in a segmented, modular configuration. The system integrates coating, drying, and material transport into a single continuous process, offering high coating efficiency and excellent film quality. It is widely used in battery R&D, process development, and small-batch pilot production environments.

Product Features

Segmented modular drying zones allow independent temperature control for each section, enabling optimized drying profiles.
Designed for continuous roll-to-roll coating with stable transport and uniform film formation.
Supports a wide range of coating materials and substrate types, suitable for different battery electrode formulations.
High coating precision with excellent thickness uniformity and surface consistency.
Hot-air circulation drying system ensures efficient solvent evaporation and stable drying performance.
Flexible configuration allows customization of coating width, drying length, and process parameters.
PLC-based control system with touchscreen interface provides intuitive operation and real-time monitoring.
Robust mechanical structure ensures long-term stable operation in pilot-scale production.

Main Specifications

Coating Type: Continuous segmented transfer coating
Drying Zones: Multiple independently controlled heating zones (customizable length)
Temperature Control Accuracy: ±0.3 ℃ per zone
Drying Temperature Range: Ambient to 150 ℃ adjustable
Drying Method: Forced hot-air circulation drying
Coating Mode: Slot-die transfer coating with continuous operation
Effective Coating Width: 330 mm
Maximum Substrate Width: 300 mm (coating width customizable)
Coating Thickness Control: Wet thickness adjustable (typical minimum 5 μm)
Dry Film Thickness Range: Approx. 0–300 μm
Unwinding and Rewinding Diameter: Max. 250 mm
Edge Alignment Accuracy: ±0.5 mm
Line Speed: Max. 60 m/min adjustable
Drying Residual Moisture Content: ≤1 μm
Compressed Air Supply: 0.5–0.7 MPa
Power Supply: Configurable according to local electrical standards
Total Power Consumption: 30 kW
Overall Dimensions: Approx. L6440 × W1200 × H1960 mm
Net Weight: Approx. 2000 kg

TWO-STAGE NMP SOLVENT RECOVERY SYSTEM

XN-NMP-2

Product Introduction

The Two-Stage NMP Solvent Recovery System XN-NMP-2 is designed for exhaust gas treatment and solvent recovery in coating and drying processes, particularly for lithium-ion battery electrode manufacturing. The system effectively treats NMP-containing exhaust gases generated during coating operations, achieving solvent recovery, emission reduction, and environmental compliance. It is suitable for integration with coating machines, drying ovens, and pilot-scale production lines.

Product Features

Two-stage processing structure ensures efficient removal and recovery of NMP solvent vapors.
Continuous operation mode supports stable treatment of exhaust gases during coating processes.
High solvent recovery efficiency significantly reduces solvent loss and operating costs.
Integrated condensation and purification system enables effective NMP separation and reuse.
Stainless steel internal structure provides excellent corrosion resistance and long service life.
Compact design allows flexible installation inside or outside production areas.
Equipped with safety protection systems to ensure reliable and stable operation.
Designed to meet environmental protection and emission control requirements.

Main Specifications

Operation Mode: Continuous operation
Exhaust Gas Processing Capacity: 600 m^3/h
Maximum Operating Temperature: ≤150 ℃
Solvent Recovery Efficiency: ≥80%
Recovery Solvent Type: NMP organic solvent
Exhaust Gas Type: Organic solvent-containing gas
Cooling Medium: Water-based cooling system
Material of Construction: SUS304 stainless steel
Gas Handling Capacity: 600 m^3/h
Exhaust Gas Outlet: External discharge after treatment
Power Supply: Configurable according to local electrical standards
Power Consumption: 1.5 kW
Overall Dimensions: Approx. L1900 × W700 × H1850 mm
Net Weight: Approx. 300 kg

ELECTRIC CALENDER MACHINE XN-CRPE-100

Product Introduction

This electric calender machine is designed for laboratory-scale calendering of battery electrode materials, as well as small quantities of metal and composite sheets such as copper and aluminum foils. The rolling thickness is adjustable, and the machine is easy to operate, making it suitable for precision thickness control and density enhancement in battery electrode preparation.

Product Features

High-hardness rollers with surface hard chrome plating, achieving hardness up to HRC62 for excellent wear resistance.
Digital display of rolling pressure ensures clear parameter indication and high adjustment accuracy.
High roller concentricity with roundness tolerance within ±2 μm for stable and uniform calendering.
Compact structural design allows easy feeding of materials.
Adjustable rolling pressure and speed for flexible operation.
Electric drive enables forward and reverse operation with smooth performance.
Compact footprint, simple operation, and convenient maintenance.

Main Specifications

Rolling Thickness: 0-3 mm adjustable
Maximum Rolling Pressure: 0-100 mm
Roller Diameter: Φ96 mm
Roller Surface Hardness: HRC62 or above
Roller Surface Roughness: Ra ≤0.4 μm
Calendering Mode: Vertical placement
Power Supply: Configurable according to local electrical standards
Power Consumption: 120 W
Rolling Speed: 0-50 mm/s adjustable
Overall Dimensions: Approx. L515 × W210 × H350 mm
Net Weight: 55 kg
Optional Rolling Widths: 100 mm,150 mm,200 mm,250 mm

HORIZONTAL ELECTRIC CALENDER MACHINE

XN-CRPE-100

Product Introduction

This horizontal electric calender machine is mainly designed for laboratory-scale processing of battery electrode materials, as well as small quantities of metal and composite sheets such as copper and aluminum foils. The machine adopts electric drive and supports adjustable rolling thickness, making it suitable for thickness reduction and density enhancement of clean-energy battery electrodes and other precision-coated materials. It features stable operation and convenient use in laboratory environments.

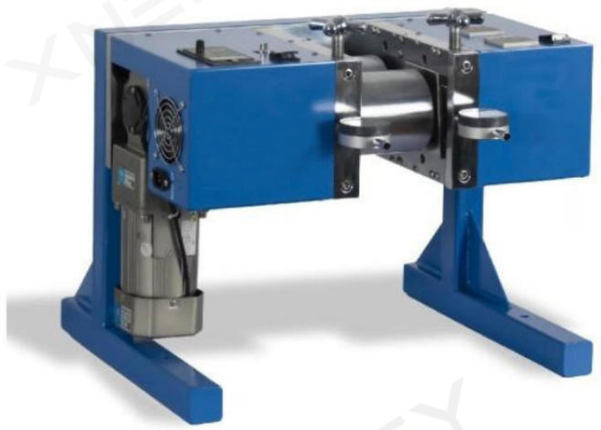
Product Features

High-hardness rollers with surface hard chrome plating, achieving hardness up to HRC62 and excellent wear resistance.
High roller precision with roundness tolerance within ±2 μm ensures stable and uniform calendering performance.
Adjustable rolling gap and rolling pressure allow flexible control for different material requirements.
Horizontal structure design facilitates smooth material feeding and operation.
Electric drive system supports forward and reverse operation with stable performance.
Compact size, simple operation, and easy maintenance, suitable for laboratory use.

Main Specifications

Roller Diameter: 2 × Φ96 mm
Roller Roundness: ≤±2 μm
Roller Surface Hardness: HRC62
Roller Surface Roughness: Ra ≤0.4 μm
Rolling Gap: 0-3 mm adjustable
Rolling Pressure Range: 0-100 mm
Calendering Mode: Horizontal configuration
Drive Mode: Electric
Power Supply: Configurable according to local electrical standards
Power Consumption: 120 W
Rolling Speed: 0-40 mm/s
Overall Dimensions: Approx. L510 × W450 × H370 mm

HORIZONTAL HEATED CALENDER MACHINE XN-HRPH-100



Product Introduction

This horizontal heated calender machine is designed for calendering electrode and functional sheet materials. It is primarily used for laboratory-scale processing of battery materials, including cathode and anode electrodes. The machine supports adjustable rolling gap and stable operation, making it especially suitable for density enhancement and thickness reduction of clean energy battery electrodes and other precision-coated materials.

