



YZPST®

Yangzhou Positioning Tech. Co., Ltd

Introduction for Ceramic Housings and Module Parts



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YZPST



Company
Introduction



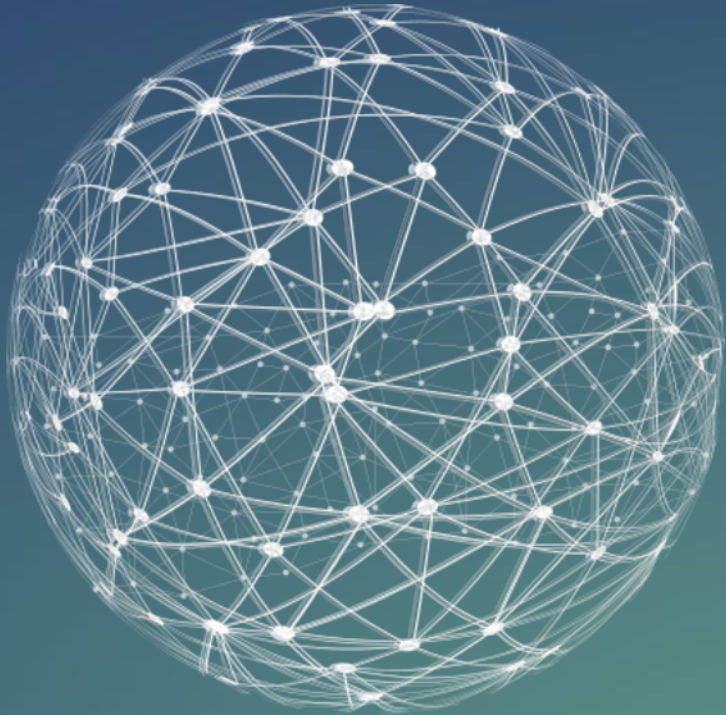
Products



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Major Clients

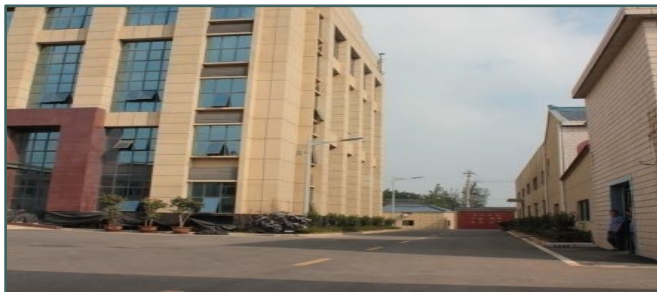


Company Introduction

Welcome to YZPST

About Us

Yangzhou Positioning Tech. Co., Ltd



- 33 years' experience in manufacturing and exporting high quality and cost-effective electronic components.
- Brand is called YZPST and PST.
- Over 500 employees
- Multiple manufacturers of beyond 30,000 square meters.
- More than 300,000 successful cases of business from 160 countries and regions.
- AEO Certificate, CE Certificate, RoHS Certificate and ISO9001 Certificate.
- Provide Industrial One-Stop Solution in many ways.
- High reputation in the field.

About Us

Yangzhou Positioning Tech. Co., Ltd has a complete set of professional production equipment and advanced measuring instruments, and can manufacture 1"-7" integrated semiconductor ceramic housing of different specifications (including GTO, IGCT, IGBT, ultra-thin type), and various modular parts.

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The manufacturing level has reached the international advanced level and the only domestic technology leader, with an annual production capacity of 2 million sets of ceramic shell products (KT80 specifications).

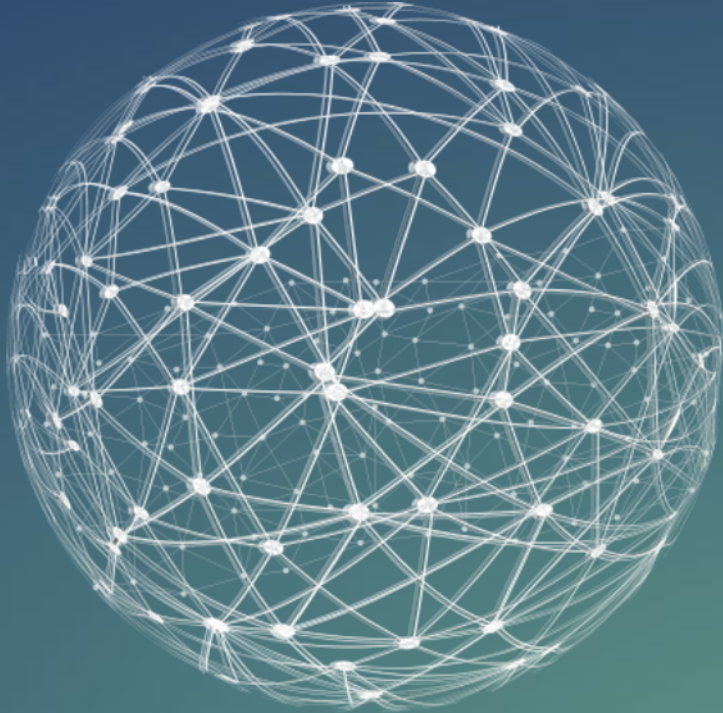
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Has relatively strong technical force and perfect management mechanism, the introduction of advanced technology and equipment, independent innovation.

The company's products are widely used in machinery, electronics, railway, power, military and scientific research departments, and are also exported to the United Kingdom, Russia, Ukraine, Estonia, India and the Czech Republic to meet market demand to the greatest extent.

