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SURFACE TREATMENT INDUSTRY ELECTROPLATING RECTIFIER

ZHENGZHOU LIYUAN HAINA RECTIFIER CO., LTD

COMPOSITION OF LIYUAN HAINA

Liyuan Haina currently has two major production bases in Jiangxi, China and Chonburi, Thailand , and three wholly-owned subsidiaries in Hong Kong, Singapore, and the United States. Branches in the UAE and Turkey are under planning. Liyuan Haina also has two exclusive agents in Japanese and Korean markets.

OVERSEAS COMPANY IN USA

5th Fl 2807 Jackson Ave Long Island City, NY

OVERSEAS FACTORY IN THAILAND

Phase 4, Pintong Industrial Park, Chonburi Province, Thailand

- Jiangxi Liyuan Haina Technology Co., LTD.

- Zhengzhou Liyuan Haina Rectifier Co., LTD.

- Hong Kong Liyuan Haina New Energy Co., LTD.



- Shenzhen Liyuan Haina Energy Co., LTD.

- Thailand Liyuan Haina Co., Ltd

- The USA Liyuan Haina Energy Rectifier Co., Ltd.

Company Profile

3

R&D Centers

6

Branches

53000⁺ m²

Plant Area



Founded in 1997, Liyuan Haina is a national high-tech enterprise. It specializes in the design, research, development and manufacture of IGBT and SCR electroplating and electrolysis rectifiers, pulse power supplies, power quality products and energy-saving products. Liyuan constantly absorbs the cutting-edge technology of related industries from abroad (Italy, Germany, the United States, Japan), attaches great importance to research and development and innovation.

Our products are widely used in new energy, photovoltaic, semiconductor, surface treatment, electrolysis, smelting, oxidation, colouring, electrophoresis, electrochemistry, testing, electrolytic gas, electrolytic copper foil, electrolytic nuclear raw materials, environmental protection electrolysis, water treatment electrolysis, rare earth electrolysis and other fields. Our company has strong competitive strength in the same industry in terms of production, sales, and technical strength.

Mission

To become a leader in the design, development and manufacturing of efficient intelligent industrial power

Vision

Embrace all rivers into the sea

Core values

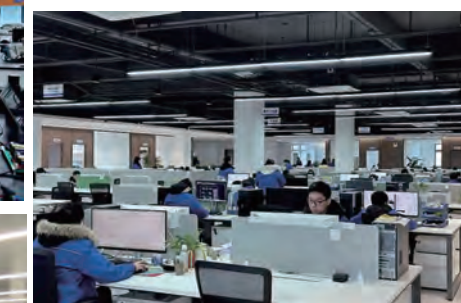
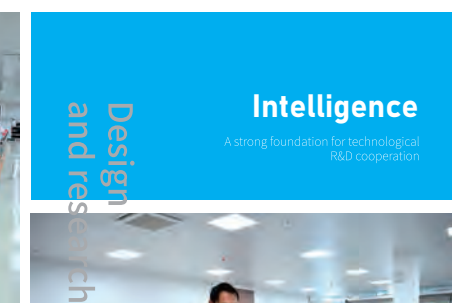
Integrity, pragmatic development and innovation, people-oriented return to society



