研科智能

Company Profile

Established in Dongguan in 2018, Yanke Intelligent Technology Co., Ltd. is a national high-tech enterprise that focuses on serving enterprise research and development, universities, and research institutes. It has long been committed to creating a safe, efficient, and intelligent one-stop experimental research and development service platform. After years of development and accumulation, it has become a comprehensive solution provider for basic research on materials and new energy, small and medium-sized trials, testing and evaluation; The product application covers directions such as lithium-ion batteries, sodium ion batteries, fuel cells, solid-state batteries, etc. Yanke Intelligence has established a global service network and delivered equipment to more than 20 countries around the world, providing turnkey engineering solutions for scientists in their laboratories.

Main product series:

Battery research and development experimental preparation equipment (including preparation plans for lithium-ion batteries, sodium ion batteries, solid-state batteries, etc.);

Battery safety testing equipment (testing equipment that complies with international and domestic standards such as GB31241, GB31485, IEC62133, UN38.3, etc.);

A turnkey project for the full process system equipment plan of lithium-ion battery production and preparation, including various battery preparation plans such as buckle, column, soft package, square aluminum shell, etc;

Fuel cell research and development experimental preparation equipment (including preparation schemes for solid oxide, proton exchange membrane fuel cells, etc.);

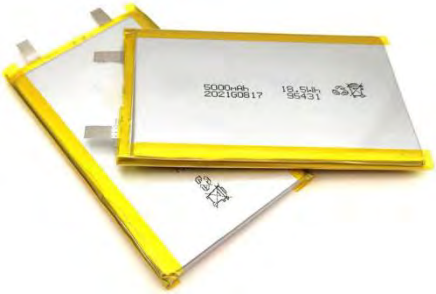
And pass ISO14001, ISO9001, ISO45001 quality system certification; Obtained the title of National High tech Enterprise; Obtained over 50 certificates, including invention and utility model patents.

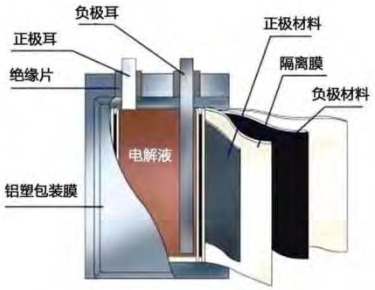
Website: www.yanke181206.com

Pouch cell introduction

According to the material of the shell, lithium-ion battery cell are divided into pouch cell, steel shell battery cell, aluminum shell battery cell, etc

Pouch cell is a type of battery cell in which a polymer shell is placed on the outer shell of a liquid lithium-ion battery cell, and the battery cells are structurally sealed with aluminum-plastic film.





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Vacuum Mixer YK-JBJ-5L

Product Feature

◆ The agitator blade has a double blade spiral 90 degree structure, equipped with a high-speed dispersion plate and a scraping wall, ensuring no dead corners during mixing.
◆ The temperature control device is a multi-point temperature measurement at the bottom ,accurately measuring the actual temperature of the material.
◆ The tank adopts double jacket structure, can pass cooling water, suitable for various process requirements.
◆ The slurry barrel is designed with electric lifting and equipped with spotlights for easy operation.

Product Introduction

This product is an efficient equipment integrating vacuum mixing and dispersion, which is suitable for the positive and negative electrode slurry mixing process in the battery experiment process. Can be used in various solvents and powder mixing process.

Tank volume	Maximum effective volume 5L, designed volume 7L
Vacuum degree	－0.098 MPA
Stirring speed	0~80rpm
Dispersion speed	0~6000rpm
Applicable viscosity	0~12000CPS
Power supply	AC 380V / 50 Hz, power approximately 4KW
Weight	Approximately 450kg
Size	Approximately L(1.3m) x W(0.9m) x H(1.7m)

Transfer Coating Machine YK-TBJ200-1m

Product Feature

◆ Substrate tension control, stable belt running, equipped with correction device.
◆ The scraper adopts a high-precision displacement sensor combined with a servo motor for automatic adjustment.
◆ The design of circulating air in the oven saves losses, and the independent air doors of the blower and exhaust fan are adjusted
◆ PLC control, touch screen operation, convenient and easy to use.