Products



Ceramic Housing for GTO (1" – 5")

Ceramic Housing for general rectifier and thyristor (1" – 6")

Ceramic Housing for IGBT (2" – 5")

Ceramic Housing for IGCT (2" – 5")

Special-Shaped Series

The extra thin Ceramic Housing (2" – 3")

Stud Mounted Construction Cap Series (50A - 400A)

Structural Pieces for Power Electronic Modules

Ceramic Metal Sealed Tube Series

Ceramic Housing for GTO (1" – 5")



Ceramic Housing for general rectifier and thyristor (1" – 6")



Ceramic Housing for IGBT (2" – 5")



Ceramic Housing for IGCT (2" – 5")



Special-Shaped Series



The extra thin Ceramic Housing (2" – 3")



Stud Mounted Construction Cap Series (50A - 400A)

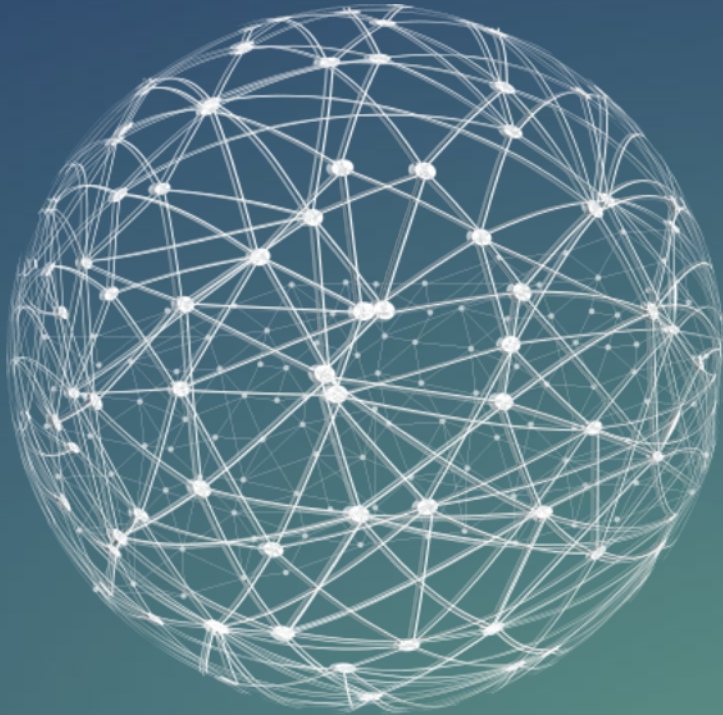


Structural Pieces for Power Electronic Modules



Ceramic Metal Sealed Tube Series





Manufacturing

Process Flow

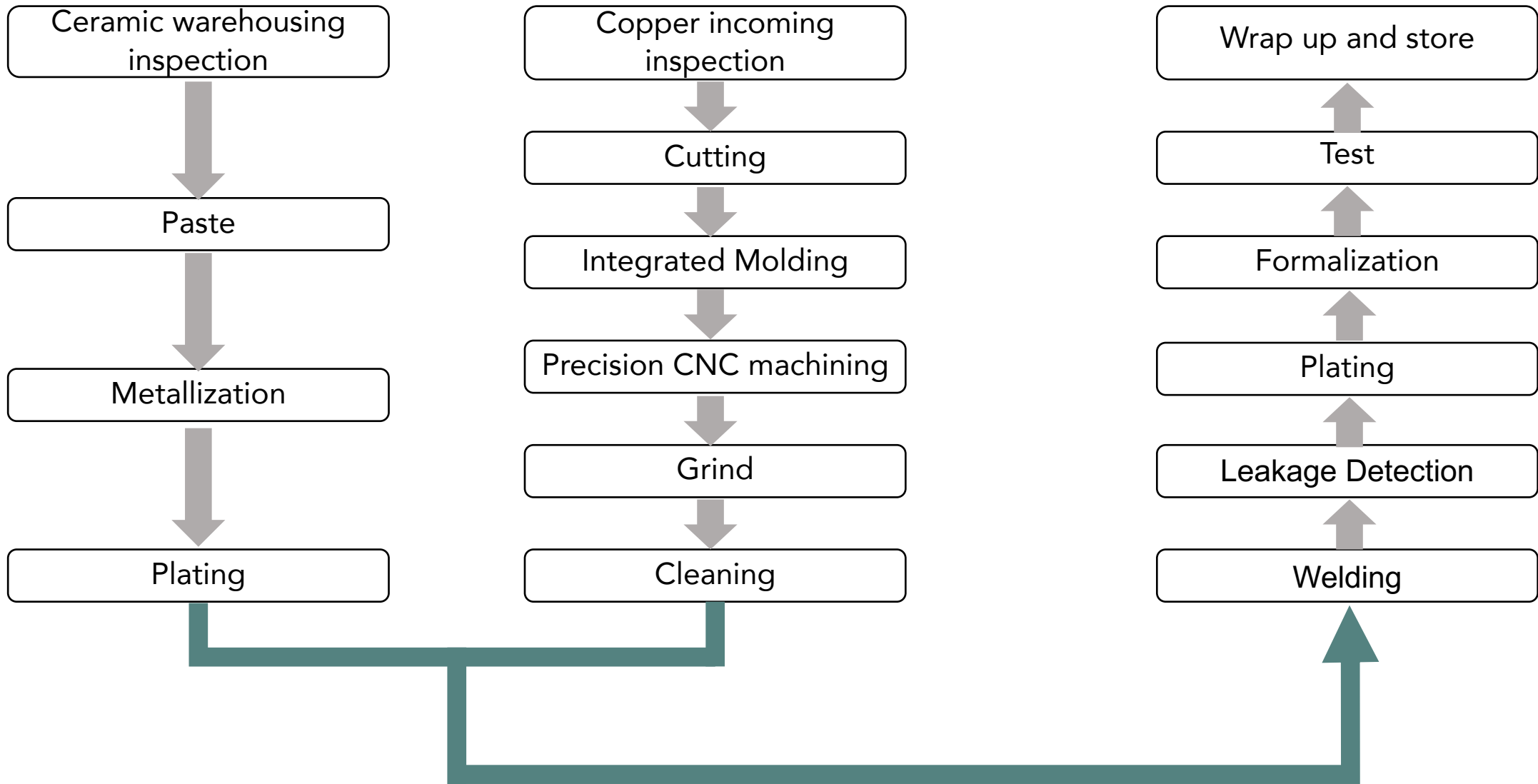
Unique Selling Points

- Integration
- Electroplating
- Isostatic Ceramics

Quality Assurance System

Production Capacity

Process Flow



Unique Selling Points

- Integrated molding technology
- Advanced surface treatment technology - Electroplating
- Isostatic Ceramics