Chairman : Huang Ruilu
Founder of the group



Factory photo



Efficient

Standardize the field environment and quality control inspection

Intelligence

A strong foundation for technological R&D cooperation

Efficient Green

Focus on the power equipment intelligent and low-carbon

labor cost reduction, big data collection

Factory photo

Business Philosophy

Professional, Brand, Innovation, Service



IGBT Type
Electroplating Rectifier



Product Description

- The product has beautiful appearance and reasonable structure, and is composed of multiple modules connected in parallel.
- Each module is exactly the same. When replacing a module, just pull out the address code to be the same as the module to be replaced.
- Each module has a hot-swappable function, that is to say, the replacement module can be replaced without stopping the machine, and without affecting the user's production.
- The control of each module adopts the advanced RS485 network control system, which has high control precision. Because it is digital control, the control signal has no attenuation, and the remote control can reach 1.2KM.
- The automatic current sharing technology is adopted between each module. The external controller sets a certain current, and the system will distribute the current to all the following unit modules on average. The current sharing control accuracy between each module is within 1%.
- The design of high-power high-frequency switching power supply adopts N+X redundant backup system. Under normal circumstances, all module units participate in the work. Once one of the modules fails, the system automatically withdraws the faulty unit, and other modules share the current of the faulty unit. Keep the total output voltage and current unchanged, and at the same time, the faulty module can be taken out for maintenance, which greatly improves the reliability of the power supply.
- has a steady voltage, steady flow control mode.
- There are protection measures such as soft start, overvoltage, overcurrent, phase loss, and overheating.
- The internal circuit board adopts anti-fog and acidification three-proof glue, which makes the electronic components not easy to be corroded by the environment, and the product is durable.
- Polarity switching function is optional.

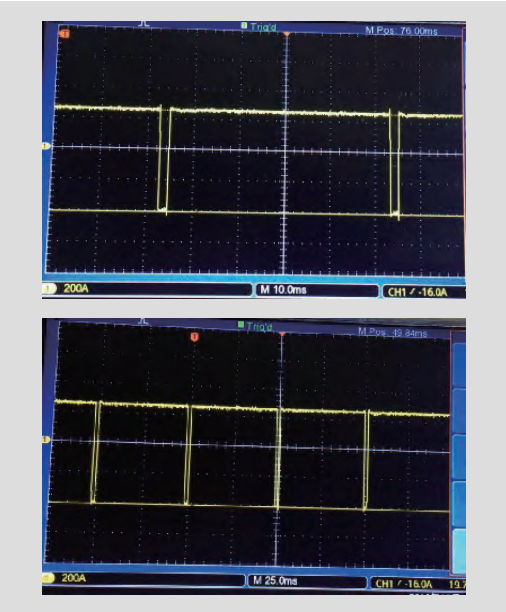


Application Industry Plating of gold, silver, nickel, zinc, tin, chrome, copper and other metals, precision patterns, deep holes, blind holes or irregularly plated parts, multilayer circuit boards and other demanding industries.

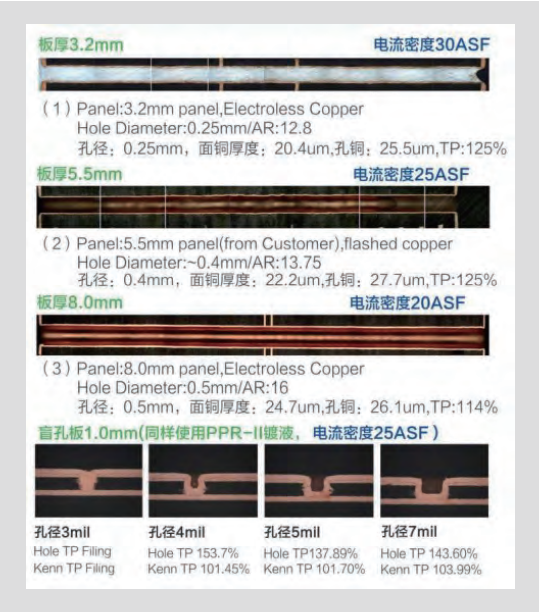
Product Description

- There are two waveforms available: direct current and pulse. The output waveform during pulse is a square wave with adjustable frequency duty cycle.
- During electroplating, the functionality of the coating can be significantly improved; When used for protective and decorative electroplating, it can achieve uniform and consistent coating color, good brightness, and strong corrosion resistance.; When used for the purification of precious metals, the purity of precious metals is higher.
- Convenient touch screen operation; Equipped with voltage and current display function, voltage and current stabilization selection function
- You can increase timing, ampere accumulation, and packing functions as needed.
- Enhance deep plating capacity, increase plating efficiency by 30% -50%, optimize production capacity, improve quality, and reduce the comprehensive cost of the plating process. The preferred production process for 5G PCB boards.
- The core controller is composed of high-speed ADC sampling and high-speed FPGA. The control system has a simple structure, high control accuracy, strong anti-interference ability, and fast response speed.

Waveform diagram example



Plating quality example



The image shows a large industrial rectifier unit with its front panel open, revealing internal components like capacitors and circuit boards. It is set against a background of industrial machinery. A green circular icon with the text "energy saving" is positioned in the upper right corner of the image area.

