昊光科技
INFO BRIGHT

INFO BRIGHT TECHNOLOGIES

A Company Dedicated to Ceramic Substrates Manufacturing

COMPANY INTRODUCTION

IBT 昊光科技 INFO BRIGHT

Info Bright Corporate History

In 2002, the Company was founded, specializing in the research and development of Optical Disc Laser Beam Mastering Recorder, Micro-Nano scale electroforming, and MEMS fabrication processes.

Beginning in 2015, our skilled technical team, equipped with mature expertise and extensive experience in laser machining, photoresist circuit pattern imaging, Magnetron thin film sputtering, and microstructure electro fabrication, expanded into DPC Ceramic Substrate fabrication for LED submounts. We not only designed our own process equipment but also managed the entire manufacturing process in-house.

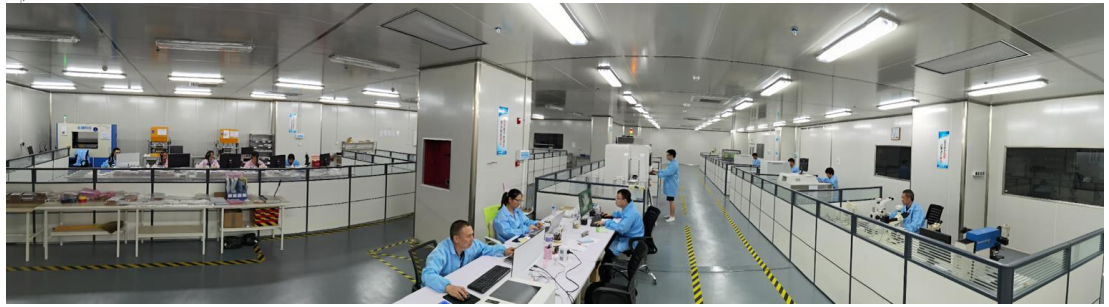
In 2017, we established and relocated our operations to XinFeng County in Ganzhou City, Jiangxi Province, China.

IBT was formed in 2002

In 2015, we began manufacturing Direct Plated Copper (DPC) Ceramic Substrate

2019 our quantity production started at XinFeng county

Registered Capital：50 Million RMB
Total Investment：300 Million RMB
Corporate Category：High Tech Electronics
Core manufacturing：Ceramic Substrates
Corporate Milestone：To become a leading supplier of Ceramic Substrate in China



Corporate History

We establish our foothold in the industry based on long terms focusing of specialized, refined, and distinctive market development.

ShenZhen IBT（between 2002 - 2012）

- **Sole producer of Laser Beam Recorders for Optical Disc Master Stamper in China**
- **Producer of Optical Disc Master Stamper Electroforming Equipment in China**

1996 – 2002 Provided professional Laser Beam Recorder machine repair services and comprehensive Optical Disc Digital Master Stamper production factory setup services in Southeast Asia.

1999 Awarded a Chinese patent for the invention of the DVCD optical storage format.

2003 Commenced mass production of Optical Disc Digital Master Stamper precision micro-nano electroforming equipment.

2004 Entered into the production of Optical Disc Master Stamper Laser Recorder Machines for commercial deliveries

2006 Initiated research and development of Ultra high-density Optical Storage Digital Master Stamper Laser Beam Recorder machine.

2010 Successfully developed the Chinese CBHD optical storage format encoder for the Tsinghua National Optical Storage Research Center.

2014 Established a pilot factory in Shenzhen dedicated to DPC direct-plated copper ceramic IC substrates and LED submounts.

2016 Entered into an investment agreement with the XinFeng County Government in Jiangxi Province to build a large-scale ceramic substrates manufacturing facility.

2018 XinFeng factory construction completed.

2019 DPC ceramic substrates production equipment installation and factory commissioning.

2020 - 2021 Obtained products qualification approval from several major LED Light Source manufacturers solidifying our position as trusted supplier of DPC ceramic IC substrates and LED submounts.

2022 Embarked into a financing and expansion plan to increase mass production capacity and pursue an ambitious growth trajectory.