Integration

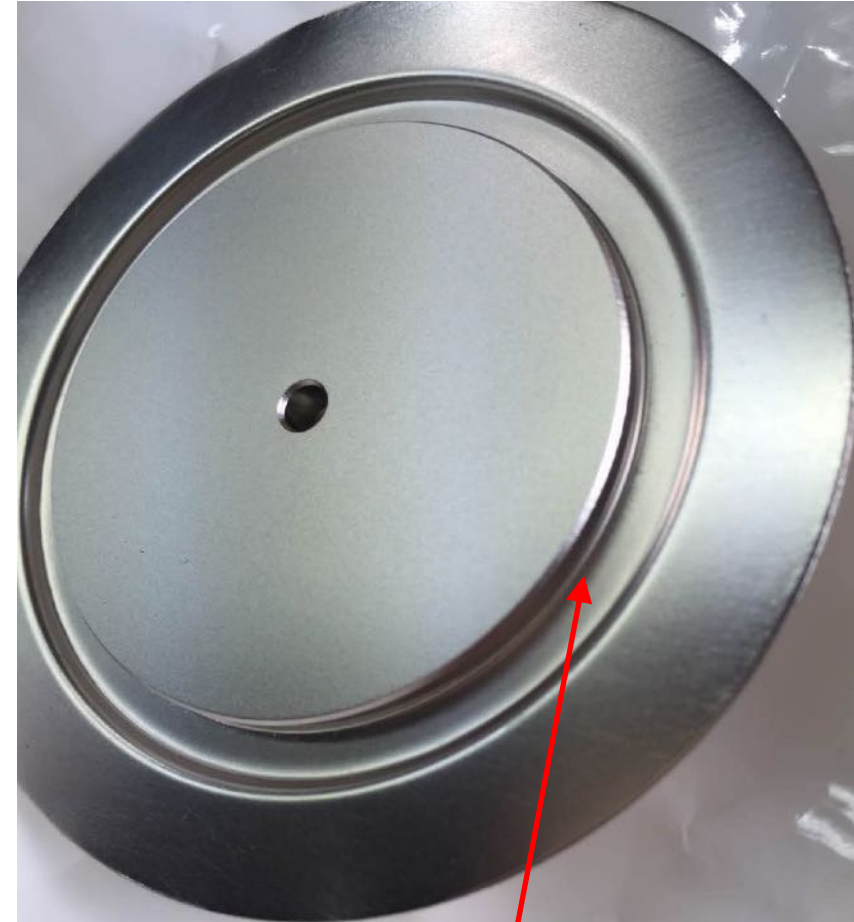
YZPST is the first tube and shell factory in China that adopts integrated molding technology. This technology has changed the traditional method of welding between copper blocks and flanges, and realized the integration of copper blocks and flanges. manufacture. The advantages of integration on the shell are as follows:

- Better air tightness increases the tightness between the copper block and the flange, so that zero air leakage between the copper block and the flange is achieved, and the tube and shell leakage caused by the welding quality is completely eliminated.
- Improve the compactness and mechanical strength of the copper block of the electrode; completely eliminate the internal cracks, pores, and non-density of the copper block (directly drawn copper rod) of the traditional welding process.
- Lifetime advantage, ultimately greatly improving the reliability and stability of ceramic housings and semiconductor devices

Comparison of cathode integration and welding type



Traditional Welded Cathode-Welding Breakpoint



YZPST integrated cathode-smooth transition

The Existing Phenomenon of Traditional Welding Housings

- Welding breakpoints, poor sealing reliability, and slow leakage:

The biggest weakness of traditional welded products is the existence of welding breakpoints; and during high and low temperature impacts, due to the different thermal expansion coefficients of the solder and the base material, it will work for a long time. Later, the solder and the base material will be separated, resulting in poor sealing of the device. The test does not leak when leaving the factory, but after long-term work, the welding breakpoint gradually corrodes and penetrates, resulting in poor sealing, and its reliability gradually decreases, and the product life is shortened accordingly.

- There are internal cracks and air leakage in the copper block electrode:

The copper block of the shell electrode of the traditional welding process is directly used the drawn copper rod of the material factory. The drawn copper rod has internal pores, cracks, and non-density. There will be a hidden danger of air leakage. The copper block electrode of the integrated tube shell is based on a copper rod and then a single electrode is extruded under high pressure, which greatly improves the compactness of the copper block and ensures the high airtight reliability of the copper block electrode.