Product Features

Integrated electric drive system with independent inlet and outlet speed control for precise material handling.
Dual-roller independent heating design ensures uniform temperature distribution and stable calendering performance.
Adjustable rolling gap enables flexible thickness control for different materials.
High-precision rollers with hard chrome-plated surfaces provide excellent wear resistance and long service life.
High roller concentricity ensures stable rolling pressure and consistent product quality.
Compact structure with simple operation, suitable for laboratory environments.
Electric drive system enables forward and reverse operation with smooth performance.
Small footprint, easy operation, and convenient maintenance.

Main Specifications

Roller Diameter: Φ96 mm
Rolling Width: 100 mm (customizable)
Roller Surface Hardness: HRC62
Roller Surface Roughness: Ra ≤0.4 μm
Roller Roundness: ≤±2 μm
Rolling Gap: 0–3 mm adjustable
Calendering Mode: Electric drive, heated rollers
Heating Method: Independent heating of upper and lower rollers
Temperature Range: Ambient to 130 °C
Temperature Display Resolution: 0.1 °C
Temperature Control Accuracy: ±0.5 °C
Drive Mode: Electric
Power Supply: Configurable according to local electrical standards
Power Consumption: 1 kW
Rolling Speed: 0–40 mm/s adjustable
Overall Dimensions: Approx. L670 × W470 × H370 mm
Net Weight: 75 kg

HEATED CALENDER MACHINE XN-HRPE-100

Product Introduction

This heated calender machine is mainly designed for laboratory-scale processing of battery electrode materials and small quantities of metal and composite sheets. It supports electric-driven calendering under controlled temperature conditions with adjustable rolling gap and simple operation. The system is particularly suitable for thickness reduction and density enhancement of clean-energy battery electrodes and other precision-coated functional materials.

Product Features

Adjustable rolling pressure and rolling speed for flexible operation.
Forward and reverse motor control allows easy handling of different materials.
Electric drive system ensures stable rolling performance.
Equipped with external protective cover for improved operational safety.
Compact structure with reliable performance, suitable for laboratory environments.

Main Specifications

Roller Diameter: Φ96 mm
Roller Surface Hardness: HRC62 or above
Roller Surface Roughness: Ra ≤0.4 μm
Rolling Gap: 0–3 mm
Maximum Rolling Pressure: 0–100 mm
Calendering Mode: Vertical placement
Heating Temperature: Up to 130 °C
Rolling Speed: 0–10 mm/s
Power Supply: Configurable according to local electrical standards
Power Consumption: 720 W
Overall Dimensions: Approx. L670 × W210 × H350 mm
Net Weight: 65 kg
Optional Rolling Widths: 100 mm,150 mm,200 mm,250 mm

COMPACT ROLL-TO-ROLL UNWINDING AND REWINDING UNIT FOR CALENDER

XN-R2R-1

Product Introduction

This unit is designed for material unwinding and rewinding in laboratory-scale roll-to-roll processing. It can be integrated with small calender machines for battery electrode fabrication, including cathode and anode electrode sheets. The system is also suitable for optical films, functional membranes, and other flexible sheet materials requiring controlled tension handling.

Product Features

Separate unwinding and rewinding modules allow flexible configuration and independent operation.
Active rewinding with torque control ensures stable and uniform winding quality.
Adjustable tension control for both unwinding and rewinding processes.
Compact structure suitable for laboratory environments and benchtop integration.

Main Specifications

Drive Mode: Continuous operation
Guide Roller Width: 200 mm
Mechanical Speed: Max. 1.5 m/min
Tension Control: Max. 50 N
Reel Type: 3-inch core
Maximum Reel Diameter: 200 mm
Overall Dimensions:
Unwinding Unit: L390 × W230 × H250 mm
Rewinding Unit: L530 × W300 × H250 mm
Power Supply: Configurable according to local electrical standards
Power Consumption: 100 W
Net Weight: Unwinding unit approx. 15 kg, rewinding unit approx. 20 kg, total approx. 35 kg

DUAL-SERVO HEATED HORIZONTAL CALENDER MACHINE XN-HRPE200

Product Introduction

This machine is designed for calendering battery electrode materials and other functional sheet materials under controlled heating conditions. It is suitable for laboratory-scale processing of cathode and anode electrodes, especially for applications requiring thickness reduction and density enhancement. The system features independent upper and lower roller drive with servo control, ensuring stable operation, high precision, and excellent calendering uniformity.

Product Features

Dual-servo drive system ensures high rolling precision and synchronous operation.
Heated calendering with independently controlled upper and lower roller temperatures, digitally displayed for accurate adjustment.
Roller surface is hard chrome plated with high surface hardness and excellent wear resistance.
Adjustable rolling gap with high repeatability and digital display of rolling parameters.
High roller concentricity and thickness control accuracy ensure consistent electrode quality.
Electric drive design provides stable operation, easy control, and low maintenance.
PLC-based control with HMI interface enables convenient parameter setting and automated operation.
Compact structure suitable for laboratory environments and pilot-scale research.

Main Specifications

Roller Diameter: Φ96 mm
Roller Roundness: ≤±2 μm
Roller Surface Hardness: HRC62
Roller Surface Roughness: Ra ≤0.4 μm
Rolling Gap: 0–3 mm adjustable
Maximum Rolling Width: 200 mm
Calendering Mode: Heated upper and lower rollers
Temperature Range: Ambient to 130 °C
Temperature Display Resolution: 0.1 °C
Temperature Control Accuracy: ±2 °C
Drive Mode: Electric servo drive
Power Supply: Configurable according to local electrical standards
Power Consumption: 1.5 kW
Rolling Speed: 0–40 mm/s
Overall Dimensions:
Calender Unit: L770 × W450 × H420 mm
Control Unit: L450 × W400 × H380 mm
Net Weight: 85 kg

HYDRAULIC BALANCED ELECTRIC CALENDER XN-HPRP-300

Product Introduction

This machine is mainly designed for laboratory-scale battery electrode calendering. The calendering pressure is adjustable, and operation is simple and stable. It is especially suitable for densification and thickness control of electrode sheets made from slurry-coated battery materials, improving electrode density and surface uniformity.

Product Features

Servo-controlled hydraulic calendering system with automatic pressure regulation.
Calender rollers are precision-machined and surface-hardened to ensure excellent wear resistance and long service life.
Dedicated hydraulic balance structure ensures stable pressure distribution and uniform calendering in both transverse and longitudinal directions.
Heavy-duty frame structure with CNC-machined components ensures high rigidity and dimensional accuracy.
Hydraulic proportional pressure control system enables precise and repeatable pressure adjustment.

Main Specifications

Maximum Calendering Force: 40 T
Maximum Mechanical Speed: 6 m/min
Working Roller Diameter: ϕ196 mm
Roller Material: 9Cr3Mo
Effective Roller Width: 330 mm
Pressing Mode: Hydraulic
Thickness Control Accuracy: ±2.5 μm
Roller Surface Hardness: HRC62-68
Surface Roughness: Ra 0.4
Drive Motor: AC variable-frequency motor
Overall Dimensions: Approx. L1470 × W600 × H1100 mm
Power Supply: Configurable according to local electrical standards
Power Consumption: 1.5 kW
Net Weight: 500 kg

HEATED HYDRAULIC DOUBLE-ROLL CALENDER XN-SHPRP-300

Product Introduction

This machine is designed for electrode calendering under controlled heating conditions. It is suitable for calendering cathode and anode electrode sheets in the battery industry, improving electrode density, thickness uniformity, and surface quality. The integrated hydraulic pressure system ensures stable and uniform calendering performance, making it ideal for applications requiring high consistency between calendering force and heating conditions.

Product Features

Integrated heating system with adjustable upper and lower roller temperatures, digitally displayed for precise control.
Hydraulic proportional pressure control system enables stable and accurate calendering force regulation.
Heavy-duty frame structure with CNC-machined components ensures high rigidity and long-term operational stability.
Calender rollers are made of high-strength alloy steel with hardened and polished surfaces for excellent wear resistance.
Dedicated hydraulic balance design ensures uniform pressure distribution in both transverse and longitudinal directions.
PLC control with HMI interface allows intuitive parameter setting and convenient operation.