IBT 昊光科技 INFO BRIGHT

Landscape：

4.5 Hectare of land with a combined 60 thousands square meters factory floor space and facility constructions.

Industrial Complex distribution：

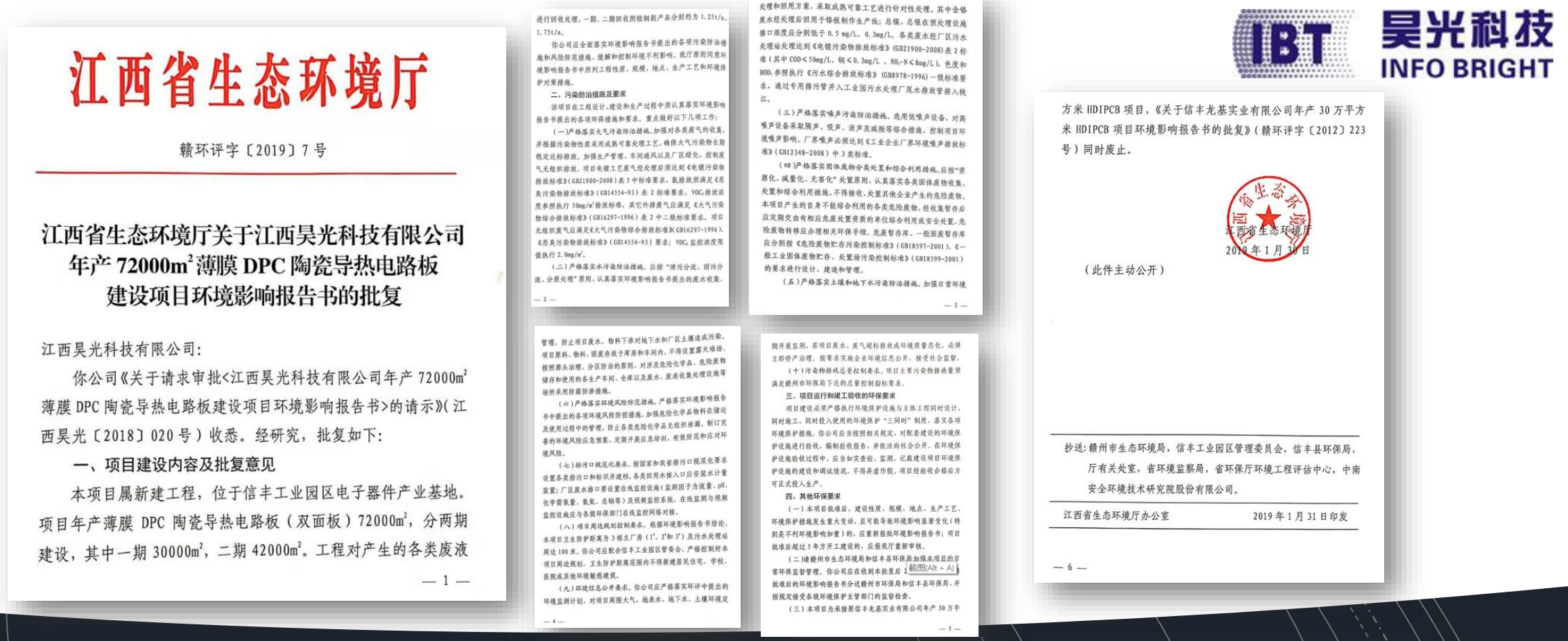
Total 5 building structures for manufacturing, R&D facilities and administrative offices. Self contained on site with waste water treatment plant, fire prevention system and power transformer utilities.

Environmental License and permits：

Approved Waste water treatment License with assessment

（赣环评字【2019】7号)

Our factory located at XinFen County, GanZhou City, JiangXi Province, China



江西省生态环境厅

赣环评字〔2019〕7号

江西省生态环境厅关于江西昊光科技有限公司年产72000m²薄膜DPC陶瓷导热电路板建设项目环境影响报告书的批复

江西昊光科技有限公司：

你公司《关于请求审批<江西昊光科技有限公司年产72000m²薄膜DPC陶瓷导热电路板建设项目环境影响报告书>的请示》（江西昊光〔2018〕020号）收悉。经研究，批复如下：

一、项目建设内容及批复意见

本项目属新建工程，位于信丰工业园区电子器件产业基地。项目年产薄膜DPC陶瓷导热电路板（双面板）72000m²，分两期建设，其中一期30000m²，二期42000m²。工程对产生的各类废液

— 1 —

进行回收处理，一期、二期回收铜极铜副产品分别约为1.25t/a、1.75t/a。

你公司应全面落实环境影响报告书提出的各项污染防治措施和风险防范措施，缓解和控制环境不利影响，我厅原则同意环境影响报告书中所列工程性质、规模、地点、生产工艺和环境保护对策措施。

二、污染防治措施及要求

该项目在工程设计、建设和生产过程中须认真落实环境影响报告书提出的各项环保措施和要求。重点做好以下几项工作：

（一）严格落实大气污染防治措施。加强对各类废气的收集，并根据污染物性质采用成熟可靠处理工艺，确保大气污染物长期稳定达标排放。加强生产管理，车间通风以及厂区绿化，控制废气无组织排放。项目电镀工艺废气经处理后须达到《电镀污染物排放标准》（GB21900-2008）表5中标准要求，氨排放须满足《恶臭污染物排放标准》（GB14554-93）表2标准要求，VOC₁排放浓度参照执行50mg/m³排放标准，其它外排废气应满足《大气污染物综合排放标准》（GB16297-1996）表2中二级标准要求，项目无组织废气应满足《大气污染物综合排放标准》（GB16297-1996）、《恶臭污染物排放标准》（GB14554-93）要求；VOC₁监控浓度限值执行2.0mg/m³。

（二）严格落实水污染防治措施。应按"清污分流、雨污分流、分质处理"原则，认真落实环境影响报告书提出的废水收集、

— 2 —

处理和回用方案，采取成熟可靠工艺进行针对性处理。其中含铬废水经处理后回用于铬板制作生产线；总镍、总银在预处理设施排口浓度应分别低于0.5 mg/L、0.3mg/L。各类废水经厂区污水处理站处理达到《电镀污染物排放标准》（GB21900-2008）表2标准（其中COD≤50mg/L、铜≤0.3mg/L、NH_3-N≤8mg/L），色度和BOD₅参照执行《污水综合排放标准》（GB8978-1996）一级标准要求，通过专用排污管并入工业园污水处理厂尾水排放管排入桃江。