Comparison of Anode Integration and Welding Type



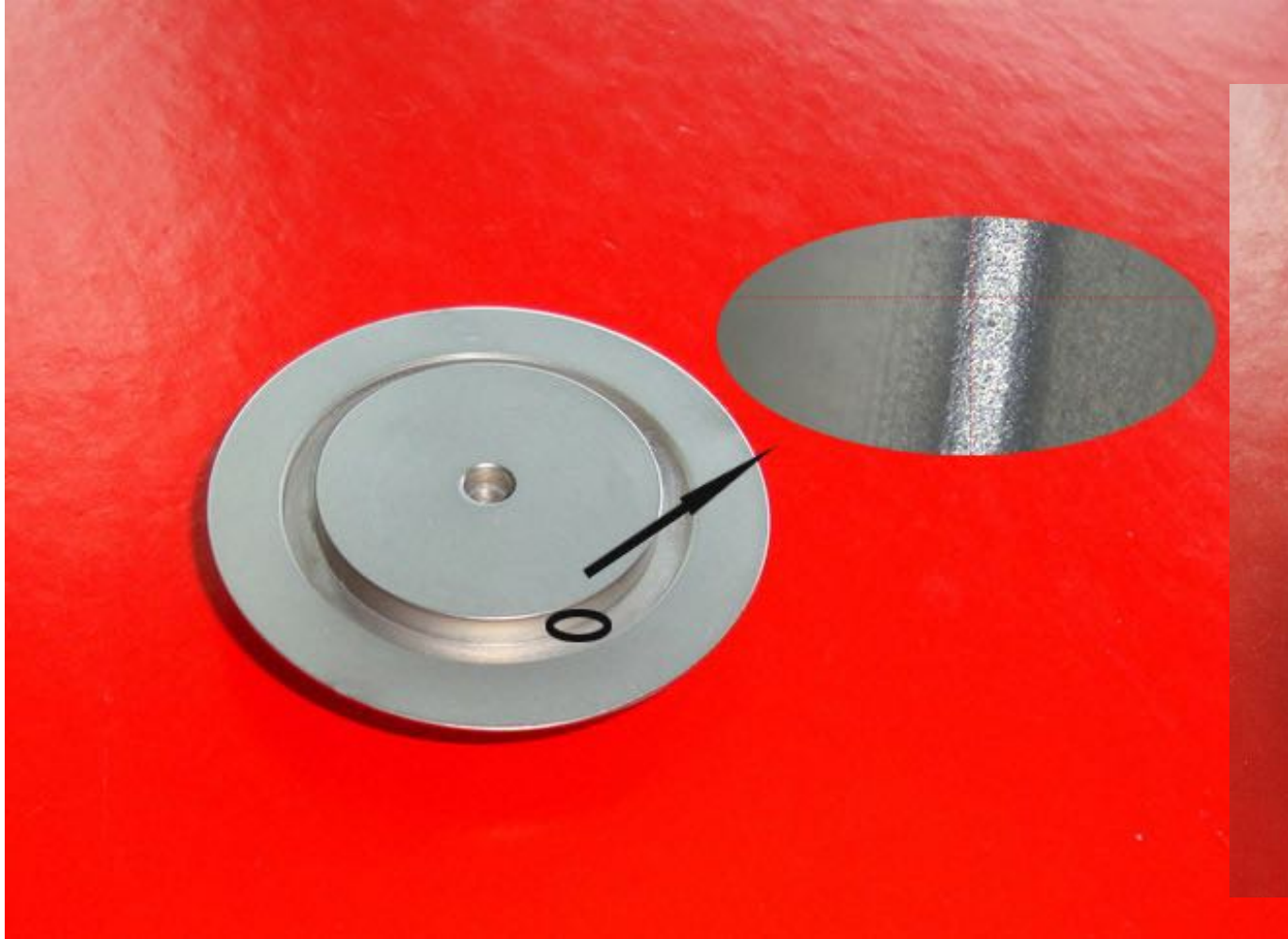
The traditional welded shell anode -
welding break point



YZPST integrated shell anode-smooth
transition

Integration

Integrated and Welding Microscopic Comparison (Partially 40 times)



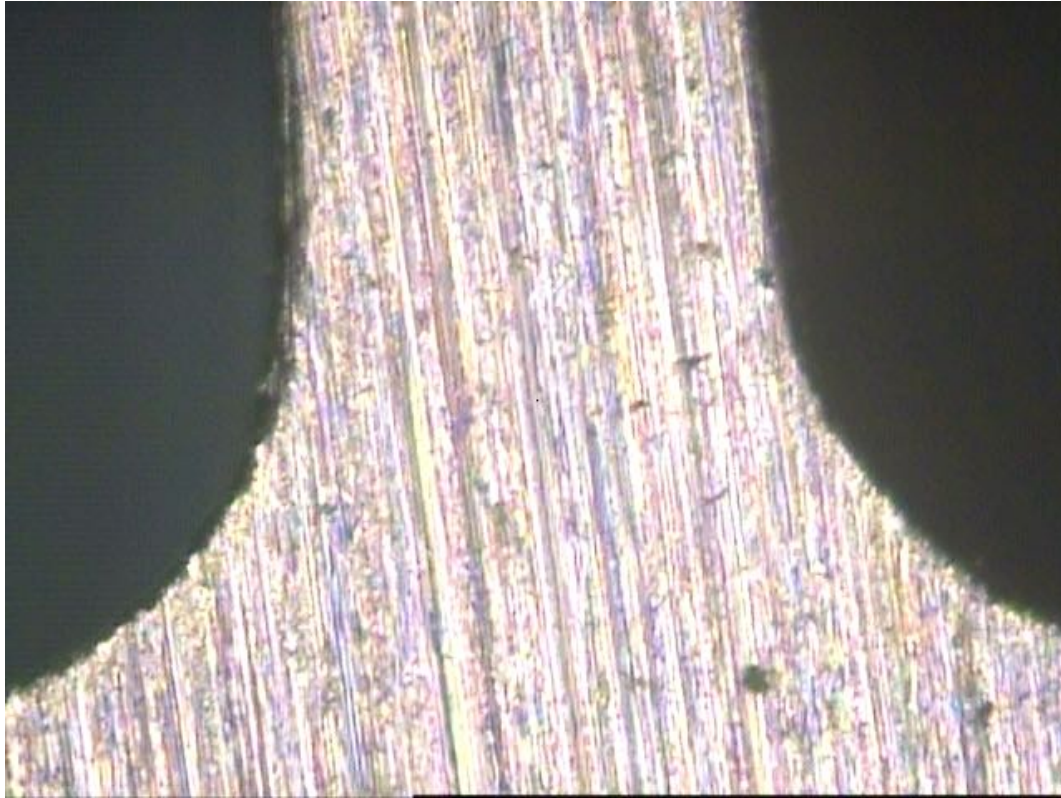
YZPST's tube and shell products (using integrated molding process)



Traditional Shell products (using welding process)