Plasma Plating&Coating Rectifier

Advanced IGBT Chopper Technology

Application Industry Plating, Plasma Spraying, Electric Arc Spraying, etc.

Product Description

- IGBT Chopper Technology;
- High power factor, low harmonics;
- IGBT chopper with independent unit redundancy backup;
- Touch control system for easy tracking of module failures and timely replacement;
- High efficiency, high regulation precision, stable output;
- IGBT chopper output current with high precision and good ripple coefficient.

Product parameters

Characteristic type	Parameter item
Rated Input Voltage	three-phase AC380V±10%, 50-60HZ
Output voltage	500V
Output current	200A
Stabilized Current Precision	≤1%
Stabilized Voltage Precision	≤1%
Rated efficiency	≥90%
Input Power Factor	≥0.98
Ripple factor	1% ~ 3%
Operating environment	—10 ~ 40℃
Storage temperature	—20 ~ 50℃
Cooling mode	Air Cooling
Operating conditions	Full 24-hour operation

Product Series

HIFBP, HIFB

The image shows a chrome plating rectifier unit, which is a large metal cabinet with a cooling fan on the front. It is placed in an industrial setting. A green circular icon with the text "energy saving" is located in the upper left corner of the image area.

Chrome Plating Rectifier

Application Industry Surface treatment of metal materials and ABS materials, etc.

Product Description

- The product adopts multi-module parallel connection, each module is exactly the same.
- The water-cooled unit is fully sealed, modularized, combined and adopts N+X redundant backup system.
- Polarity reverse can be used, reverse forward automatic conversion, independent regulation, can be set forward, reverse working time.
- With stabilized voltage, stabilized current control mode.
- Each module has the function of hot casting and unplugging, which does not affect the normal production when replacing the module.
- Adopt new type of rectifier, device voltage drop 0.1V-0.2V, high rectification efficiency, energy saving and power saving.
- All-digital intelligent control system, convenient for production management and intervention in DCS system.
- Soft start, over-voltage, over-current, phase failure, overheating and other protective measures.
- The internal circuit board adopts acid-proof and fog-proof three-proof adhesive, avoiding corrosion of electronic components by the environment, and making the product durable and long-lasting.

Product parameters

Characteristic type	Parameter item
Rated Input Voltage	three-phase AC380V±10%, 50-60HZ
Output voltage	12V
Output current	12KA
Stabilized Current Precision	≤1%
Stabilized Voltage Precision	≤1%
Rated efficiency	≥95%
Input Power Factor	≥0.98
Ripple factor	1% ~ 3%
Operating environment	—10 ~ 40℃
Storage temperature	—20 ~ 50℃
Cooling mode	Water cooling
Operating conditions	Full 24-hour operation

Product Series

TBSB, TBFB, ±12V, 12V, ±15V, 15V, ±20V, 20V; 2000A, 5000A, 10KA, 12KA



energy saving

Zinc Plating Rectifier

Application Industry

Surface treatment industry, such as plating for zinc, chrome, metal materials, etc.

Product Description


- High control accuracy and low ripple factor;
- With stabilized voltage and current control mode;
- Adopt digital network control, high output precision;
- The whole line increases the anti-interference design, the operation is more stable;
- Adoption of new rectifier mode and rectifier components, device voltage drop in 0.1V-0.2V high rectification efficiency;
- The internal circuit board is coated with salt spray acidified three-proof glue,
- which makes the electronic components not easy to corrode and the products durable.

Product parameters

Characteristic type	Parameter item
Rated Input Voltage	three-phase AC380V±10%, 50-60HZ
Output voltage	12V
Output current	2000A
Stabilized Current Precision	≤1%
Stabilized Voltage Precision	≤1%
Rated efficiency	≥90%
Input Power Factor	≥0.98
Ripple factor	1% ~ 3%
Operating environment	—10 ~ 40℃
Storage temperature	—20 ~ 50℃
Cooling mode	Air Cooling
Operating conditions	Full 24-hour operation

Product Series

HIFB ,TBSB, TBFB



energy saving

PCB Plating Rectifier

Application Industry

Metal plating, precision plating, PCB plating, surface treatment of jewelry and small hardware, etc.