Main Specifications

Calendering Temperature Range: Upper and lower rollers heated, ambient to 130℃ adjustable
Temperature Display: Digital display
Temperature Control Accuracy: ±2℃
Maximum Calendering Force: 40 T
Calendering Gap Adjustment: 0-3 mm
Roller Dimensions: ϕ196 mm × 330 mm
Roller Surface Hardness: HRC65-70, hardened layer thickness ≥15 mm
Roller Material: 9Cr3Mo alloy steel, hardened layer thickness ≥20.15 mm
Thickness Control Accuracy: ±3 μm
Drive Motor: 1.5 kW AC variable-frequency motor
Power Supply: Configurable according to local electrical standards
Total Power Consumption: 5 kW
Overall Dimensions: Approx. L1470 × W600 × H1100 mm
Net Weight: 520 kg
Equipped with swivel casters for easy movement

ROLL-TO-ROLL CONTINUOUS HYDRAULIC CALENDER MACHINE XN-HRPER-300

Product Introduction

This roll-to-roll continuous hydraulic calender machine is designed for continuous calendering of electrode materials. It is widely used in battery manufacturing processes for cathode and anode electrodes. The machine delivers stable calendering pressure, high surface finish, and excellent thickness uniformity. With an integrated hydraulic pressure system, it is suitable for applications requiring high rolling force, high consistency, and long-duration continuous operation.

Product Features

Designed for continuous roll-to-roll electrode calendering applications.
Equipped with an integrated unwinding and rewinding system for stable material handling.
Hydraulic pressure system provides stable and uniform rolling force.
Robust frame structure with CNC-machined components ensures high rigidity and precision.
Rollers are surface-hardened, offering high wear resistance and long service life.
High-precision pressure control ensures excellent thickness consistency across the electrode width.
Independent drive system with stable output torque.
PLC control with touch-screen interface for easy parameter setting and operation.

Main Specifications

Maximum Rolling Force: 40 T
Maximum Rolling Speed: 6 m/min
Roller Diameter: ϕ200 mm
Roller Material: 9Cr3Mo
Roller Surface Hardness: HRC65
Maximum Rolling Width: 330 mm
Minimum Gap Adjustment: 3 mm
Pressure Accuracy: ±2.5 μm
Rolling Drive: AC variable-frequency motor
Equipped with Unwinding and Rewinding Function
Overall Dimensions: Approx. L1760 × W1470 × H1100 mm
Power Supply: Configurable according to local electrical standards
Power Consumption: 2.5 kW

HYDRAULIC CALENDER UNWINDING AND REWINDING MODULE XN-FSJ300

Product Introduction

The hydraulic calender unwinding and rewinding module is designed for electrode material winding and unwinding operations. The system features an independent automatic winding and unwinding structure, enabling stable material handling before and after the calendering process. It is suitable for lithium-ion battery cathode and anode electrodes, as well as other functional coated films and thin-sheet materials requiring controlled tension winding and rewinding.

Product Features

Both unwinding and rewinding adopt servo-controlled automatic tension regulation.
Equipped with automatic edge correction during unwinding and rewinding to ensure good alignment quality.
Independent electrical control system ensures stable and reliable operation.
Unwinding and rewinding units are designed as separate modules.
Can be integrated and operated in combination with a hydraulic calender system.

Main Specifications

Unwinding and Rewinding Control: Servo automatic tension control
Edge Correction Function: Automatic during unwinding and rewinding
Tension Adjustment Range: 0–30 N
Maximum Rewinding Diameter: 250 mm
Maximum Unwinding Diameter: 250 mm
Installation Dimensions:
Unwinding Unit: Approx. L410 × W790 × H530 mm
Rewinding Unit: Approx. L650 × W790 × H530 mm
Weight: Unwinding approx. 200 kg; Rewinding approx. 237 kg
Power Supply: Configurable according to local electrical standards
Frequency: 50/60 Hz
Power Consumption: 1 kW
Operation Mode: Continuous operation
Guide Roller Width: 350 mm
Maximum Mechanical Speed: 6 m/min

MANUAL COIN CELL PUNCHING MACHINE

XN-HPM-24

Product Introduction

This machine is designed for manual punching of battery electrode sheets. It supports punching operations on various materials and thicknesses using interchangeable dies. The structure is simple and stable, offering easy operation and reliable performance. It is suitable for punching lithium-ion battery cathode and anode electrodes, separators, and other thin-sheet materials in laboratory environments.

Product Features

Manual lever operation with smooth punching action and stable force output.
High-precision punching with clean edges and minimal burrs.
Supports punching of various electrode materials with thickness ranging from 0.005 to 0.5 mm.
Interchangeable punch dies allow flexible diameter selection.
Compact structure with simple operation and convenient maintenance.
Stable base design ensures safe and reliable use.
Clean appearance and small footprint, ideal for laboratory benchtop use.

Main Specifications

Punching Diameter: Adjustable, ϕ5 mm to ϕ24 mm
Applicable Material Thickness: 0.005–0.5 mm (battery electrode materials)
Punching Stroke: 25 mm
Overall Dimensions: Approx. L150 × W170 × H310 mm
Net Weight: 6 kg

AUTOMATIC CUTTING MACHINE XN-ARSC-300

Product Introduction

This machine is mainly used for automatic cutting of battery cathode and anode electrode sheets. The cutting length, quantity, and speed can be freely set. It supports single-sheet cutting as well as continuous automatic cutting. The machine features automatic feeding and automatic stopping after cutting, with adjustable cutting speed. Electrode sheets are conveyed by belts, ensuring smooth operation and convenient use.

Product Features

Cutting length, quantity, and speed can be freely programmed for independent operation.
Automatic tension control during unwinding.
Supports continuous cutting; both fixed-length cutting and optical tracking cutting modes are available to meet different process requirements.
Adjustable cutting width from 10 to 300 mm; cutting length adjustable from 1 to 9999 mm.
PLC control with HMI interface, providing user-friendly operation.
Clean and compact structural design with a simple and professional appearance.
Easy operation, safe use, and small footprint.

Main Specifications

Unwinding Mode: Pneumatic shaft unwinding with automatic tension control and constant tension operation
Fixed-Length Cutting Speed: 5–250 mm/s
Optical Tracking Cutting Speed: 5–150 mm/s
Maximum Unwinding Diameter: 250 mm
Edge Burr: ≤25 μm
Power Supply: Configurable according to local electrical standards
Power Consumption: 500 W
Compressed Air Supply: 0.5–0.8 MPa
Applicable Cutting Width: Maximum 300 mm
Applicable Cutting Length: 1–9999 mm
Cutting Method: Servo motor drive with encoder feedback
Cutting Accuracy: ±0.3 mm (adjustable via internal parameters)
Overall Dimensions: Approx. L1250 × W720 × H915 mm (guide plate length 800 mm, total length up to 1500 mm)
Net Weight: Approx. 240 kg

PRODUCT
https://xnergy.us

SEMI-AUTOMATIC ELECTRODE PUNCHING MACHINE

XN-PDC-280

Product Introduction

The Semi-Automatic Electrode Punching Machine XN-PDC-280 is designed for high-efficiency die-cutting of lithium-ion battery electrode sheets, including both cathode and anode materials. It is widely used in battery R&D laboratories, pilot production lines, and small-scale manufacturing environments.
This machine integrates hydraulic pressing with precision die-cutting, offering stable punching force, high dimensional accuracy, and consistent repeatability. It supports soft-pack battery electrode fabrication and is suitable for producing electrode samples, process validation, and experimental cell assembly.

Product Features

The Semi-Automatic Electrode Punching Machine XN-PDC-280 is designed for high-efficiency die-cutting of lithium-ion battery electrode sheets, including both cathode and anode materials. It is widely used in battery R&D laboratories, pilot production lines, and small-scale manufacturing environments.
This machine integrates hydraulic pressing with precision die-cutting, offering stable punching force, high dimensional accuracy, and consistent repeatability. It supports soft-pack battery electrode fabrication and is suitable for producing electrode samples, process validation, and experimental cell assembly.