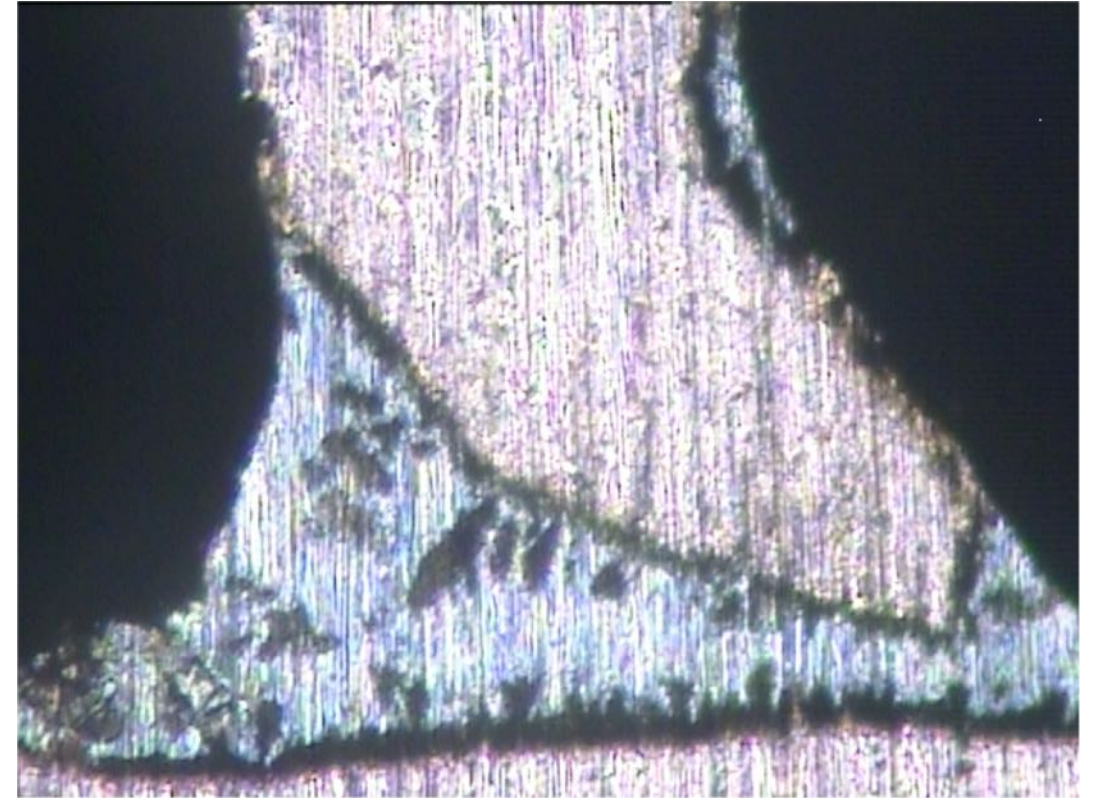
Integration

Integrated and Welding Profile Microanalysis (400 times microscopy)



YZPST integrated product section view

Features: dense organization, smooth, integrated connection transition



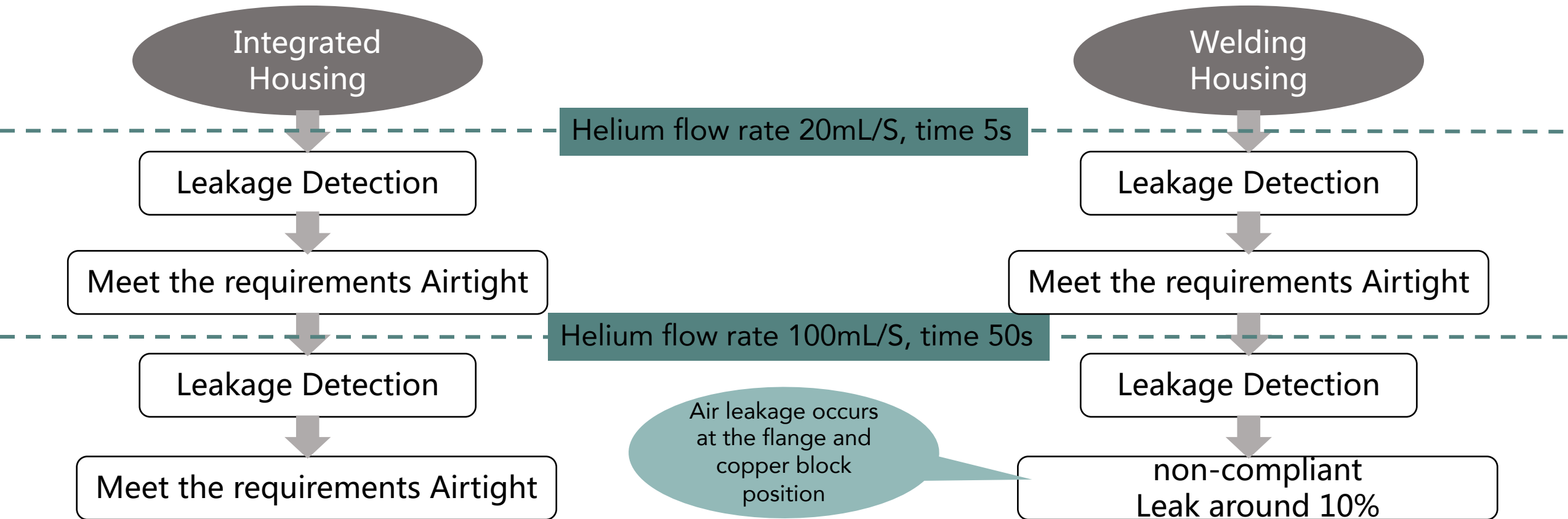
Sectional view of traditional welded products