（三）严格落实噪声污染防治措施。选用低噪声设备，对高噪声设备采取隔声、吸声、消声及减振等综合措施，控制项目环境噪声影响。厂界噪声必须达到《工业企业厂界环境噪声排放标准》（GB12348-2008）中3类标准。

（四）严格落实固体废物分类处置和综合利用措施。应按"资源化、减量化、无害化"处置原则，认真落实各类固体废物收集、处置和综合利用措施，不得接收、处置其他企业产生的危险废物。本项目产生的自身不能综合利用的各类危险废物，经收集暂存后应定期交由有相应危废处置资质的单位综合利用或安全处置。危险废物转移应办理相关环保手续。危废暂存库、一般固废暂存库应分别按《危险废物贮存污染控制标准》（GB18597-2001）、《一般工业固体废物贮存、处置场污染控制标准》（GB18599-2001）的要求进行设计、建造和管理。

（五）严格落实土壤和地下水污染防治措施。加强日常环境

— 3 —

管理，防止项目废水、物料下渗对地下水和厂区土壤造成污染。项目原料、物料、固废存放于库房和车间内，不得设置露天堆场。按照源头治理、分区防治的原则，对涉及危险化学品、危险废物储存和使用的各生产车间、仓库以及废水、废渣收集处理设施等场所采用防腐防渗措施。

（六）严格落实环境风险防范措施。严格落实环境影响报告书中提出的各项环境风险防控措施，加强危险化学品物料在储运及使用过程中的管理，防止各类危险化学品无组织泄漏。制订完善的环境风险应急预案，定期开展应急培训，有效防范和应对环境风险。

（七）排污口规范化要求。按国家和我省排污口规范化要求设置各类排污口和标识并建档。各类回用水接入口应安装水计量装置；厂区废水排口要设置在线监控设施（监测因子为流量、pH、化学需氧量、氨氮、总铜等）及视频监控系统，在线监测与视频监控设施应与各级环保部门在线监控网络对接。

（八）项目周边规划控制要求。根据环境影响报告书结论，本项目卫生防护距离为3栋主厂房（1#、2#和3#）及污水处理站周边100米，你公司应配合信丰工业园区管委会，严格控制好本项目周边规划，卫生防护距离范围内不得新建居民住宅、学校、医院或其他环境敏感建筑。

（九）环境信息公开要求。你公司应严格落实环评中提出的环境监测计划，对项目周围大气、地表水、地下水、土壤环境定

— 4 —

期开展监测，若项目废水、废气超标排放或环境质量恶化，必须立即停产治理。按要求实施企业环境信息公开，接受社会监督。

（十）污染物排放总量控制要求。项目主要污染物排放量须满足赣州市环保局下达的总量控制指标要求。

三、项目运行和竣工验收的环保要求

项目建设必须严格执行环境保护设施与主体工程同时设计、同时施工、同时投入使用的环境保护"三同时"制度，落实各项环境保护措施。你公司应当按照相关规定，对配套建设的环境保护设施进行验收，编制验收报告，并依法向社会公开。在环境保护设施验收过程中，应当如实查验、监测、记载建设项目环境保护设施的建设和调试情况，不得弄虚作假。项目经验收合格后方可正式投入生产。

四、其他环保要求

（一）本项目批准后，建设性质、规模、地点、生产工艺、环境保护措施发生重大变动，且可能导致环境影响显著变化（特别是不利环境影响加重）的，应重新报批环境影响报告书；项目批准后超过5年方开工建设的，应报我厅重新审核。

（二）请赣州市生态环境局和信丰县环保局加强本项目的日常环保监督管理。你公司应在收到本批复后7日内将经批准后的环境影响报告书分送赣州市环保局和信丰县环保局，并按规定接受各级环境保护主管部门的监督检查。

（三）本项目为承接原信丰龙基实业有限公司年产30万平

— 5 —

方米HDIPCB项目，《关于信丰龙基实业有限公司年产30万平方米HDIPCB项目环境影响报告书的批复》（赣环评字〔2012〕223号）同时废止。

江西省生态环境厅

2019年1月30日

（此件主动公开）

抄送：赣州市生态环境局，信丰工业园区管理委员会，信丰县环保局，厅有关处室，省环境监察局，省环保厅环境工程评估中心，中南安全环境技术研究院股份有限公司。

江西省生态环境厅办公室　　2019年1月31日印发

— 6 —

Full-Process Manufacturing Factory for DPC Technology with Comprehensive Environmental Assessment Procedures

The environmental assessment approval is an essential prerequisite for high-tech clean manufacturing.