Main Specifications

Power Supply: Configurable according to local electrical standards
Rated Power: 100 W
Compressed Air Requirement: 0.5–0.8 MPa
Maximum Punching Size: 280 × 180 mm
(Custom sizes available upon request)
Punching Pressure: 3 T
Punching Accuracy: ±0.1 mm
Overall Dimensions: Approx. L650 × W400 × H950 mm
Net Weight: Approx. 180 kg

COMPACT PNEUMATIC ELECTRODE PUNCHING MACHINE

XN-PDC-120

Product Introduction

The Compact Pneumatic Electrode Punching Machine XN-PDC-120 is a small, efficient die-cutting solution developed for lithium-ion battery electrode preparation. It is suitable for punching cathode and anode sheets for coin cells, pouch cells, and small-format batteries.
Driven by a pneumatic system, this machine offers stable punching performance without the need for electrical power for the pressing mechanism. Its compact size allows it to be easily installed inside gloveboxes, making it ideal for moisture- and oxygen-sensitive battery material processing.

Product Features

Pneumatic-driven punching mechanism with stable and consistent output force.
Compact footprint designed for glovebox integration and laboratory benches.
High punching precision ensures accurate electrode dimensions and clean edges.
No hydraulic oil system required, resulting in clean operation and low maintenance.
Simple and intuitive operation suitable for research laboratories and small-batch testing.
Rigid upper and lower platen structure ensures high die alignment accuracy.
Protective die structure enhances operational safety during punching.
Equipped with positioning reference features to improve repeatability.

Main Specifications

Compressed Air Requirement: 0.5–0.8 MPa
Maximum Punching Size: 120 × 100 mm
(Custom sizes available upon request)
Punching Pressure: 1 T
Punching Accuracy: ±0.1 mm
Overall Dimensions: Approx. L405 × W300 × H310 mm
Net Weight: Approx. 35 kg

AUTOMATIC CYLINDRICAL CELL WINDING MACHINE

XN-AWC-200

Product Introduction

The Automatic Cylindrical Cell Winding Machine is designed for precision winding of cylindrical lithium-ion battery cells. It integrates electrode winding, separator alignment, and adhesive taping into a fully automated process. The system ensures stable tension control, consistent winding accuracy, and reliable repeatability, making it suitable for pilot-scale production and small-batch manufacturing.
This machine is widely used for cylindrical cell formats such as 18650, 21700, 26650, and 32650, and can be customized according to specific process requirements.

Product Features

Fully automatic separator feeding, electrode winding, and tape application
Closed-loop tension control to ensure stable winding quality
High winding accuracy suitable for high-energy-density cells
Touchscreen HMI for intuitive operation and parameter setting
Automatic alarm and fault positioning for easy troubleshooting
Modular structure for convenient maintenance and future upgrades

Main Specifications

Applicable cell diameter: Ø3 mm core (standard), suitable for 18650 / 21700 / 26650 / 32650
Electrode length: 90–650 mm
Electrode width (cathode & anode): 28–60 mm
Separator width: 30–65 mm
Tape width: 8–15 mm
Winding accuracy (separator vs. electrode alignment):≤ ±0.3 mm
Yield rate: ≥ 98%
Production speed: up to 3 pcs/min (depending on electrode length and operator loading)
Power supply: Configurable according to local electrical standards
Total power: approx. 1.0 kW
Compressed air: 0.5–0.7 MPa
Machine dimensions (L × W × H): approx. 1750 × 1150 × 1500 mm
Weight: approx. 500 kg
Operating environment: ≤ 40 °C, RH ≤ 75%

MANUAL ELECTRODE STACKING MACHINE

XN-MSC-200

Product Introduction

The Manual Electrode Stacking Machine is designed for Z-type stacking of battery electrodes and separators. It is mainly used in laboratory and pilot-scale battery development, allowing precise alignment of cathode, anode, and separator layers during pouch or prismatic cell assembly.
The machine emphasizes simplicity, reliability, and ease of operation, making it ideal for R&D environments and process verification.

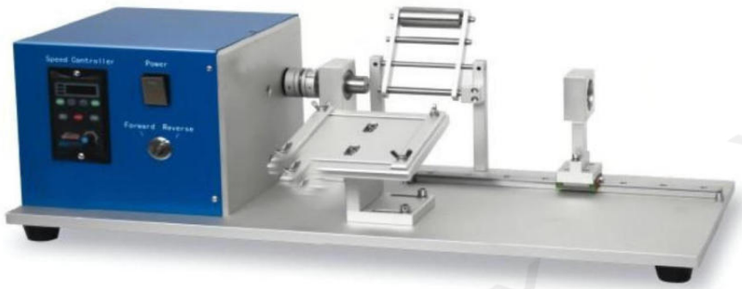
Product Features

Z-type stacking structure for accurate layer alignment
Manual operation with pneumatic-assisted pressing
Simple structure, easy maintenance, and intuitive operation
Compact footprint suitable for glovebox or laboratory integration
Stable stacking pressure for consistent electrode positioning

Main Specifications

Stacking method: Z-type manual stacking
Applicable materials: cathode, anode, separator
Electrode length range: 20–200 mm
Electrode width range: 20–200 mm
Maximum stacking thickness: ≤ 18 mm
Stacking stroke: 300 mm
Compressed air: 0.4–0.7 MPa
Power supply: Configurable according to local electrical standards
Total power: approx. 200 W
Machine dimensions (L × W × H): approx. 425 × 520 × 600 mm
Weight: approx. 30 kg

MANUAL WINDING MACHINE XN-MWC



Product Introduction

The Manual Winding Machine XN-MWC is designed for laboratory-scale winding of soft-pack (pouch) lithium batteries. It is particularly suitable for cathode and anode electrode winding processes during battery R&D, prototype development, and small-batch testing.
This machine features a compact structure and flexible adjustment, allowing researchers to manually control winding tension, alignment, and electrode positioning. It is ideal for early-stage process validation, material evaluation, and teaching laboratories where precision, visibility, and operational simplicity are required.

Product Features

Manual operation design allows full control over the winding process, suitable for experimental and R&D applications.
Adjustable guide rails enable precise positioning in up-/down, left/right, and front/back directions.
Stable mechanical structure ensures smooth and consistent winding motion.
Supports adjustable winding tension to accommodate different electrode materials.
Capable of forward and reverse rotation for flexible operation.
Compact footprint and lightweight design make it suitable for laboratory benches.
Simple structure with easy maintenance and intuitive operation.
Optional accessories available for soft-pack battery winding applications.

Main Specifications

Power Supply: Configurable according to local electrical standards
Rated Power: 100 W
Winding Speed: 0–170 rpm adjustable
Applicable Cell Width: ≤30 mm
Overall Dimensions: Approx. L665 × W300 × H220 mm
Net Weight: Approx. 20 kg

AUTOMATIC PRISMATIC CELL WINDING MACHINE XN-AWS-100

Product Introduction

The Automatic Prismatic Cell Winding Machine XN-AWS-100 is a precision winding system developed for square (prismatic) lithium-ion battery manufacturing. It integrates automatic winding, tension control, alignment correction, and intelligent monitoring to ensure high consistency and repeatability during electrode winding.
This equipment is suitable for R&D laboratories, pilot production lines, and small-to-medium batch manufacturing environments. It supports automatic stop and alarm functions to protect electrode materials and ensure stable operation.

Product Features

Advanced servo-driven winding system ensures precise speed and tension control.
Supports adjustable winding width and electrode dimensions for different battery designs.
Automatic tension control system maintains stable winding quality throughout the process.
Integrated deviation correction mechanism prevents electrode misalignment during winding.
High-precision mechanical design ensures consistent electrode stacking and winding accuracy.
Automatic stop function triggered by abnormal conditions to protect materials and equipment.
User-friendly HMI interface enables easy parameter setting and real-time monitoring.
Suitable for cathode, anode, and separator winding in prismatic lithium-ion batteries.