Features: welding slag, pores, not dense

Integration

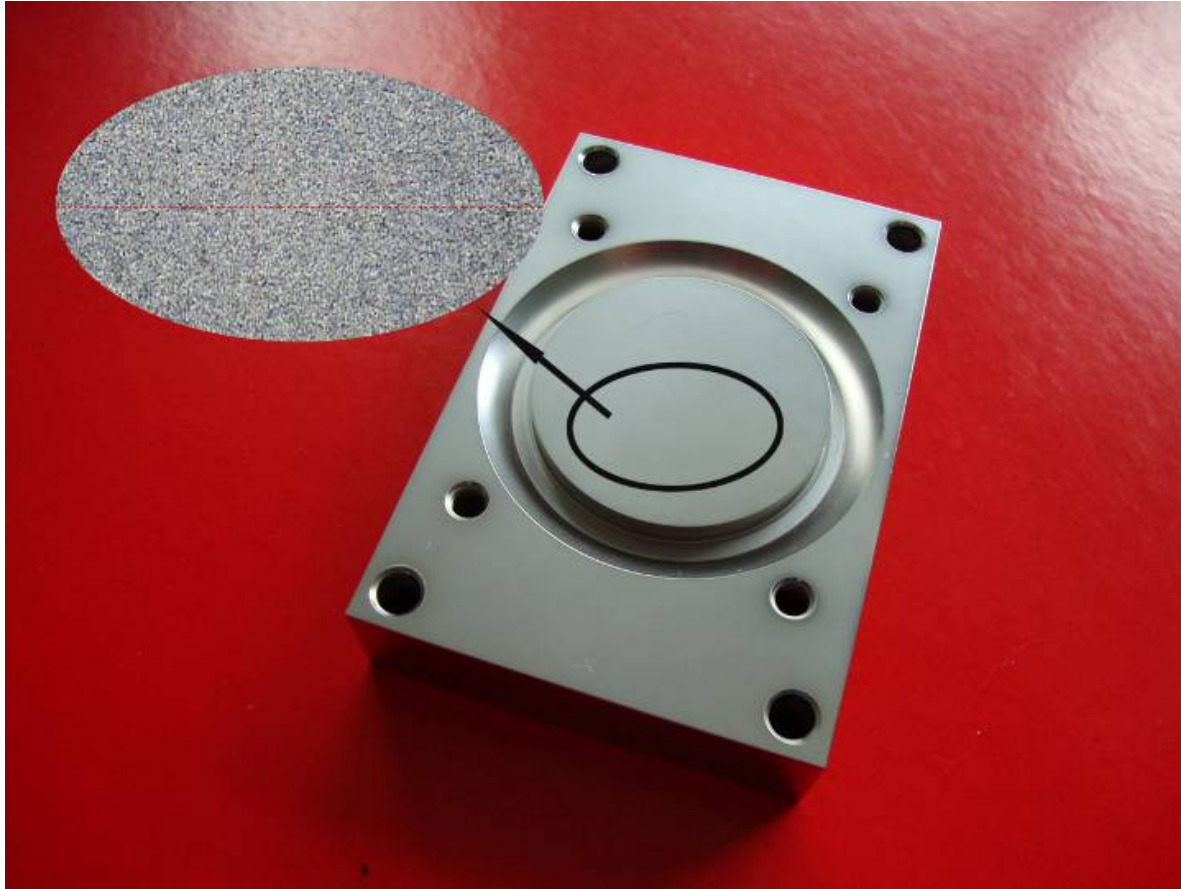
Slow Leakage Comparison Test of Tubes and Housings (integrated VS welding type)

Requirements: Helium leakage rate standard: $<10^{-8}$ bar cm³/ sec

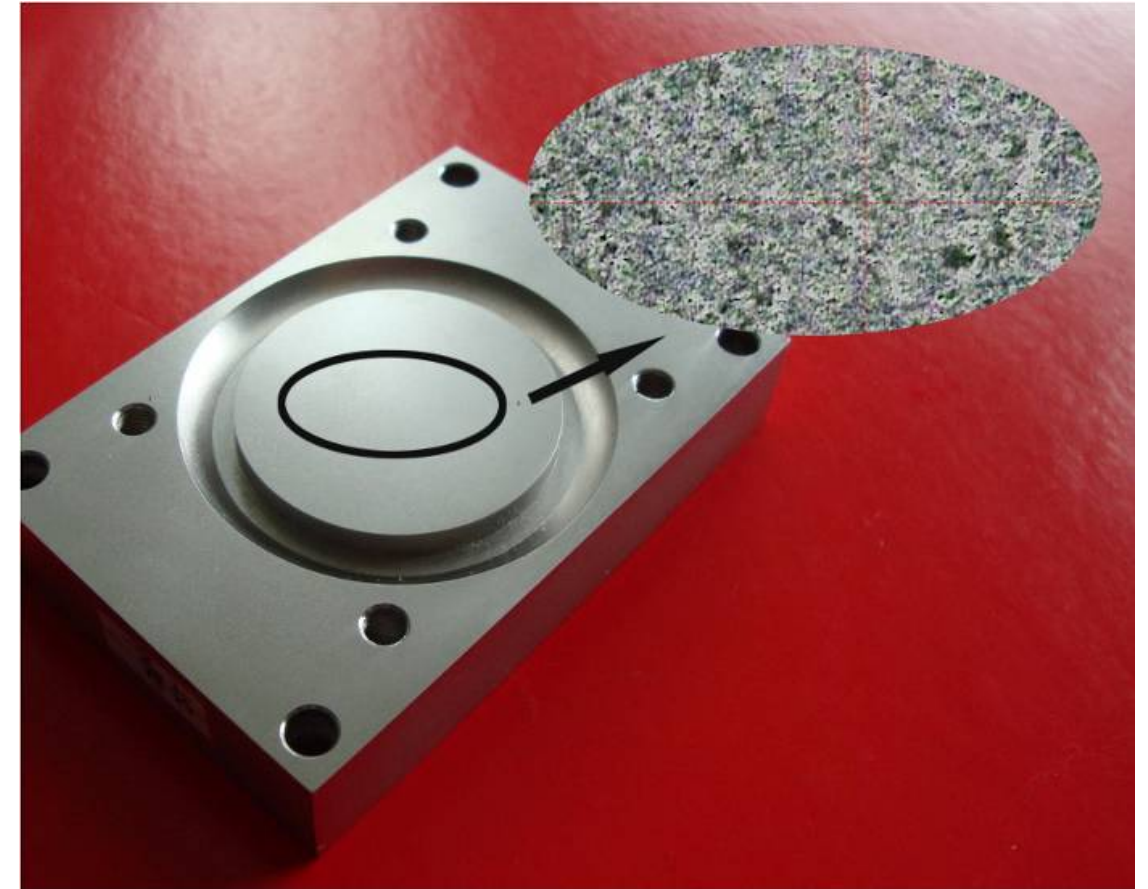


Conclusion: Our company's integrated pipe shell has better sealing performance and lower leakage rate under long-term working conditions.