Product Introduction

Applied to the positive and negative electrode coating process of lithium batteries, adopting a high-precision vertical plate structure and stable operation. The central controller with high-speed computing function can be used for continuous and intermittent coating, making it convenient for surface coating processes on various substrates

Coating method	Continuous coating, intermittent coating
Operating substrate range	Aluminum foil 10um~25um copper foil 6um~15um
Effective coating width	The coating width is 200mm
Single-side coating thickness range	The thickness can be applied to 1um~30um
Coating precision	Single-side coating thickness accuracy of 1-2 um
Running speed	The coating speed is 0.5m~1m / min
Baking temperature range	Room temperature ~80℃, temperature deviation ± 3℃
Correction accuracy of winding and unwinding	≤±0.5mm
Power supply	AC 380V / 50Hz, power approximately 13KW
Weight	Approximately 900 kg
Size	Approximately L(2.5m) x W(1.4m) x H(1.6m)

Electrode Roller Pressing Machine YK-GYJ-210x330

Product Introduction

Suitable for thinning and increasing density of lithium battery electrodes, in order to achieve the designed/predetermined volumetric energy density and battery performance of lithium batteries produced by rolled electrodes.

Product Feature

◆ The constant pressure pump station adopts an automatic gas-liquid boosting workstation imported from the United States, an Italian solenoid valve, and a Swedish pressure sensor.

◆ The electrode roller is made of high alloy forged steel material, with dual medium frequency induction quenching and electroslag remelting process treatment.

◆ The two rollers are horizontally arranged up and down, and the overall memorial archway type

Effective size of rolling surface	Φ210mmx330mm, The effective roller pressure width is 150~320mm
Linear pressure between two rollers	Maximum 35T
Roller hardness	HRC 65, hardness uniformity HS ± 2
Roller material	9Cr3mo
Roller surface roughness	Ra≤0.2
Roll straightness	≤±0.0015mm
Installation radial runout	≤±0.0025mm
Equipment operation speed	0~4m/min
Power supply	AC 220V / 50Hz, power approximately 7KW
Weight	Approximately 1,000 kg
Size	Approximately L(1.5m) x W(1.5m) x H(1.3m)

Electrode Cutting Machine YK-CPJ-400

Product Introduction

Applied to segmented gaps and fixed length cutting of lithium battery electrodes. The cutting length, quantity, and speed can be set arbitrarily, and it has an automatic unwinding function. The tension controller automatically feed and stops the material.

Product Feature

◆ Unwinding Automatic tension adjustment

◆ Automatic feeding with color code sensing gap cutting function.

◆ Manual, automatic operation function, fault alarm function.

◆ Using a programmable controller PLC for automatic control.

Cutting width	≤400mm
Rolling material diameter	＜Φ350mm
Parallelism of upper and lower feeding rollers	≤±0.10mm
Feeding speed	≥15m/min
Feeding accuracy	±0.2mm/100mm
Burr depth	≤±0.15μm
Unwinding method	Active tension unwinding of inflatable shaft, magnetic powder tension
Power supply	AC 220V / 50Hz, power approximately 2KW
Weight	Approximately 400kg
Size	Approx. L (1m) x W(1.1m) x H(1.5m)

Manual Die-Cutting Machine YK-SCP-200

Product Introduction

Suitable for manual punching and shaping of single positive and negative electrode pieces of lithium batteries.

Product Feature

◆ Using air-liquid pressurized cylinder drive, small energy consumption, large output.
◆ Full air control is adopted, simple operation, and automatic pressurization is realized through pneumatic logic gas circuit.
◆ Roll or sheet type electrode feeding.
◆ Replacement of the knife mold is convenient and quick.
◆ Small overall size, save space.