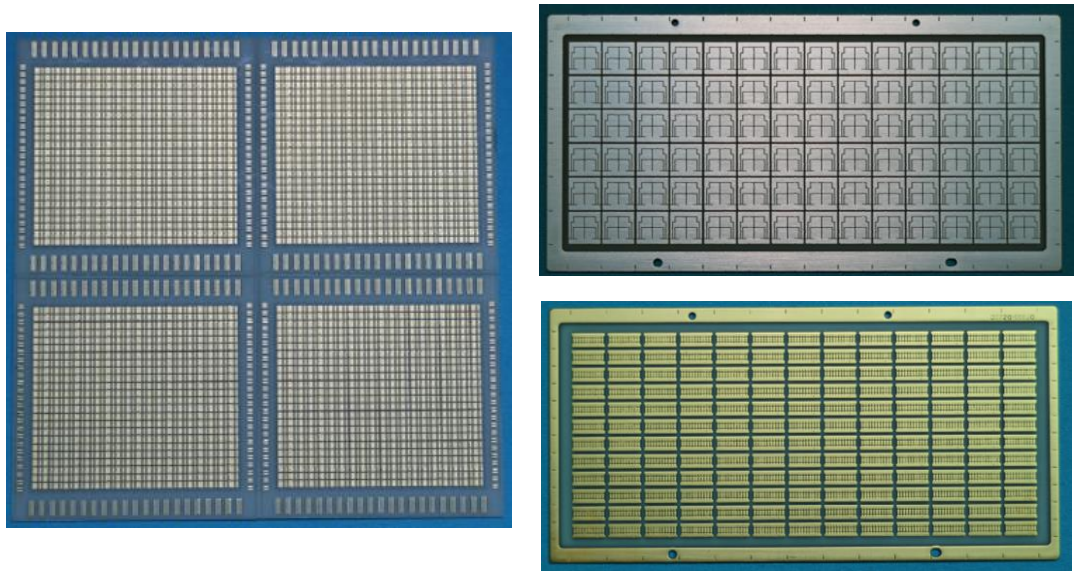
Our Product(1)

DPC Product

Ceramic Substrate Manufacturing for the Semiconductor & Electronics Industry

Application

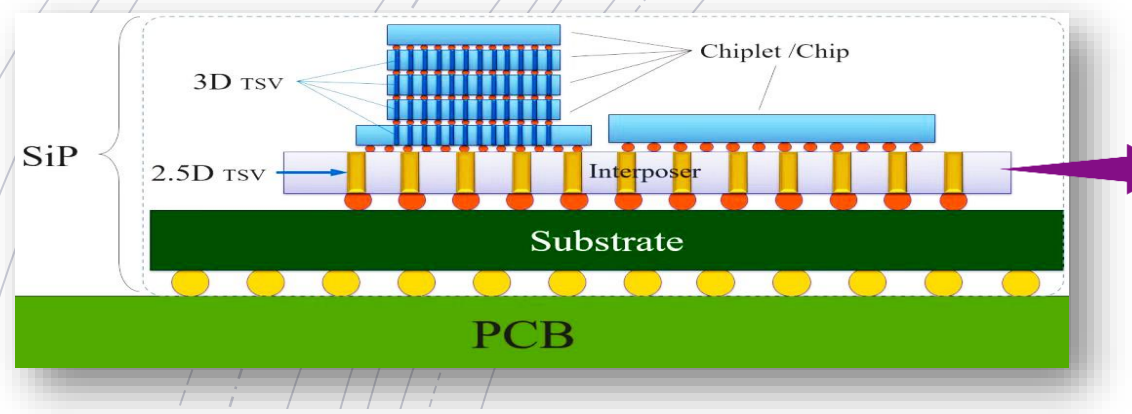
High-Power LED Light Source Sub-Mounts, Microelectromechanical Systems (MEMS), Microwave Wireless Communications, Power Control Circuits, and Automotive Electronics.



We are dedicated to achieving excellence in our products and establishing a 'Trustworthy Brand' is the cornerstone of our manufacturing philosophy.

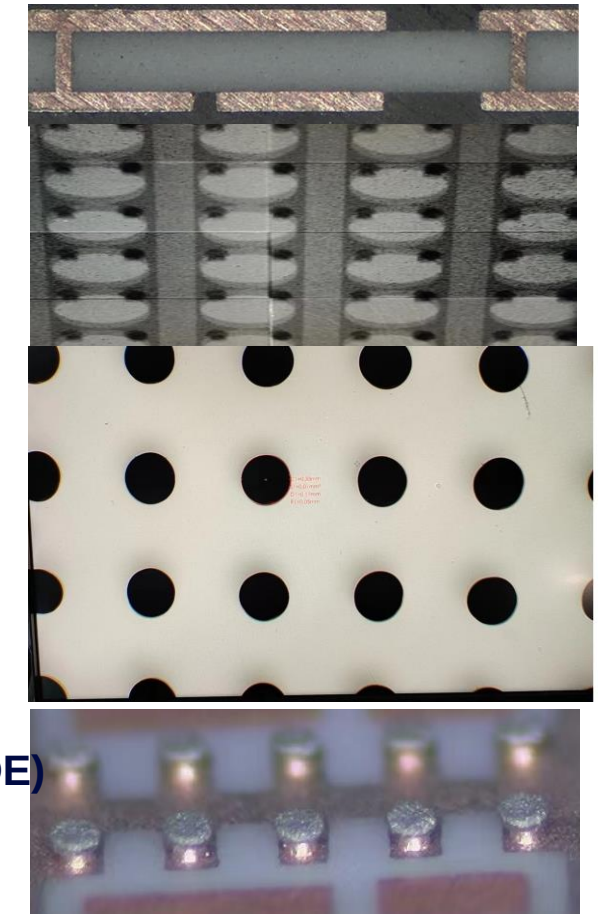
Our Product(2)