The Main Technical Feature - Electroplating

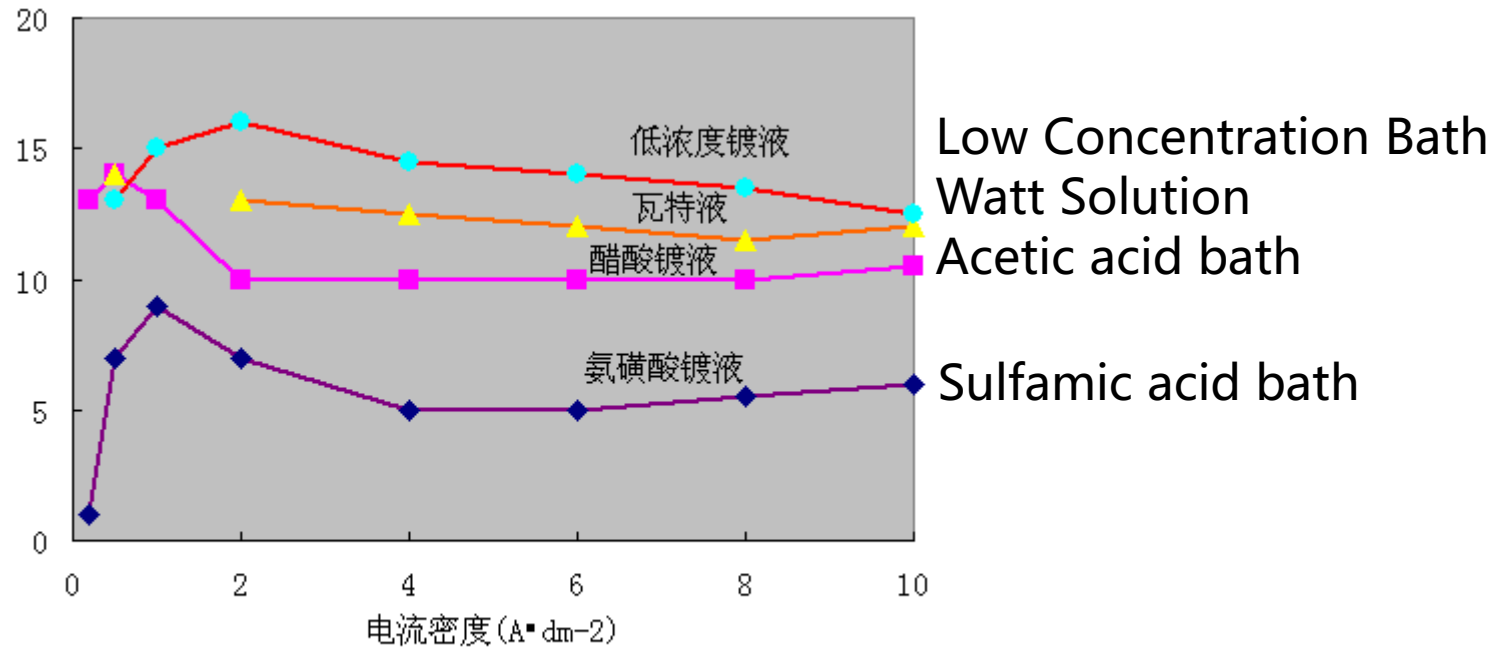


YZPST's modular structure products (using sulfamic acid nickel plating process)



Traditional Module structure products (using nickel sulfate plating process)

Comparison Test of Different Types of Plating Solutions and Internal Stress of the Coating



镀液种类、电流密度与镀层内应力的关系

Conclusion: The nickel sulfamic acid bath electroplating solution has the lowest internal stress of the coating, Therefore, the choice of sulfamic acid bath is superior to other baths.

Refer to the literature for the above content:

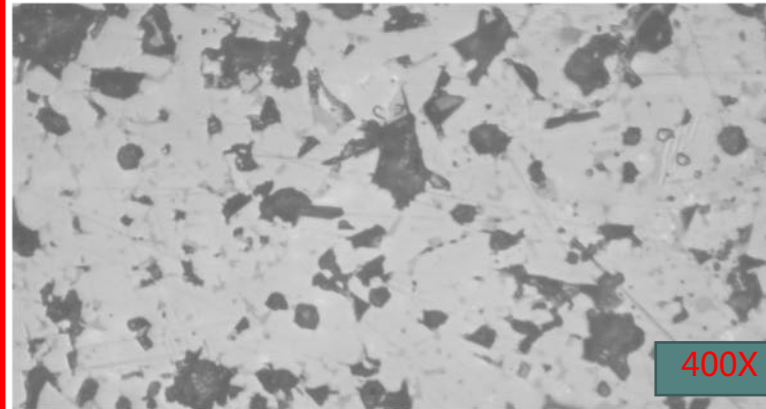
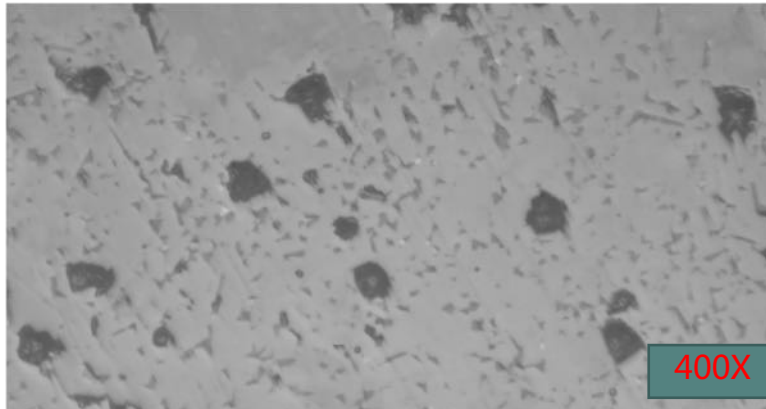
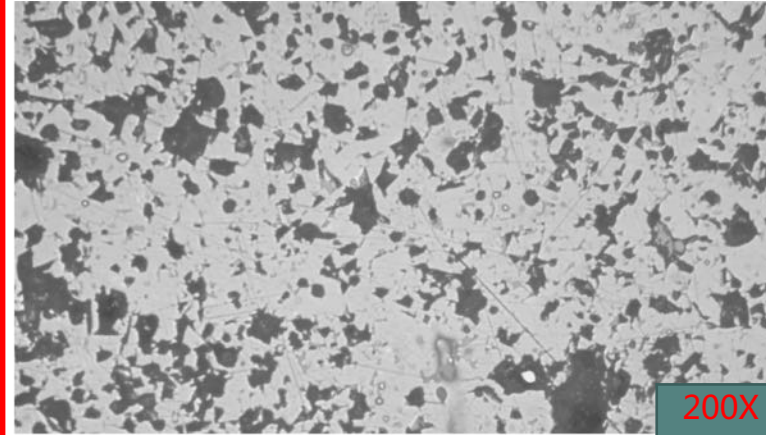
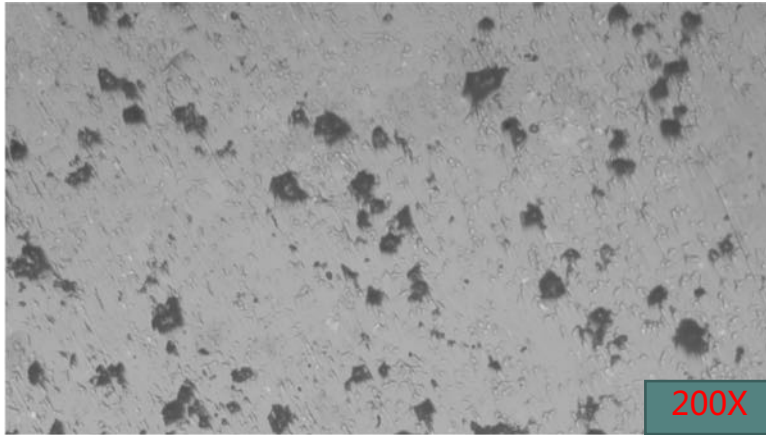
1. An Maozhong. Electroplating theory and technology[M]. Harbin: Harbin Institute of Technology Publishing Car, 2004.
2. Zhang Yuncheng. Electroplating Handbook 3rd Edition [M]. Beijing: National Defense Industry Press, 2008.