Maximum punch pressure	≤3T
Maximum punch cut area	150mm x 200mm
Dimensional accuracy	≤0.1mm
Electrode appearance	Burrs are less than 15um
Edge size	≥5mm
Power supply	AC 220V / 50Hz, power approximately 0.1KW
Weight	Approximately 200kg
Size	Approximately L(0.6m) x W(0.8m) x H(1.2m)

Manual Laminating Machine YK-SDP-200

Product Introduction

Applied to the lithium battery electrode stacking process, using an isolation membrane automatic tension control system. The cylinder drives the diaphragm to move left and right to achieve Z-shaped stacking, and adopts a cantilever design that is easy to operate.

Product Feature

◆ Z-shaped semi-automatic lamination, the diaphragm tension is adjustable.
◆ Electrode are placed manually, and fixtures assist in positioning to ensure the uniformity of lamination.
◆ Adopting compatibility design, the battery size can be adjusted by positioning fixtures, with a wide adjustment range.
◆ The desktop design is compact and convenient, with simple operation and easy maintenance.

Lamination efficiency (second / s)	(5.0~8.0) Number of layers + (10~15)
Electrode and diaphragm alignment accuracy	Central deviation is ± 0.5mm
Diaphragm end face alignment accuracy	±0.5mm
Adjacent electrode alignment accuracy	±0.5mm
Electrode overall alignment accuracy	±0.5mm
Lamination sheet size	Length 60~200mm width 50~150mm
Power supply	AC 220V / 50Hz, power approximately 0.2KW
Weight	Approximately 50kg
Size	Approximately L(0.5m) x W(0.5m) x H(0.6m)

Ultrasonic Welding Machine YK-HJ-4200

Product Introduction

Suitable for welding the positive and negative electrode foils and tabs of pouch cell lithium-ion batteries. Equipped with an adjustable welding platform.

Product Feature

◆ Using advanced constant current and constant voltage circuit technology, the ultrasonic amplitude is continuously adjustable.

◆ The mechanical structure of the machine head adopts a German X guide rail structure, with extremely high precision.

◆ System power on self-test, automatic frequency search, no need to re-calibrate the system after replacing or repairing the welding head or mold

Positive/negative electrode material	Aluminum foil, copper foil
Positive / negative electrode thickness	0.006～0.020mm
Positive / negative electrode ear material	Aluminum tabs, nickel tabs, copper nickel-plated tabs
Positive / negative electrode tabs thickness	0.1-0.3mm
Maximum number of laminated layers	10-30 layer
Supporting power	4200W + (peak value)
Supersonic frequency	20KHz
Welding pulling	≥300N
Power supply	AC 220V / 50Hz, power approximately 4.2KW
Weight	Approximately 60kg
Size	Head: about L(0.5m) x W(0.4m) x H(0.5m) Control box: about L(0.5m) x W(0.5m) x H(0.2m)

Hot Pressure Testing Machine YK-YXJ-300

Product Introduction

Used for hot pressing and short circuit testing of square shaped battery cells.

Product Feature

◆ Manual test and automatic test functions are optional.

◆ Short circuit testing of batteries under heating and pressure conditions, with precise and adjustable heating temperature and applied pressure

◆ Precision testing of insulation resistance, identification of micro short circuit conditions in battery cells, and judgement of battery cell safety performance

◆ Peripheral safety light screen design ensures user safety.

Maximum shaping area	300 mm-long x 200mm-wide
Maximum working pressure	450kg, with adjustable pressure
Hot pressure temperature control range	30℃～120℃
Temperature accuracy	±3℃
Temperature rise time	About 20 minutes (target temperature: 80℃)
Shaping time	The 0~99.9 seconds are adjustable
Power supply	AC 220V / 50Hz, power approximately 2.5KW
Weight	Approximately 100kg
Size	Approximately L(0.5m) x W(0.5m) x H(0.6m)

Manual Shell Punching YK-SCK-300

Product Introduction

Used for manual punching and forming of aluminum-plastic film for pouch cell

Product features

◆ Adopting a four guide pillar structure, it slides smoothly up and down with high accuracy.
◆ Replacing molds is convenient and fast.
◆ Installing light screen, double button operation and outer cover protection.