Product Description

- The core technology of TB series is synchronous rectification technology, the efficiency is as high as 94%, largely improve efficiency and save cost.
- The plug design facilitates maintenance and simplifies wiring.
- High precision, stability, reliability and multi-loop control system.
- The product is small, easy to connect in parallel and expand, also provide full digital RS485 network communication control and optional WIFI function.
- Independent air duct is used to improve the corrosion resistance of the whole device and extend power life.
- Distinct waterproof casting process can effectively prevent against condensate water.
- The cooling water pipe without a connector is secure and is free of leakage.
- Full range and high precision control can be realized by single and double output of TB series integrated machine.
- TB series dual output or quad output slot placement on both sides can improve uniformity and reduce loss.

Product parameters

Characteristic type	Parameter item
Rated Input Voltage	Three phase AC220V±10% 50-60HZ
Output voltage	12V
Output current	10A
Stabilized Current Precision	≤1%
Stabilized Voltage Precision	≤1%
Rated efficiency	≥90%
Input Power Factor	≥0.90
Ripple factor	1%
Operating environment	—10 ~ 40℃
Storage temperature	—20 ~ 50℃
Insulation resistance	Input—output: ≥5MΩ
	Input—chassis: ≥5MΩ
	output—chassis: ≥5MΩ
Dielectric Strength	Input—output: AC1500V, 10mA, one minute
	Input—chassis: AC1000V, 10mA, one minut
Cooling mode	Air cooling

Product Series

TB series 5V,6V,12V; 100A, 200A, 500A, 600A. Customized is available.



Anodizing Rectifier



AC/DC Coloring Rectifier

Product Description

- Different rectifier components are used according to different output voltages to maximize the efficiency and life of the machine
- RS485 full digital signal, or 0-5V, 0-10V, 4-20mA analog signal selection
- High efficiency and high accuracy
- Multiple units exist, support hot-swappable, and can be used without downtime. Can be designed N+1 module
- Multiple stages of soft start and fast start can be set to ensure the formation quality of oxide films of different stages and specifications; there is a soft closing function to prevent the oxide film from being too soft and improve the density, corrosion resistance and wear resistance of the oxide film.
- the internal circuit board adopts anti-fog and acidification three-proof glue, which makes the electronic components not susceptible to environmental corrosion and the products are durable.
- High power factor, high efficiency, Reasonable structural design
- Practical and effective multiple protection system

Product parameters

Characteristic type	Parameter item
Input voltage	three-phase AC380V±10%, 50-60HZ
Voltage stabilization accuracy	≤1%
Current stabilization accuracy	0.5-1000MA step 100US (or customized by user)
Rated efficiency	Max. 1%
Power factor	≥0.98
Ripple coefficient	1%-3%
Operating environment	-10 ~ 45 C
Storage temperature	-20 ~ 50 C
Cooling method	air-cooled or full water-cooled
Operation condition	Full load 24 hours operation

Product Series

TBFB , TDFB , TBSB , TDSB

Product Description

- AC and DC can be set separately in different stages and output a variety of waveforms, which can meet different process requirements
- Adopt Siemens servo motor, higher precision control than traditional inverter controlled motor.
- Adopt output three pole design, add auxiliary activation function on the basis of traditional colouring power supply.
- All control and status signals are processed centrally by PLC, including all start and stop operation signals, status signals for work operation indication and alarm, and fault signals such as water temperature too high, water pressure too high or too low, and thermal protection.
- Precision circuitry is used to detect voltage and current, making the output voltage and current more accurate.
- Use of reliable silicon components
- With stabilized voltage and current control mode.
- With protection measures such as soft start, over-voltage, over-current, phase loss and overheating.
- The internal circuit board adopts the anti-fog acidification triple-proof adhesive, so that the electronic components are not easily corroded by the environment and the product is durable.