Main Specifications

Winding Width: 25–100 mm (adjustable)
Electrode Width: 16–60 mm (adjustable)
Electrode Thickness: 2–98 mm (adjustable)
Winding Speed: 10–180 mm/s (adjustable)
Winding Accuracy:
Electrode alignment deviation: ≤±1 mm / 500 mm
Separator alignment deviation: ≤±0.2 mm
Electrode-to-separator alignment deviation: ≤0.5 mm
Power Supply: Configurable according to local electrical standards
Rated Power: 1 kW
Compressed Air Requirement: 0.4–0.6 MPa
Net Weight: Approx. 600 kg
Overall Dimensions: Approx. L1660 × W1300 × H1570 mm (excluding material feeding extension)

FULLY AUTOMATIC ELECTRODE STACKING MACHINE XN-SKME-200

Product Introduction

This machine is mainly used for Z-fold stacking of battery cathode electrodes, anode electrodes, and separators. It features automatic unwinding, automatic separator cutting, and fully automated electrode stacking with high stacking efficiency.
Different process requirements can be achieved by adjusting fixtures, making it highly suitable for stacked pouch cell battery fabrication.

Product Features

Equipped with automatic tension control for electrode rolls and separators, and automatic separator deviation correction.
Mechanical hands enable automatic electrode pick-up, lamination, separator cutting, and tape application.
Stacking quantity and parameters can be preset and automatically controlled.
Modular fixture design allows wide adjustment range to accommodate different battery sizes.
Separate feeding design for cathode and anode electrodes to prevent material mixing.
PLC control with HMI interface, ensuring easy operation and maintenance.
Left-right movement driven by servo motors, offering high precision and convenient micro-adjustment.

Main Specifications

Stacking Method: Z-fold stacking
Operation Mode: Automatic electrode pick-up, automatic separator unwinding, automatic stacking, automatic separator cutting and collection, automatic tape application
Stacking Accuracy: Overall flatness ±0.3 mm
Stacking Size Range: Minimum: L80 mm × W55 mm; Maximum: L200 mm × W200 mm (including tabs)
Maximum Stack Thickness: 30 mm
Maximum Separator Roll Diameter: 250 mm
Separator Unwinding: 3-inch core with pneumatic expansion
Separator Tension Control: Automatic servo tension control
Separator Alignment: Automatic edge alignment control
Overall Dimensions: Approx. L1800 × W1450 × H1800 mm
Net Weight: 600 kg
Power Supply: Configurable according to local electrical standards
Power Consumption: 3 kW
Air Supply: 0.5–0.8 MPa compressed air
Operating Environment: Recommended ambient temperature 25 ±5 °C, relative humidity 30–90% RH, free from vibration and electromagnetic interference

SEMI-AUTOMATIC ELECTRODE STACKING MACHINE XN-SKMF-100

Product Introduction

This machine is mainly used for Z-fold stacking of battery cathode electrodes, anode electrodes, and separators. Electrode loading is performed manually, while electrode position correction and the entire stacking process are completed automatically. The system offers high stacking efficiency and accuracy. Different battery sizes can be realized by adjusting positioning fixtures, making it highly suitable for R&D and sample fabrication of stacked pouch lithium-ion batteries. The equipment features a desktop structure and can be operated inside a glovebox. It adopts a single-arm structure with automatic constant-tension control for roll-type separators.

Product Features

Automatic constant-tension control for roll-type separators with Z-fold automatic stacking
Stacking quantity can be preset and automatically controlled
Modular fixture design allows battery size changes through adjustable positioning fixtures, providing a wide adjustment range and ensuring stacking accuracy
PLC control with HMI interface for easy operation and maintenance
Manual electrode loading, automatic positioning, automatic vacuum pick-up, automatic stacking, manual separator loading, and tape application
Left-right movement driven by stepper motors for high precision and convenient fine adjustment
Suitable for operation inside a glovebox

Main Specifications

Stacking Method: Z-fold stacking, roll-type separator
Operation Mode: Mechanical arm automatic electrode pick-up, automatic separator unwinding with constant tension control
Vacuum Pick-up Pressure: Better than -65 kPa
Stacking Accuracy: Overall flatness ±0.3 mm (inter-electrode alignment accuracy, based on 25 layers)
Electrode Width: 40–90 mm
Electrode Length: 40–100 mm (electrode direction, excluding tabs)
Electrode Tab Length: Max. 15 mm
Stack Thickness: Max. 15 mm, maximum stack layers configurable up to 100 layers
Maximum Separator Roll Diameter: 200 mm
Separator Core: 3-inch core with expansion chuck
Stacking Speed: Electrode stacking 4–6 s per sheet, separator stacking 6–8 s per sheet (excluding electrode preparation time)
Power Supply: Configurable according to local electrical standards
Power Consumption: 600 W
Air Supply: 0.5–0.8 MPa
Overall Dimensions: Approx. L800 × W600 × H720 mm
Net Weight: 120 kg

SPLIT-TYPE TOP & SIDE HEAT SEALING MACHINE

XN-HS-200-S

Product Introduction

The Split-Type Top & Side Heat Sealing Machine is designed for sealing the top and side edges of pouch lithium-ion batteries. The machine adopts a modular split structure, allowing easy integration into glovebox environments and flexible configuration for different sealing processes.
It is suitable for laboratory research, pilot-scale battery development, and small-batch production where precise temperature control, sealing consistency, and operational safety are required.

Product Features

Split-type structure enables easy installation inside gloveboxes
Independent temperature control for upper and lower sealing heads
Digital temperature display ensures accurate and repeatable sealing conditions
Uniform sealing pressure produces consistent seal width and clean appearance
High thermal efficiency reduces energy consumption and improves process stability
Adjustable sealing pressure accommodates different pouch thicknesses
Linear guide rail design ensures smooth vertical movement and accurate alignment
Compact design with clean appearance and stable structure
Suitable for different pouch sizes with simple parameter adjustment

Main Specifications

Applicable pouch size: side sealing ≤ 190 mm, top sealing ≤ 190 mm (including gas outlet)
Maximum sealing length: 200 mm
Sealing width: standard 5 mm (customizable)
Heating temperature range: ambient to 250 °C, adjustable
Temperature control accuracy: ±2 °C
Sealing time: standard 25–35 s, adjustable from 0–99 s
Sealing thickness accuracy: ≤ 15 μm
Safety protection: high-temperature resistant insulation design
Compressed gas: 5–8 kg/cm² (glovebox-compatible gas recommended)
Power supply: Configurable according to local electrical standards
Total power: 900 W
Working unit dimensions (L × W × H): approx. 310 × 230 × 260 mm
Control unit dimensions (L × W × H): approx. 350 × 310 × 215 mm
Weight: approx. 20 kg

CERAMIC ROTARY PLUNGER PUMP

XN-RPP-50

Product Introduction

The Ceramic Rotary Plunger Pump is a high-precision metering pump designed for accurate and stable delivery of low- to high-viscosity liquids. It is widely used in industries such as battery electrolytes, pharmaceutical liquids, acids, solvents, emulsions, adhesives, and laboratory reagents.
The pump utilizes ceramic materials for key wetted components, ensuring excellent chemical resistance, wear resistance, and long service life under continuous operation.