Maximum aluminum film size	300 mm-long x 200mm-wide
Punching pit depth	6mm (related to aluminum-plastic film material)
Applicable molds	Two-piece die / spring die
Maximum pressure	5 Tons
Power supply	AC 220V / 50Hz, power approximately 0.1KW
Weight	Approximately 150kg
Size	Approximately L(0.7m) x W(0.5m) x H (1m)

Manual Edge Cutting Machine YK-SQB-200

Product Introduction

Suitable for pouch cell aluminum-plastic film edge cutting

Product features

◆ Using cylinder punching.
◆ The upper cutting blade is guided by a mold ball guide column guide sleeve, with high precision to ensure zero clearance and service life between the upper and lower cutting blades.

Effective blade length	200mm
Capacity	＞ 200PCS/hour (based on worker proficiency))
Power supply	AC 220V / 50Hz, power approximately 0.1KW
Weight	Approximately 45kg
Size	Approximately L(0.4m) x W(0.5m) x H(0.3m)

Manual Top and Side Sealing Machine YK-SDCF-200

Product Introduction

Suitable for manual top and side sealing of pouch cell, Equipped with adjustable platform.

Product features

◆ The heating tube heats the sealing head, and the temperature of the upper and lower sealing heads is accurately and independently controlled.
◆ Hard or soft sealing, manual control of pressing and holding time.
◆ Desktop design, configured with adjustable operation platform, safe and convenient operation.

Effective edge sealing length	0～200mm
Edge sealing width	3.5mm (customizable)
Sealing time	From 0.1 to 99 seconds
Edge sealing temperature	Room temperature of ~200℃
Temperature control accuracy	±2℃
Power supply	AC 220V / 50Hz, power approximately 1.5KW
Weight	Approximately 50kg
Size	Approximately L(0.4m) x W(0.4m) x H(0.5m)

Three-Layer Vacuum Oven YK-KX-300

Product Introduction

Used for baking lithium-ion battery electrodes, cells, and batteries to be filled with liquid. Each workroom works independently, and the heating, vacuuming, and inflation work in an automatic cycle mode. The time of each working section is set through the touch screen.

Product Feature

◆ Three layers of independent temperature control design, each working chamber can realize different logistics baking.

◆ Electric heating air cycle for the heating of the working chamber, with good temperature uniformity and little volatility.

◆ The inner layer material is 201 stainless steel, the outer layer is cold rolled plate powder, high performance heat insulation sandwich design.

◆ The overall structure of the frame and chamber, good sealing, can ensure the long vacuum does not drop pressure.

Heating principle	Three separate heating layers
Temperature	Room temperature to 120℃
Vacuum degree	When the pumping pressure is between -0.1 and -0.09Mpa, the digital display maintains a pressure of ≥ 95% for 24 hours
Temperature homogeneity	50mm away from the wall at each point in the inner cavity: ≤ ± 4 ℃ under vacuum, ≤ ± 3 ℃ under normal pressure
Single-layer box size	Approximately 350mm x wide 850mm x 800mm deep
Power supply	AC 380V / 50Hz, power approximately 7.5KW
Weight	Approximately 800kg
Size	Approximately L(1.2m) x W(1.1m) x H (2m)

Four Work Station Glove Box YK-STX-4

Product Introduction

Provides equipment for anhydrous and anaerobic environments. The equipment mainly consists of a display system, transition chamber, vacuum system, control system, box, circulating purification and regeneration system, etc. It can also work integratedly with gas purification system, solvent over consumption system, and water oxygen display system. The box is made of high-quality steel plate or mirror stainless steel by argon arc welding, with double-layer tempered glass. Beautiful and novel, with stable performance. and oxygen display system respectively. The box is made of high quality steel plate or mirror stainless steel argon arc welding, double layer tempered glass. Beautiful and novel, with stable performance.