Product parameters

Characteristic Types	Parameter Items	Technical Requirements
Input characteristics	Rated input voltage	Three phase AC440V ± 10% 60HZ
	Rated input current	211A (one of the three phases has a small current)
	Input power factor	COS Φ ≥0.90
Output characteristics	Output voltage	DC 0 ~ 25V AC 0 ~ 25V
	Output current	DC 0 ~ 3000A AC 0 ~ 3000A
	stabilized Voltage precision	≤3%
	stabilized current precision	≤3%
	Display accuracy	1A,0.1V
	Rated conversion efficiency	η >90%
	Dielectric Strength	Input output: AC1000V, 10mA, 1 minute
		Input - chassis: AC1000V, 10mA, 1 minute
	Insulation characteristics	Insulation resistance
Input-housing: ≥5M Ω		
Output - enclosure: ≥5M Ω		
Protection characteristics	It has self-protection function under abnormal conditions such as overvoltage, overcurrent, phase loss, short circuit, overheating, etc	

Product Series

ACDC-FB , ACDC-SB



energy saving

High Power SCR Rectifier System

Application Industry Metallurgy, metal smelting, electrolysis for copper, aluminum, zinc , rare earth etc., electrolytic deposition.

Product Description

- High power rectifier adopts multi-module parallel connection.
- High-power rectifier has large power and can be directly used for high-voltage entry, such as AC6KV, AC10KV, AC35KV, AC110KV, etc.
- Fully sealed, fully water-cooled, modular and modular, with the possibility of adding N+X redundant standby unit systems.
- Full digital trigger and control system, convenient for production management and intervention in DOC system.
- Each module is exactly the same, when replacing the module, you only need to dial the address code to be the same as the module you need to replace.
- Each module has the function of hot plugging and unplugging, when replacing the module, it can be replaced without stopping the machine, without affecting the normal production of the user.
- With over-voltage, over-current, overheating, water leakage, water pressure is too low or too high, soft start and other protection functions.
- The internal circuit board adopts three-proof adhesive against salt spray and acidification, so that the electronic components are not easy to be corroded by the environment, and the product is durable and long-lasting.

Product parameters

Characteristic type	Parameter item
Rectifier type	Silicon controlled rectifier
Model and specification	KES-28kA/76V
Place of equipment use	Indoor
Grid side input voltage	10kV±5%,50±0.5Hz,3PH
Rated output current	DC28kA
Rated output voltage	DC76V
Rectifier electrical connection type	Double anti star five column non in phase inverse parallel connection
Pulse wave number	Single cabinet 12 pulse wave
power factor	≥ 0.92 at rated load
Current sharing coefficient	≥ 0.92, 2 elements per arm in parallel
Load class	Level II (100% continuous, 150% 1 minute)
Anti interference capability	It has good ability to resist lightning and external electromagnetic interference
Anti grid Fluctuation capability	It has the ability to resist the low voltage of more than 50% and the fluctuation of less than 0.1s in the peripheral power grid
Noise	Rectifier cabinet ≤ 60dB, transformer ≤ 65dB (at 1m of equipment)

Product Series

TBFB, TBSB, KES, KGFB, KGSB



energy saving

Electrophoresis Rectifier

Application Industry Widely used in industries such as automotive electrophoresis, ship electrophoresis, metal hardware electrophoresis, and electrophoretic painting.

Product Description

- Using reliable silicon structure, the efficiency can reach over 95%
- The ripple coefficient is low, up to 3% or even 1%, which can effectively reduce porosity and improve the bonding force between the surface and the substrate
- With soft start and quick start function, can set multiple operation stages
- According to the electrophoresis process, multiple voltage rise modes can be used, and each voltage and time can be set independently.
- Equipped with complete protection functions such as phase loss, overvoltage, overcurrent, overheating, short circuit, etc
- Unique line design and line protection ensure the safety of operators
- Automatic shutdown and external alarm device can be set

Product Description

Parameter Items	Technical requirements
Input voltage	3-phase.AC380V±10% ,50 ~ 60HZ
Voltage stabilization accuracy	≤1%
Steady current accuracy	≤1%
Rated efficiency	η≥85%
Operating environment	-10℃ ~ 40℃
Storage temperature	-20℃ ~ 50℃
Insulation resistance	Input—Output: ≥5MΩ
	Input—Case: ≥5MΩ
	Output—Case: ≥5MΩ
Insulation strength	Input—Output: AC1500V,10mA,1min
	Input—Case: AC1000V,10mA,1min
Cooling way	Forced air cooling
Running condition	Full load 24 hour operation