SiP Chiplet Interposer



INTERPOSER:

- Si Wafer
- Glass
- AlN
- SiO2
- Sapphire



The Three Levels of Circuit Integration

Factors	SoC	SiP	PCB
Material	semiconductor	Conductors and insulators	Conductors and insulators
Volume	Smaill (<4)	Medium(4-10)	Large(>10)
Cost	high	low	low
Lead time	long	relatively short	short
Type	single chip	Multi-chip + Few Passive Components	Multi-chip + large number of passive components

Main Processes:

- Through-hole plating (THP)
- Blind via filling (BV)
- Pillar Bumps
- Laser induced direct etching (LIDE)
- Damascene copper
- C2 ball grid array (BGA) <100μm
- Physical vapor deposition (PVD)
- Plasma enhanced chemical vapor deposition (PECVD)
- surface finish

SiP Packaging Offers Significant Advantages:

Short Development Cycle, Low Cost, High Density, and Low Power Consumption

WLP/PLP Panel-Level Glass Circuit Board

昊光科技 INFO BRIGHT

Advantages of our equipment:

1. PVD Magnetron Sputtering Equipment for Glass Panel Circuit Layer Metallization with an Annual Production Capacity of 400,000 m²
   a) Two German made Von Ardenne 600x1200mm PVD Sputtering Lines
   b) One Applied Materials 1.6-Meter Wide Area PECVD Sputtering Line
   c) One Mid-Sized Taiwanese 600x400mm PVD Sputtering Line
   d) Three Semi-Automatic PVD Coating Prototyping Devices Based on Concepts from MRC, USA
2. Complete Set of Self-Developed Electrolytic Copper Precision Plating Equipment
3. Equipped with picosecond, nanosecond, and CW lasers of ultraviolet (UV) and green wavelengths for glass processing, cutting, drilling, and other processes.

Service Options for for downstream value-added processing:

a) **Semi-Additive Metallized COG Glass Substrate (mSAP Additive Processing for Final Circuitry)**
b) **Full-Additive Metallized COG Glass Substrate (Tenting Etching Processing for Final Circuitry)**
c) **COG MiniLED Glass Circuit Board (SAP Circuit Board for Direct Chip Mounting Specified by End User)**

Corporate Roadmap

High-quality production

Phase 1: **(Goals Achieved)**

Starting in vast LED market, we became a top supplier with mature process, market knowledge, skilled staff, and advanced equipment. We achieved our goals with in-house production equipment, skilled workforce, and robust quality control. Steady production capacity of 30-50 sqm daily.

Annual turnover of 6,000 to 100 million RMB

Intelligent Mass Production

Phase 2: **(In progress)**

To ramp up quality production, we need support of excellent MES Manufacturing Execution Systems, Industrial Qualification, and stable customers. Environmental Controls and safety measures must be well enforced. We'll invest in automated smart manufacturing alongside acquiring new equipment. By raising investment funds, we'll expand DPC ceramic capacity and offer SiP Interposer substrates using electronic glass and quartz materials. Production capacities will boost to 50-100 sqm daily.

Annual turnover of RMB 100-200 million

High yield

Phase 3: **(In preparation)**

Our focus is on high-volume, high-quality production. We'll develop Interposer and Substrates for advanced packaging of WLP, PLP and Chiplet SiP. We'll optimize production, resources, and automation to reach daily output of 100-200 sqm combined DPC & Semi-Conductor SiP Interposer and substrates. A successful IPO will fuel our self-sufficient future.

Annual turnover of more than RMB 300-500 million

Customer Satification

Phase 4: **(In preparation)**

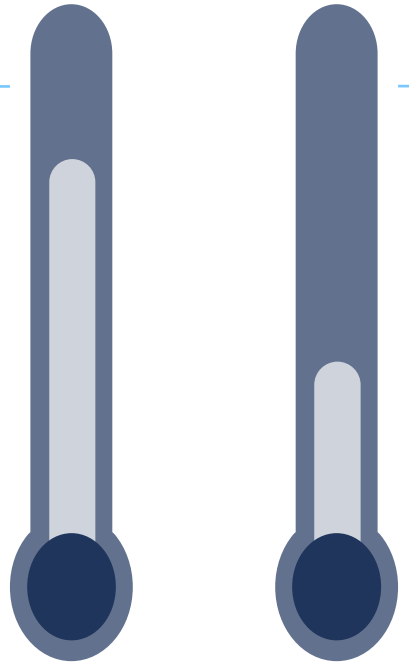
Leveraging our future strengths, we aim to form horizontal partnerships with strategic partners to facilitate corporate expansion, with a particular focus on the Semi-Conductor Interposer and Chips Submounts market in the field of advanced packaging. We'll invest into smart manufacturing system to boost production output above 200 sqm daily. Our ultimate goal is to achieve top customer satisfaction by supplying high-quality Ceramic substrates for the industry.