Product Feature

◆ Closed circulation: The inert gas inside the glove box is continuously dehydrated and deoxygenated through a closed circulation fan and purifier.

◆ Automatic control regeneration: Dehydration and deoxygenation materials can be regenerated, and the regeneration process is controlled by a program

◆ Automatic cleaning: The atmosphere inside the glove box is replaced through an automatically controlled cleaning valve..

Large transition cabin	304 Stainless steel, 360mm in diameter, 600mm in length
Small transition cabin	304 Stainless steel, 150mm in diameter, 300mm in length
Control system	The working pressure of the control box and transition cabin can be freely set within ± 5mbar, and the system automatically protects when it exceeds ± 16mbar
Display system	Adopting Siemens PLC touch screen smart700
Vacuum system	Imported vacuum pump, can be started manually or by PLC, with a flow rate of 12m³/ h. Vacuum pump limit vacuum degree ≤ 2x10-3 mbar
Oxygen analyzer	Measuring range: 0 ~ 1,000 ppm
Water analyzer	Measuring range: 0-500 ppm
Power supply	AC 220V / 50Hz, power approximately 1.5KW
Weight	Approximately 400kg
Size	Approximately L (3.1m) x W(1.2m) x H(1.95m)

Electric Liquid Injection Pump YK-ZYB-10g

Product Introduction

Used for injecting electrolyte into pouch cell of different sizes.

Single stroke	0.2～10g
Liquid injection accuracy	The error of a single stroke is about 0.008g
Liquid injection range	1~999 (circle)
Pump core material	Zirconia ceramic materials
Power supply	AC 220V / 50Hz, power approximately 0.2KW
Weight	Approximately 3kg
Size	Approximately L(0.3m) x W(0.25m) x H(0.2m)

Vacuum Standing Box YK-JZX-300

Product Introduction

Suitable for vacuuming the injected battery, allowing the gas inside the battery to be extracted, achieving the function of fast and uniform penetration of electrolyte into the battery cell.

Internal cavity size	Length 300mm x width 200mm x 250mm height
Standing time	0~99.99s Adjustable
Inflation time	0~99.99s Adjustable
Vacuum degree	Up to the maximum of-90 KPa
Power supply	AC 220V / 50Hz, power approximately 0.1KW
Weight	Approximately 60kg
Size	Static box: about L(0.6m) x W(0.4m) x H(0.6m) Control box: about L(0.5m) x W(0.4m) x H(0.3m)

Vacuum Pre Sealing Machine YK-YFJ-300

Product Introduction

Suitable for vacuuming, hot pressing and pre-sealing edges after liquid filled and standing in pouch cell glove boxes

Product Feature

◆ Maintain good vacuum to ensure the moisture content of the battery product.
◆ The overall design is compact and can be placed in a regular glove box for use.
◆ Modular design for electronic control and structural standards, convenient for maintenance.

Applicable cell size	Max: L250mm x W300mm (with gas bag) x H12mm
Sealing edge length	0～280mm
Sealing edge width	Customized according to customer process requirements
Sealing blade head	Serrated blade
Sealing edge temperature	0～300℃
Temperature control accuracy	±2℃
Power supply	AC 220V / 50Hz, power approximately 3KW
Weight	Approximately 50kg
Size	Approximately L(0.4m) x W(0.6m) x H(0.5m)

Vertical Hot Pressure Formation Machine YK-L 32 CH-5V6A

Product Introduction

Applied to the formation process of single head protruding tabs pouch cell. By heating the aluminum plate and clamping the battery cell, the battery cell is formed using a fast thermal conductivity method. Place the battery cell and clamp it between the pressure plate using a cylinder method. A single device with 32 points, a set of fixtures with 8 layers, and 4 batteries placed on each layer. The maximum charging and discharging current is 6A.

Product Feature

◆ Using cylinder boosting, controlled by PLC through electrical proportional valve, it can achieve multi time and multi stage pressure regulation.