Product Series

KGFB , KGSB

Electroplating Rectifier in Surface Treatment Industry

Application Field

Liyuan Haina surface treatment plating rectifiers are widely used in the chemical industry, hardware, communication equipment, computers, vehicles, toys, household appliances, instruments, construction industry, ships, electronic equipment, electrical, mechanical, equipment manufacturing, plastic products, textiles and many other industries. For example, hard chrome plating, zinc plating, copper plating, nickel plating, aluminum profile oxidation coloring, ABS material plating, jewelry plating, electrophoresis and so on.



Chemical Industry



Hardware



Construction Industry



Communication Equipment

Pulse Power Supply in PCB Plating Industry

Pulse power supply is prevalent in PCB plating for copper, nickel, gold, tin,etc.

Customer on-site cases



6V 2400A



6V 3000A



18V 3600A



12V 6000A

Customer on-site cases



12V 8000A



15V 20KA



±12V 4000A



22V 22KA



100V 10KA

Characteristic

Low loss and high efficiency

When used common DC plating rectifier, the plating around the hole is thicker, but no plating in the hole. The two ends are big and the middle is small. This “dog bone phenomenon” is prone to copper cracking, or no electricity at all.

The Our self-developed high-speed positive and negative pulse power supply is used to reverse the copper accumulation around the hole, thus ensure the same thickness inside and outside the hole, reduce the loss and improve the efficiency. It's the premium for 5G PCB board.

Advantages

Positive and negative high speed pulse power supply

- Two output types: the load line is coaxial cable and the load line is twisted pair
- The core controller is composed of high-speed ADC sampling and high-speed FPGA
- The control mode is flexible. The waveform multi-stage setting can be carried out by remote computer or local touch screen
- Good pulse waveform, with good prevention of overshoot, undershoot and small rise and fall time
- Compared with similar imported power supplies, it has high cost performance

Electrolysis Rectifier in Metallurgy Industry

Application Field

Liyuan Haina electrolysis rectifiers are widely used in metallurgical industry, such as electrolytic refining of non-ferrous metals, including smelting of copper, aluminum, zinc, nickel, lead, etc., smelting of precious metals, rare-earth smelting, graphitization furnaces, heating of silicon carbide, and heating of smelting furnaces.



Smelting Copper



Smelting Aluminum



Precious Metal Smelting



Rare-earth Smelting

Anodizing Rectifier in Aluminum Anodizing and Coloring Industry

Pulse power supply is prevalent in PCB plating for copper, nickel, gold, tin, etc.