Isostatic Ceramics

The ceramics produced by YZPST adopt the isostatic pressing process (from the second half of 2020). The ceramics is a process production line developed and manufactured by the company; compared with the hot die casting process, the ceramics obtained by this process have the following advantages:

- **Better consistency;**
 - **Higher density;**
 - **Lower porosity;**
- **Better mechanical strength;**

Isostatic Ceramics



Microstructure of ceramic produced by isostatic pressing process

Microstructure of ceramic produced by hot die casting process

It can be seen from the above figure that the ceramic pores produced by the isostatic pressing process are significantly less than those produced by the hot die casting process.

Quality Assurance System

- The company has passed ISO9000 certification. The quality control department is the company's quality management and quality control department, responsible for the company's quality inspection, quality system maintenance and measurement. The quality control department strictly implements the quality management of products in accordance with the requirements of ISO9001 during production, and has set up incoming inspection, process inspection, warehousing and outbound inspection to ensure that each batch of products meets customer requirements.
- The company currently has 18 sets of various types of main precision testing equipment and 80 sets of various length measuring instruments, which can meet the testing requirements of various products.

Quality Assurance System

Serial number	Name	Unit	Quantity	Precision
1	Three-coordinate measuring instrument (imported precision level)	station	2	+/-1um
2	Helium pavement leak detector	station	3	1.65*10-11PA.M3/S
3	X-ray coating thickness gauge (USA-Thermo)	station	3	0.05%
4	Hardness Tester	station	1	±3%
5	Imager	station	2	(3+L/200) uM
6	Surface roughness measuring instrument	station	2	Ra0.025uM
7	Salt spray test chamber	station	1	Range temperature 45C°,humidity 35%
8	Humidity test chamber	station	1	Range temperature 85C°, humidity 85%
9	Low temperature box	station	1	range 0C°—65C°
10	High temperature box	station	1	range 25C°— 200C°
11	Rally	station	2	±1% 0-1000kg / ±1% 0-5000kg
12	Stereo microscope	station	1	50X magnification

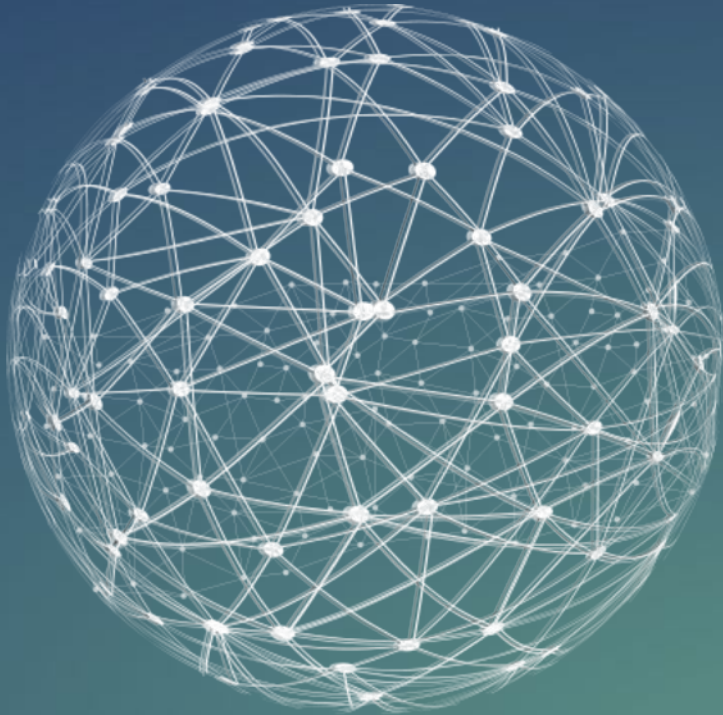
Production Capacity

YZPST main production equipment is as follows:

- More than 80 sets of various machining equipment such as CNC machine tools,
- 23 large double-sided grinding machines,
- 6 metallization and welding furnaces (one of which is a fully automated high-precision metallization production kiln equipment imported from the United States);
- An automatic electroplating line for nickel sulfamic imported from the United States can ensure high-quality electroplating effects.

YZPST can produce various semiconductor ceramic housings and module structural parts of 1~7 inches.

According to the company's existing processing equipment, the company's annual production capacity can reach 2 million sets (KT80 specifications).



Major Clients

Business Culture

We assist our valued customers in designing and developing their products standing on the creative and innovative foot.

We manufacture the products with quality assurance, delivery accuracy and cost effectiveness.

Major Clients



THANK YOU!

By Steven Zhang



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