Annual turnover of more than 2 billion RMB

DPC Market Overview

China's DPC ceramic IC substrate market is booming, expected to reach demands in hundreds of billions Yuan annually.

- These high-performance substrates excel in heat management, making them ideal for advanced electronics applications such as power devices and multi-chip modules.



SiP advanced packaging is driving a shift towards DPC substrates, replacing 30% of PCB in area within 3 years.

- Glass Interposer (alkali-free glass, quartz)
- High thermal conductive ceramic Composite substrates of materials (AlN, SiN)
- Single crystal Interposer substrates of materials (Si, sapphire, DLC)
- Organic IC substrates (ABF, BT)

Meeting the Needs of Industrial Quality Applications

- DPC substrates are crucial for industrial applications, particularly in environments with extreme temperature fluctuations and harsh conditions that can cause component failures. Their superior stability and thermal conductivity ensure reliability and optimal performance even under demanding circumstances.

DPC Ceramic Substrate Manufacturing Process

Core Competitiveness Analysis

Info Bright Tech

We adopt an in-depth collaborative industrial approach to advance in parallel across process controls, advanced equipment, production methods, and management practices. Our long-term investment budget focuses on detailed R&D, thorough anatomical analysis, understanding of application technology and process principles, as well as production equipment that supports process solutions. By integrating full-process production controls, we aim to ensure superior quality product across the entire manufacturing process.

Industry Competitors

Foundation of knowledge has been built through procurement, outsource commissioning and/or other third-party know-how in providing production solutions and dedicated equipment supports with insufficient reinvestment in scientific R&D. Certain processes over reliant on external third parties might result in a loss of controls of quality during production process. As a result, infrastructural gains and advancements are non-cumulative due to external, non-proprietary supplies of know-how and technologies.

Details of long-term research and development improvements in technology.

- Mechanism of Ceramic and Active Metal Bonding Force, Vacuum Deposition Process Parameters, and Methods
- The Electroplating Mechanism of THP Conductive Vias, High Aspect Ratio Deep Blind Vias, and the Role and Impact of Copper Plating Additives
- The Functional Relationship and Impact of Pulse Electroplating and Direct Current Electroplating on THP Conductive Vias, Blind Vias, and Copper Deposition on the Surface
- Exposure Process, Equipment, Materials, Technological Mechanism, and Process Control for Forming Thick Films with a Thickness of 100 to 400 Micrometers
- Deposition Requirements and Crystal Morphology of High-Power Electronic Conductive Copper Circuits: Requirements and Impact on Application Function Modules
- Surface Treatment Technology Requirements for Semiconductor IC Substrates and Chip Bonding Welding
- Process Requirements for Surface Treatment of Ceramic Substrates in Chip Encapsulation Eutectic Bonding
- Electrochemical Deposition of Eutectic Soldering Alloy Materials
- Establishment and Improvement of Intelligent Manufacturing Systems

DPC Ceramic Substrate Production Process

Full-process production of ceramic substrates is a necessary guarantee for quality manufacturing

Ceramic substrate
Al2O3/AlN

Process, Method, and Design:

- Professional expertise
- Customer service support
- Effective communication

By integrating customer resources with our own process teams, we ensure effective performance and guarantee the delivery of the final desired product

Customer Provides Design Drawings →	**Program Department Preliminary Review** →	**Technical Review**	**2-3** Days
EQ Customer Confirmation →	**Develop customer confirmation chart** →	**Quotation**	**2** Days
Warehouse confirmation of materials →	**Technical process requirements development**		**1** Days
Sample order production			**14-21** Days
Official mass production →	**First delivery** **10** Days	**Continuous Delivery** →	Every **3-5** Days