Customer on-site cases



22V 24KA



40V 1000A



22V 24KA

Customer on-site cases



45V 6000A



30V 8KA



70V 40KA



300V 48KA



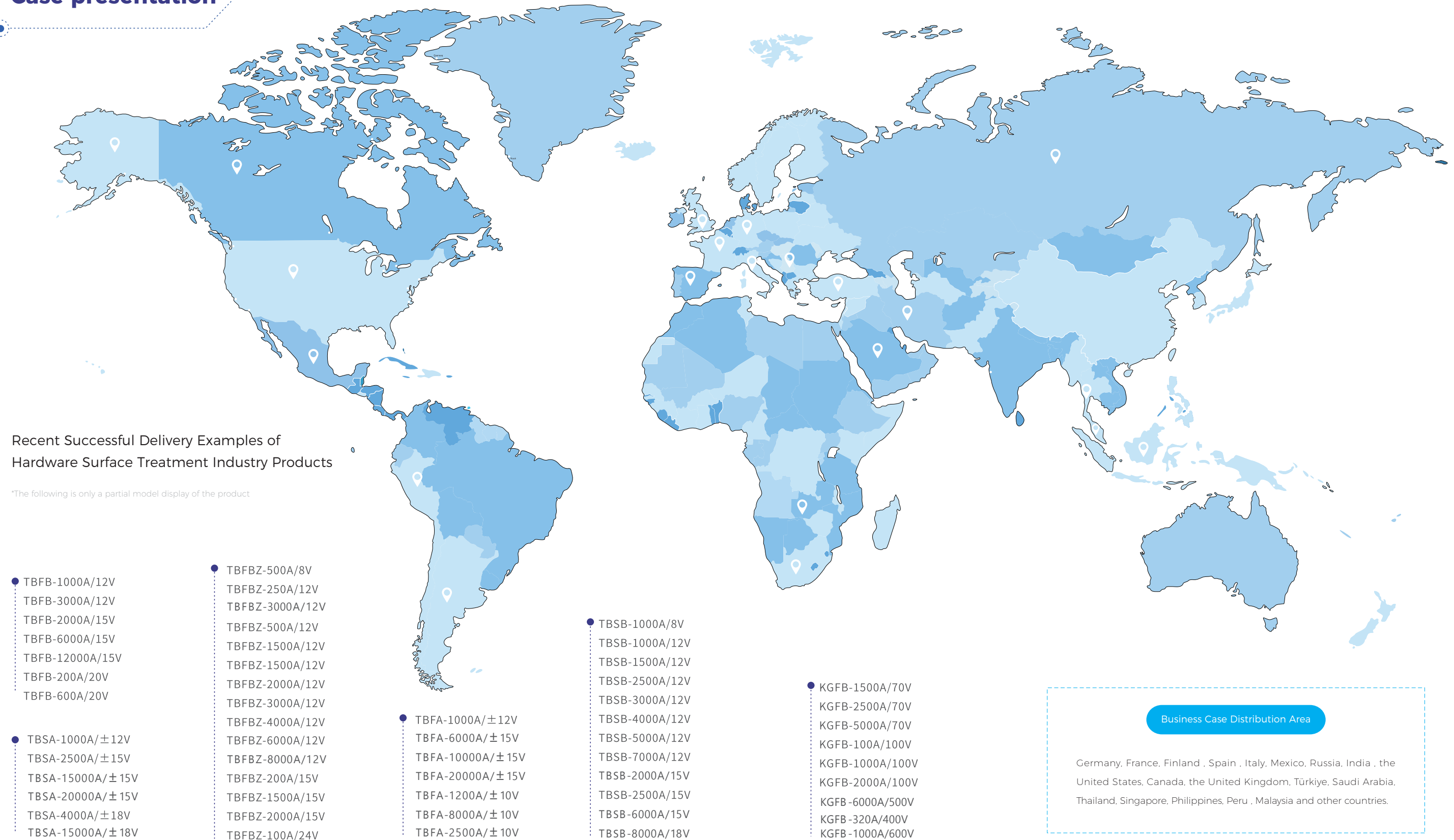
60V 2000A

Characteristic

For common anodizing rectifier, output voltage is generally in the range of 18V-24V, output current is 4000A, 6000A, 12KA and so on. Hard anodizing the oxide film is thicker, the regular voltage also higher, such as 80V, 100V.

The DC/AC coloring rectifier work principle: First use direct current (D.C.) , make the anode for electrolysis, and uniform the different parts of the oxide film, meanwhile change the structure of the film holes, so that the coloring to avoid cracking of the oxide film. Then process the AC coloring, to achieve uniform coloring result.

Case presentation



CUSTOMER CENTRIC CREATING VALUE FOR CUSTOMERS

Liyuan Haina surface treatment plating rectifiers are widely used in the chemical industry, hardware, communication equipment, computers, vehicles, toys, household appliances, instruments, construction industry, ships, electronic equipment, electrical, mechanical, equipment manufacturing, plastic products, textiles and many other industries. For example, hard chrome plating, zinc plating, copper plating, nickel plating, PCB plating aluminum anodizing and coloring, ABS material plating, jewelry plating, electrophoresis and so on.

OUR PACKAGING

Before packaging, we will carefully inspect the equipment to ensure that the casing is free of oil stains, scratches, and other marks. The markings are neat and intact, and then use packaging film for packaging to mainly prevent dust and water from entering.

Choose a suitable wooden box packaging method based on the size of the equipment. Ordinary sealed boxes are used for 200KG and below, and frame wooden boxes are used for 200KG and above.





QUALITY FIRST • CUSTOMER FIRST



力源海纳
LIYUANHAINA

Liyuan Haina Rectifier Co., Ltd

Thanks for your attention !

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