Product Features

High-precision volumetric metering with excellent repeatability
Ceramic components provide strong corrosion resistance and wear resistance
Suitable for corrosive, abrasive, and high-purity liquid media
Smooth flow output with minimal pulsation
Wide adjustable flow range for flexible process control
Compact structure with stable performance and easy maintenance
Multiple control modes available, including manual and automated operation
Compatible with PLC systems for integrated process control
Designed for long-term continuous operation with low maintenance requirements

Main Specifications

Pump type: single-head positive displacement ceramic plunger pump
Wetted materials: ZrO_2, Al_2O
Applicable media: electrolytes, acids, solvents, emulsions, adhesives, reagents
Plunger diameter accuracy: ±2 μm
Drive mode: servo motor or stepper motor
Speed range: 1–1200 rpm, adjustable
Pressure capability: up to 3 MPa
Flow rate range: 0.01–10000 μL per stroke, max 10000 μL per cycle
Flow calculation modes: Q (flow rate), Q × time, N × strokes
Operating temperature: ambient to 250 °C (depending on media compatibility)
Sealing materials: PTFE / fluororubber / perfluoroelastomer (customizable)
Tubing size options: Φ2.5 / Φ4.0 / Φ6.0 mm (depending on flow range)
Pump dimensions (L × W × H): approx. 145 × 300 × 150 mm
Control unit dimensions (L × W × H): approx. 200 × 175 × 330 mm
Weight: approx. 10 kg (pump head), control unit included separately
Power supply: Configurable according to local electrical standards
Total power: 300 W
Operating environment: 0–40 °C, relative humidity < 80%

ALUMINUM-PLASTIC FILM FORMING MACHINE

XN-CF-200

Product Introduction

The Aluminum-Plastic Film Forming Machine is designed for semi-automatic forming of aluminum-plastic laminate films used in pouch lithium-ion batteries. Through controlled pressing and forming processes, the machine shapes aluminum-plastic films into stable cavities with uniform depth and high dimensional consistency.
It is widely used in battery R&D laboratories, pilot lines, and small-scale production environments where high forming accuracy and repeatability are required.

Product Features

Semi-automatic forming process with stable pressure control
Fast die change design for improved operational efficiency
Uniform cavity depth and smooth forming surface
High rigidity frame structure ensures consistent forming quality
Independent upper and lower platen structure for precise alignment
Safety-focused design with protective covers and emergency stop
Compact footprint suitable for laboratory and pilot-scale deployment

Main Specifications

Maximum forming size: up to 200 mm × 150 mm (customizable)
Maximum forming depth: up to 6 mm (depending on film strength)
Forming pressure: up to 3 tons, adjustable
Pressure display: digital display
Compressed air: 0.5–0.7 MPa
Power supply: Configurable according to local electrical standards
Total power: 100 W
Machine dimensions (L × W × H): approx. 610 × 290 × 1060 mm
Weight: approx. 180 kg
Mold parallelism tolerance: 0.02 mm
Upper and lower platen flatness: 0.02 mm

TOP-SIDE HEAT SEALING MACHINE

XN-HS-200

Product Introduction

The Top-Side Heat Sealing Machine is designed for sealing the top edge of pouch lithium-ion batteries after electrolyte filling. By precisely controlling temperature, pressure, and sealing time, the machine ensures strong, uniform, and reliable sealing of aluminum-plastic films.
It is suitable for laboratory research, pilot-scale production, and small-batch manufacturing of pouch cells, providing consistent sealing quality close to production-line standards.

Product Features

Independent heating control for upper and lower sealing heads
Digital temperature and pressure display for precise process control
Uniform sealing pressure ensures consistent seal width and appearance
High sealing strength with excellent air-tightness
Safety protection design with insulation and shielding
Simple operation, stable performance, and compact structure

Main Specifications

Maximum sealing length: ≤ 200 mm
Sealing width: standard 5 mm (customizable)
Sealing thickness: 0.15–0.30 mm
Applicable pouch size: width ≤ 200 mm
Top sealing depth: ≤ 200 mm (gas exhaust supported)
Upper sealing temperature: max. 300 °C (recommended ≤ 200 °C)
Lower sealing temperature: max. 300 °C (recommended ≤ 160 °C)
Sealing pressure: 0.5–0.7 MPa (adjustable)
Sealing time: 0.25–35 s (adjustable)
Power supply: Configurable according to local electrical standards
Total power: 900 W
Machine dimensions (L × W × H): approx. 340 × 345 × 440 mm
Weight: approx. 30 kg

PRODUCT
https://xnergy.us

NEEDLE-PIERCING SECONDARY VACUUM SEALING MACHINE XN-FVHS-200

Product Introduction

The Needle-Piercing Secondary Vacuum Sealing Machine is designed for secondary vacuum sealing of pouch lithium-ion batteries after electrolyte filling and resting. The system performs vacuum extraction through needle piercing followed by heat sealing, effectively improving internal vacuum quality and sealing reliability.
This equipment is suitable for laboratory research, pilot-scale production, and small to medium batch pouch cell manufacturing where stable vacuum level and consistent sealing quality are required.

Product Features

Vacuum-assisted secondary sealing process improves internal cell consistency
Heat sealing temperature is adjustable to accommodate different pouch materials
Uniform sealing pressure ensures flat and reliable seal edges
Vertical motion guided by dual linear guides ensures high sealing parallelism
Needle piercing and sealing operations are stable and repeatable
Compact structure with integrated control panel for convenient operation
Suitable for different pouch battery sizes with flexible parameter adjustment
PLC and HMI control enable intuitive operation and process stability

Main Specifications

Sealing temperature range: ambient to 250 °C, adjustable
Temperature control accuracy: ±1.5 °C
Heat sealing pressure: 0–7 kg/cm², adjustable
Sealing time: 0–99 s, adjustable
Sealing width: 5 mm (customizable according to requirements)
Maximum sealing length: 200 mm
Vacuum degree: adjustable down to –95 kPa
Power supply: Configurable according to local electrical standards
Total power: 900 W
Compressed gas: 0.5–0.7 MPa
Overall dimensions (L × W × H): approx. 515 × 400 × 590 mm

HOT PRESS FORMING MACHINE XN-HA-200

Product Introduction

The Hot Press Forming Machine is designed for thermal pressing and reshaping of pouch lithium-ion battery cells after initial sealing. By applying controlled heat and pressure, the machine improves cell flatness, internal structure uniformity, and overall appearance quality.
It is commonly used after pouch sealing processes to enhance battery consistency and is suitable for laboratory testing, pilot lines, and small-scale production environments.

Product Features

Automatic temperature and pressure control ensures stable forming conditions
Adjustable pressing pressure allows compatibility with different cell structures
Compact mechanical design provides easy operation and high stability
Uniform heating improves forming consistency and reduces internal stress
Simple control interface enables fast parameter setup and adjustment
Reliable safety design ensures stable operation during thermal pressing

Main Specifications

Effective pressing area (L × W): 200 × 200 mm
Working speed: 300–500 cycles per hour
Pressing force: 0–1 ton
Power supply: Configurable according to local electrical standards
Total power: 1 kW
Compressed gas: 0.5–0.7 MPa
Overall dimensions (L × W × H): approx. 515 × 320 × 720 mm
Weight: approx. 60 kg
Optional pressure detection module with resolution up to ±1 kg

COIN CELL MANUAL CRIMPING MACHINE

XN-CCM-20

Product Introduction

The Coin Cell Manual Crimping Machine is designed for laboratory-scale coin cell assembly and sealing. It is mainly used for sealing coin-type batteries during material research, performance evaluation, and small-batch sample preparation. The machine can also be used for battery disassembly research, electrode pressing, and post-test analysis.
This system adopts a compact mechanical structure and manual hydraulic operation, providing stable sealing force and reliable forming results. It is suitable for research laboratories, universities, and pilot production environments.

Product Features

Precision-machined mold structure ensures stable and repeatable sealing quality
Manual hydraulic pressure mechanism provides smooth operation and clear force feedback
Built-in safety pressure relief valve allows fine adjustment of sealing pressure
Internal pressure gauge enables direct observation and accurate pressure control
Compact footprint allows easy placement inside gloveboxes
Compatible with multiple coin cell formats through mold replacement
Simple structure with high reliability and low maintenance requirements

Main Specifications

Manual operating force: less than 5.5 kg
Sealing mold material: imported mold steel, corrosion resistant and durable
Structural material: aluminum alloy combined with high-strength steel
Surface treatment: environmentally friendly coating with anti-corrosion protection
Overall dimensions (L × W × H): approx. 260 × 270 × 350 mm
Weight: approx. 25 kg
Compatible with CR20 series coin cells; CR24 and CR1620 series supported with optional molds

COIN CELL ELECTRIC CRIMPING MACHINE

XN-CCME-20

Product Introduction

The Coin Cell Electric Crimping Machine is designed for electric-driven sealing of coin-type batteries. It is widely used in laboratory research for battery material evaluation, as well as in pilot-scale and small-batch production. The electric press mechanism ensures consistent sealing pressure and improved operational efficiency compared to manual systems.
This equipment is suitable for coin cell assembly processes requiring higher repeatability, stable pressure control, and reduced operator workload.