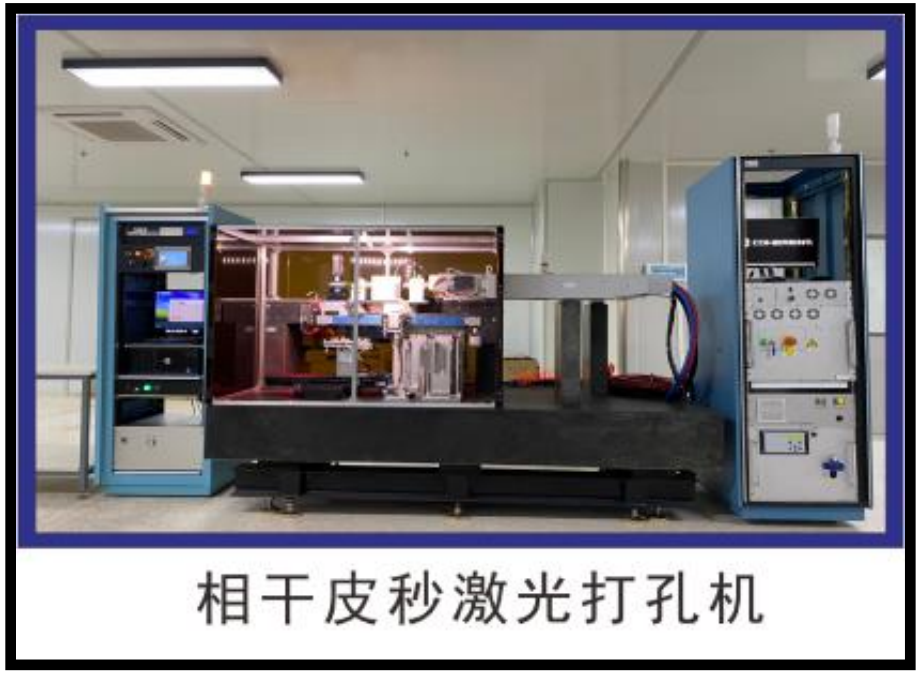
Laser Drilling

Laser Drilling

- With picosecond, nanosecond, continuous, pulse, fiber laser; IR, green, UV various wavelengths and CO2 laser. Various applications in drilling, scribing, bad spot coding, surface stripping, etc.

Germany TruMicro Picosecond Laser

Autonomous laser perforation underlying control software and hardware
Drive picosecond laser cold processing effect



相干皮秒激光打孔机

DPC Ceramic Substrate Production Process

Full-process production of ceramic substrates is a necessary guarantee for quality manufacturing

Conductive seed metal layer sputtering

- Two batch production continuous PVD vacuum coating lines in VON ARDENNE, Germany
- U.S. MRC semi-automatic three-target sputtering (including plasma cleaning)
- Germany Applied Materials 1m6 wide large rotating target vacuum coating
- IBT independent design three-target co-sputtering PVD material experiment
- Taiwan small and medium batch tunnel type continuous PVD coating final test line

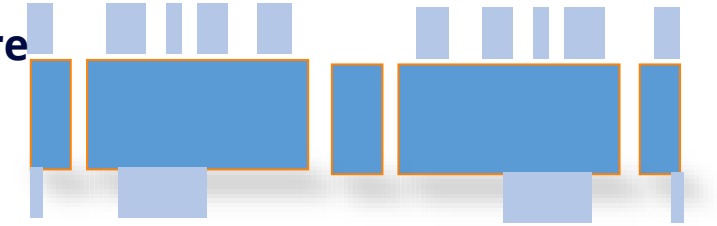
德国冯阿登纳真空镀膜线两条

The bond between ceramic and metal is crucial
Processes for various compound ceramics and glass substrates

Exposure and Development:

Self-developed, independent property rights, fully automatic thick film photomask exposure machine

Circuit graphics exposure development



LDI laser lithography direct engraving pattern
Self-designed and manufactured LIGA thick film exposure and development equipment
Carl Suss RC8, RC33 wafer-level photoresist coater
Line width, line spacing ≥ 10μm

LIGA 厚膜光罩曝光机

A must for ultra-high, ultra-fine structured graphics LIGA exposure can handle processes that market LDI equipment cannot

昊光科技
INFO BRIGHT


相干皮秒激光打孔机

Laser perforation → **Daily capacity: 50 square meters**

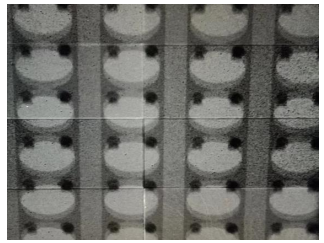
Vacuum Coating → **Daily capacity: 1250 square meters**


LIGA 厚膜光罩曝光机

Exposure development → **Daily capacity: 100 square meters**

Metal Circuit Layer Electroplating Thickening

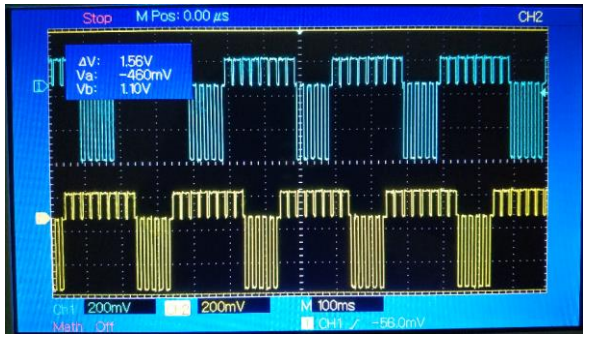
Self-developed complementary manufacturing positive and negative pulse plating power supply



SAP Multilayer Blind Hole Plating Effect

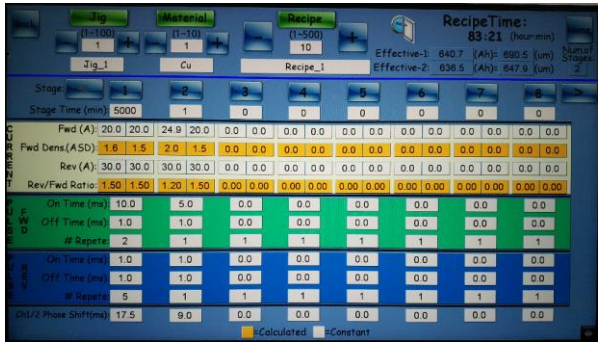
1. **Autonomous Pulse Rectifier**
2. **High-Precision Micro-Electroplating Software**
3. **Self-Developed Copper Plating Additive**