◆ Using a silicone heating plate for heating, the temperature is controlled by a PLC temperature module.

◆ Cylinder driven, pressure adjustable.

PLC control, design multiple alarm and protection functions.

Number of channels	32 channel
Voltage control range	25mV ～5V
Voltage accuracy	± 0.05% of FS
Current control range	Range 1:0.5 mA ~ 0.1 A; range 2:0.1A ~3A; range 3:3A ~6A
Current accuracy	± 0.05% of FS
Temperature range	Normal temperature of ~90℃, with an accuracy of ± 3℃
Initial heating time	30 min (target temperature: 80℃)
Pressure range	300～1800kg
Power supply	AC 220V / 50Hz, power approximately 4KW
Weight	Approximately 300kg
Size	Approximately L(1.2m) x W(0.8m) x H(1.8m)

Secondary Sealing De-gasser YK-EFJ-300

Product Introduction

Suitable for vacuum sealing after the formation of pouch cell.

Product Feature

◆ The pressure of the sealing knife can be adjusted through a pressure regulating valve to meet different process parameter requirements.

◆ Suitable for different types of batteries, easy and convenient to adjust.

◆ The battery pressure plate adopts a large cylinder with adjustable output pressure. Ensuring the hardness of the battery and the discharge of the battery electrolyte.

◆ With temperature abnormal alarm function

Applicable battery size	Height ≤ 200mm (including tabs) Width ≤ 300mm (including airbag) (airbag width ≤ 150mm) Thickness 2-15mm
Sealing width	4～14mm
Effective length of sealing head	300mm
Parallelism of sealing head	±0.01mm
Sealing edge temperature	Room temperature ~280℃ with accuracy ± 3℃
Vacuum degree	Adjustable, maximum not less than -95Kpa
Power supply	AC 380V / 50Hz, power approximately 3KW
Weight	Approximately 300kg
Size	Approximately L(0.8m) x W(0.8m) x H(0.9m)

Cutting, Folding, and Ironing Integrated Machine YK-QZT-350

Product Introduction

Applied to automatic edge cutting, single folding, double folding, edge ironing , shaping of pouch cell.

Product Feature

- The battery fixture adopts a screw and double precision linear guide structure, which is more lightweight and easy to maintain.
- The folding mechanism adopts high-precision roller folding.
- The conveying fixture and cutting blade can adjust the speed controller according to production capacity needs.
- The operation is equipped with automatic and manual operation functions.

Edge ironing head length	350mm
Fixture length	400mm
Power supply	AC 220V/50Hz, Power of approximately 2KW
Weight	Approximately 300kg
Size	Approximately L (0.9m) x W (1.6m) x H (1.7m)

Battery Cell Tester YK-CS-5V6A

Product Introduction

Used for performance testing of batteries that have undergone the formation process to obtain their capacity, internal resistance, and other key parameters. Classifying and grading batteries..

Product Feature

◆ Each module provides 8 independent programmable channels, with built-in power supply and complete control circuit.

◆ Each module can work independently. Each channel can be set up in a different working mode. The channel is completely independent.

◆ Accurate programming features, the system software can set the working steps and parameters, and the flexibility of each working mode

Number of channels	8 channels per unit, 80 channels overall unit
Voltage range control	25mV ～5V
Minimum discharge voltage	The two ends of the upper and lower fixtures can be discharged to 1.0V, and the 2m wire length can be discharged to 1.5V (customizable discharge to 0V)
Voltage accuracy	± 0.05% of FS
Current control range	Range 1:0.5 mA ~ 0.1 A; range 2:0.1A ~3A; range 3:3A ~6A
Constant voltage cutoff current	Range 1:0.2 mA; range 2:6 mA; range 3:12 mA
Current accuracy	± 0.05% of FS
Power supply	AC 220V / 50Hz, power approximately 3.5KW
Weight	Approximately 250kg
Size	Approximately L(0.7m) x W(0.6m) x H(1.6m)

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