Product Features

Electric-driven pressing system ensures stable and uniform sealing force
360-degree open mold structure allows easy loading and unloading of coin cells
Compact design suitable for glovebox integration
Stable operation with low noise and high reliability
High-precision mold design guarantees consistent sealing quality
Internal pressure display allows real-time monitoring and adjustment
Sealing pressure is adjustable and can be preset
Compatible with multiple coin cell formats via interchangeable molds

Main Specifications

Mold material: imported Japanese mold steel
Structural material: aluminum alloy combined with high-strength steel
Surface treatment: environmentally friendly coating with anti-corrosion finish
Power supply: Configurable according to local electrical standards
Overall dimensions (L × W × H): approx. 270 × 180 × 570 mm
Weight: approx. 25 kg
Compatible with CR20 series coin cells; CR2450 and CR1620 supported with optional molds

CYLINDRICAL CELL MANUAL CRIMPING MACHINE

XN-SMC-18

Product Introduction

The Cylindrical Cell Manual Crimping Machine is designed for laboratory-scale assembly and sealing of cylindrical lithium-ion cells. It is primarily used for material research sample preparation, cylindrical battery sealing studies, and small-batch pilot production. The system provides stable and repeatable sealing performance through a manual hydraulic press mechanism.
This equipment is well suited for research laboratories, battery development centers, and glovebox-integrated environments where compact size, reliable sealing force, and precise pressure control are required.

Product Features

High-precision mold design ensures consistent and reliable sealing quality
Robust steel frame structure provides stable operation and enhanced safety
Manual hydraulic pressing system allows smooth force application and clear tactile feedback
Integrated pressure gauge enables direct observation and precise control of sealing pressure
Interchangeable mold system supports multiple cylindrical cell formats
Compact footprint allows easy placement inside gloveboxes
Simple mechanical structure ensures low maintenance and long service life

Main Specifications

Manual operating force: less than 5.5 kg
Mold material: imported Japanese mold steel
Structural material: aluminum alloy combined with high-strength steel, corrosion-resistant surface treatment
Normal sealing pressure range: 55–80 kg/cm²
Overall dimensions (L × W × H): approx. 280 × 270 × 440 mm
Weight: approx. 24 kg
Supported cell formats: 14, 18, 21, 26, 32 series cylindrical cells with corresponding molds

CYLINDRICAL CELL PNEUMATIC CRIMPING MACHINE

XN-SMCP-18

Product Introduction

The Cylindrical Cell Pneumatic Crimping Machine is designed for laboratory and pilot-scale sealing of cylindrical lithium-ion batteries. It is suitable for battery material research, cylindrical cell development, and small-scale production environments. The pneumatic drive system provides stable and consistent sealing force with improved operational efficiency.
This system supports single-step or multi-step sealing processes and is compatible with glovebox operation, making it ideal for controlled atmosphere battery assembly.

Product Features

Pneumatic-driven operation enables easy and efficient sealing without manual force
Dual-position sealing design improves sealing consistency and edge quality
Precision-machined molds ensure accurate cell alignment and uniform sealing results
Stable steel frame structure enhances safety and durability
Compact design allows convenient integration into glovebox systems
Adjustable sealing pressure ensures compatibility with different cell formats
Optional short-circuit protection function available for enhanced safety

Main Specifications

Standard configuration: 18650 cylindrical cell sealing mold, one-step or two-step sealing
Optional molds available for other cylindrical cell formats
Air supply: 0.4 MPa clean compressed air or nitrogen
Air consumption: approx. 0.5 L per sealing cycle
Recommended sealing pressure: 0.4 MPa
Maximum sealing stroke: 30 mm
Mold compatibility: 18650 standard mold, optional 21, 26, 32 series molds
Overall dimensions (L × W × H): approx. 360 × 220 × 490 mm
Weight: approx. 30 kg
Power supply: Configurable according to local electrical standards

PRODUCT
https://xnergy.us

FULLY AUTOMATIC TABLESS BATTERY CELL FORMING MACHINE XN-XZY-60

Product Introduction

This machine is mainly used for cell forming and correction of batteries and supercapacitor cells. It performs press-forming of tabless electrode ends, facilitating subsequent laser welding of current collectors. The process ensures that aluminum foil materials form uniform and well-defined inward folds, delivering excellent forming consistency and quality.

Product Features

Adopts a four-position forming process to create uniform inward folds in aluminum foil, enabling tabless cell structures and improved material consistency.
Integrated product dimension inspection function for screening qualified products.
Optional on-load resistance testing with configurable measurement range to detect and reject non-conforming cells.
Model parameters and length adjustments are displayed via optical scale measurement, enabling precise and intuitive adjustment.
PLC control with HMI interface for simple and intuitive operation.
High-precision mold design ensures accurate and stable cell forming.
Industrial exterior design with aluminum enclosure, offering a clean appearance and easy operation.
Supports multiple automatic operation modes to adapt to various production scenarios.

Main Specifications

Applicable Products: 60-type battery and supercapacitor cells (cell diameter approx. 57 mm), length 50–204 mm, customizable
Forming Speed: Adjustable
Holding Time: Adjustable
Slide (Press) Maximum Stroke: 20 mm
Length Positioning Accuracy: ±0.03 mm
Overall Forming Length Tolerance: ±0.1 mm
Tooling Service Life: ≥5 million cycles under normal operation
Control System: PLC process control
Production Capacity: ≥3 PPM
Yield Rate: 98%
Power Supply: Configurable according to local electrical standards
Air Supply Pressure: 0.5–0.7 MPa
Air Consumption: 0.5 m^3/min
Power Consumption: 750 W
Overall Dimensions: Approx. L1600 × W1080 × H1750 mm
Net Weight: 450 kg

SUPERCAPACITOR CELL HOUSING INSERTION MACHINE XN-RK-60

Product Introduction

This machine is designed for supercapacitor assembly, where the welded cell and top cover with O-ring are inserted together into the outer casing. The O-ring provides reliable sealing inside the casing to ensure internal airtightness.

Product Features

High-precision linear guide sleeves are used for alignment, ensuring stable and accurate insertion dimensions.
Insertion height is adjustable to accommodate supercapacitor cells of different heights.
Integrated production counting function for convenient output statistics.
Insertion speed is adjustable via pneumatic control.
Equipped with photoelectric safety protection to ensure safe and reliable operation.
Industrial exterior design with refined appearance and user-friendly operation.
PLC control with HMI display for simple and intuitive operation.
Optional high-frequency heating-assisted insertion, suitable for matching outer casings and current collector sheets.

Main Specifications

Applicable Products: 60-type supercapacitor cells, length 50–204 mm, customizable
Insertion Depth: Adjustable
Insertion Depth Accuracy: ±0.1 mm
Insertion Speed: Up to 50 mm/s, adjustable
Tooling Service Life: ≥5 million cycles under normal operation
Production Capacity: 23 pcs/min
Yield Rate: 98%
Air Supply Pressure: 0.5–0.8 MPa, adjustable
Power Supply: Configurable according to local electrical standards
Power Consumption: 500 W
Net Weight: 300 kg
Overall Dimensions: Approx. L700 × W500 × H2190 mm

PRODUCT
https://xnergy.us

SUPERCAPACITOR SECONDARY COMPRESSION SEALING MACHINE

XN-MFK-60

Product Introduction

This machine is suitable for secondary molding and sealing of battery and supercapacitor outer casings. It adopts a fixed-position mold structure, where the upper and lower molds press downward while the middle mold holds the casing. The mold assembly clamps and stabilizes the product during forming, and the subsequent downward pressing operation completes the sealing process with high consistency and reliability.

Product Features

Mold-based circumferential clamping sealing is adopted, applying uniform holding force around the entire circumference to ensure minimal dimensional variation of the casing edge after sealing and excellent sealing performance.
The mold is guided by precision guide posts and guide sleeves, providing extremely high guiding accuracy and ensuring parallelism during pressing.
Pressing stability is ensured by mold-based operation, eliminating the need for hydraulic systems and reducing the risk of oil contamination, making the equipment easy to automate.
Sealing pressure and holding time are adjustable to accommodate different product specifications.
PLC control system ensures stable operation, high reliability, and easy operation.
Color touch-screen LCD interface provides intuitive parameter setting and process monitoring.
The machine frame is fabricated from high-quality steel with solid welding, polished surfaces, and an aesthetically pleasing finish.
Equipped with photoelectric safety protection and safety doors to ensure safe and reliable operation.

Main Specifications

Applicable Products: 60-type supercapacitor cells, length H50–204 mm, customizable
Adaptable Product Height Tolerance: ≤0.03 mm
Sealing Length Accuracy: ±0.1 mm
Sealing Process: Mold-based compression sealing
Tooling Service Life: ≥5 million cycles under normal operation
Production Capacity: 23 pcs/min
Yield Rate: 98%
Air Supply Pressure: 0.5–0.7 MPa, adjustable
Power Supply: Configurable according to local electrical standards
Air Consumption: 0.4 m^3/min
Power Consumption: 500 W
Overall Dimensions: Approx. L600 × W565 × H1750 mm
Net Weight: 500 kg

FULLY AUTOMATIC VACUUM DRYING SYSTEM

XN-MFK-60

Product Introduction

This system is mainly used for vacuum drying and nitrogen circulation baking of batteries and supercapacitors, followed by electrolyte filling inside a glovebox under moisture-free and oxygen-free conditions. The working process is as follows: products are placed into the vacuum chamber, where precise baking parameters are set, including heating temperature, heating time, holding time, vacuum level, nitrogen filling, and circulation cycles.

Product Features

Square vacuum chamber design with independently arranged shelves ensures flat placement and uniform heating.
Each vacuum chamber is independently controlled and equipped with optional N_2 circulation for baking; temperature and vacuum parameters are displayed independently.
Fully automatic control system allows independent setting of temperature, vacuum, nitrogen filling, holding time, and circulation cycles, with flexible operation.
Real-time display of temperature, vacuum pressure, operating time, and remaining time via intuitive HMI interface.
Inner chamber and shelf structures are manufactured from high-quality stainless steel for cleanliness, hygiene, and durability.
Vacuum chamber body is made of SUS304 stainless steel with precision machining and welded construction, featuring excellent airtightness and durability.
Vacuum pipeline uses stainless steel piping with optimized flow paths, enabling fast vacuum pumping and oil-free operation.
Equipped with imported solenoid valves for rapid gas switching and precise control.
Key components are selected from high-quality imported brands to ensure long-term stable operation.
External enclosure adopts powder-coated surface treatment, offering a clean, durable, and professional appearance.

Main Specifications

Temperature Range: Ambient temperature to 180 °C
Temperature Resolution: 0.1 °C
Temperature Fluctuation: ≤ ±2 °C
Temperature Uniformity: ≤ ±2 °C
Heating Time: From ambient temperature to 140 °C within 30 minutes; temperature overshoot ≤5 °C, with over-temperature alarm protection
Ultimate Vacuum Level: ≤ −98 kPa
Production Capacity: One unit can bake up to 180 supercapacitor cells per batch (calculated based on 60-type, L138 cells)
Air Supply Pressure: 0.5–0.7 MPa
Power Supply: Configurable according to local electrical standards
Total Power Consumption: 8 kW
Net Weight: 600 kg
Vacuum Chamber Dimensions: Approx. L580 × W420 × H270 mm
Overall Dimensions: Approx. L1600 × W1370 × H2150 mm

SUPERCAPACITOR CELL PACKAGING LINE XN-RKGCFK

Product Introduction

This production line is designed for automatic sealing and packaging of batteries and supercapacitor outer casings. It integrates automatic labeling, high-precision electrolyte injection, pre-sealing, secondary sealing, and inspection, enabling high-efficiency, continuous automated production.

Product Features

Fully automatic operation with stable performance, high efficiency, and reduced labor requirements.
Programmable control supports both single-station independent operation and fully automatic line operation, offering flexible production modes.
Adopts fixture-based positioning to securely hold products with high concentricity, ensuring uniform electrolyte injection and sealing quality.
High-precision metering pumps and valve assemblies ensure accurate electrolyte injection volume and consistent sealing results.
Inspection stations automatically classify qualified and non-qualified products and transfer them to corresponding conveyors with high reliability.
PLC control system with HMI interface enables intuitive operation and process monitoring.
Industrial exterior design with refined appearance and easy operation.

Main Specifications

Applicable Products: Φ60 supercapacitor cells and battery products, customizable
Number of Stations: 1–6 stations, customizable
Injection Volume: 0–250 ml, adjustable
Vacuum Level: Injection vacuum pressure maintained at ≥ –98 kPa (vacuum chamber supplied by customer)
Vacuum Time: Low-vacuum duration, injection time, pressurization pressure, and pressurization time independently adjustable
Wetted Parts: Injection components made of stainless steel; machine frame made of aluminum alloy with confirmation-resistant design
Process Gas Pressure: Consistent with glovebox operating gas pressure, 0.2–0.4 MPa
Power Supply: Configurable according to local electrical standards
Power Consumption: 1.5 kW
Overall Dimensions:
Execution Section: Approx. L1410 × W420 × H860 mm
Control Section: Approx. L600 × W450 × H1500 mm
Net Weight: 180 kg

SINGLE-SIDED DUAL-WORKSTATION GLOVE BOX XN-2440/750/900

Product Introduction

This glove box system is widely used for handling materials that require water- and oxygen-free environments, such as lithium battery materials, semiconductors, supercapacitors, specialty chemicals, catalysts, pharmaceuticals, powder materials, and new materials. It is suitable for universities, research institutes, and industrial enterprises, and is widely applied in fields including new energy, metallurgy, electronics, chemical engineering, geology, mining, and pharmaceuticals.

Product Features

The system consists of a sealed glove box chamber and a gas purification system, forming a fully enclosed circulation system in which purified inert gas continuously circulates.
The gas purification system enables efficient removal of moisture and oxygen to maintain a stable inert atmosphere.
Human-machine interface with color touch screen and Chinese interface enables intuitive operation and real-time monitoring.
Fully automatic control based on PLC and HMI allows coordinated control of gas purification, pressure regulation, vacuum, gas filling, circulation, and regeneration processes.
The system automatically monitors operating conditions; when abnormal parameters or system faults are detected, alarms are triggered and protective measures are activated to ensure equipment safety and reliability.
High sealing performance ensures low gas leakage and long-term stable operation.
Modular design supports customization and functional expansion, including heating, cooling, purification upgrades, and fast safety viewing windows.

Main Specifications

Chamber Material: 304 stainless steel, 3 mm thickness, inner surface brushed stainless steel finish
Overall Dimensions: L2440 × W750 × H1900 mm
Front Window: Inclined viewing window with tempered safety glass, 8 mm thickness
Glove Ports: Aluminum alloy flanges, O-ring sealed
Gloves: Butyl rubber gloves, thickness 0.4 mm, diameter 8 in, length 32 in
Purification System: Molecular sieve 0.3 nm, one gas inlet and one gas outlet
Shelves: Stainless steel shelves, adjustable height
Lighting: LED lighting installed above the working chamber
Interfaces: Reserved DN3, DN40 KF ports; DN1 feedthrough (220 V)
Antechamber: Large chamber ϕ360 × L600 mm; small chamber ϕ150 × L300 mm, both made of 304 stainless steel with brushed finish
Moisture Level: ≤ 500 ppm after vacuuming and gas replacement; can reach lower levels after regeneration
Oxygen Level: 0–1000 ppm (ZrO_2 sensor), preventing exposure issues associated with air-based sensors
Moisture Sensor: ≤ 1 ppm
Power Supply: Configurable according to local electrical standards
Power Consumption: 1.2 kW
Overall Dimensions: Approx. L3300 × W900 × H2100 mm
Net Weight: 600 kg