IBT designs and manufactures high-power precision pulse plating power supplies. With 15 years of experience, they have developed wafer-level microstructure plating, flip-chip copper pillars, bumps, and Damascus copper plating processes. They also offer TSV, TGV, THP through-hole plating, blind holes, and mSAP and SAP processes



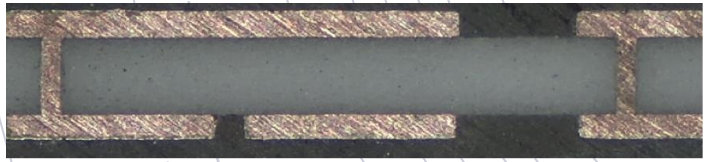
Pulse Waveform Control Function

Pulse Precision: 0.1 Microseconds

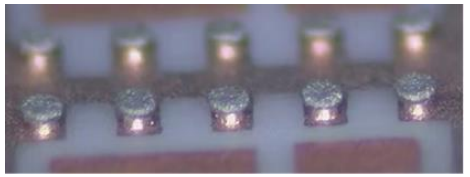


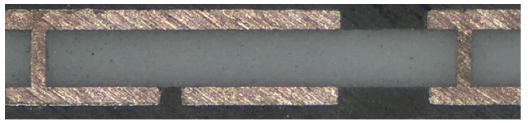
High-Precision Electroplating Function Setup Menu

Self-developed copper plating additives and THP through-hole plating effect

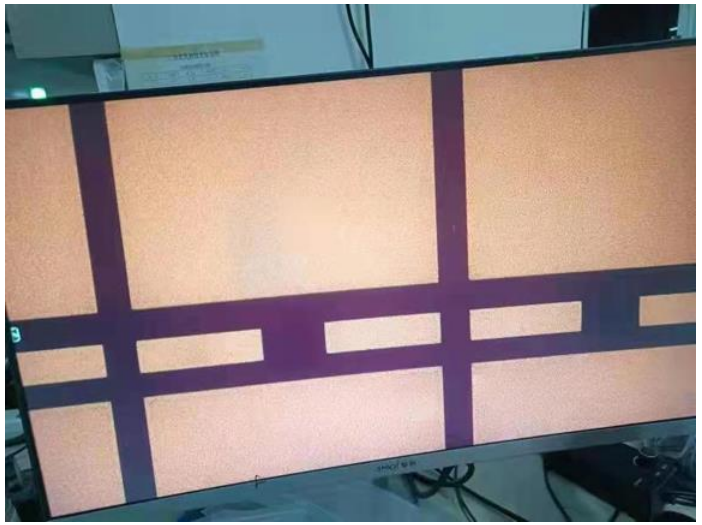


Proprietary formulated SAP copper electroplating additives for substrates



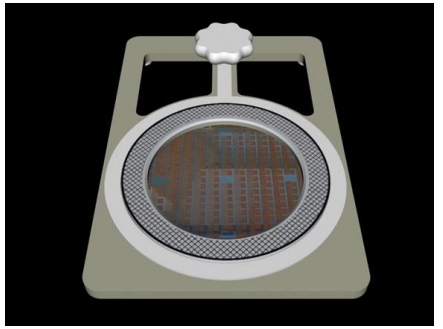


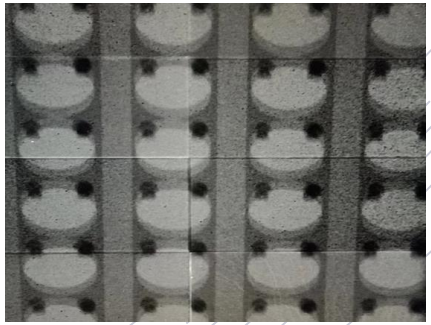
Addressing the Critical Process Challenges of mSAP and SAP IC Carriers - Yes! We are ready!



With 15 years of experience in microstructure electroplating, we developed proprietary copper plating additives for THP, TSV, TGV, BV, and deep trenches. These solutions enable flawless wafer-level electroplating, including copper pillar, bumping, and Damascene plating, rivaling leading International solution providers from Germany and the USA.

Self-developed plating additives for THP, BV, TSV, TGV, Pillar, and carrier SAP electroplating



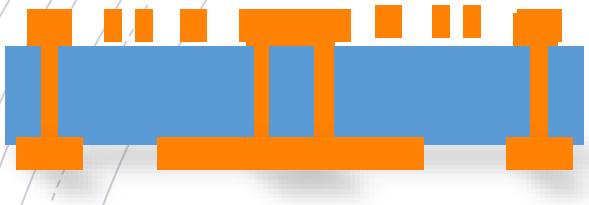


Proprietary Wafer Chuck Design & Electroplating Effects on Deep Blind Holes→

Product Development

Precision grinding and polishing

Grinding and polishing



Roughness process capability

- Flatness of solid crystal area ≤1.5um
- Surface roughness of solid crystal area ≤0.2um

The ceramic substrate must be compatible with the semiconductor packaging process, requiring a precision grinding and polishing machine that is essential for mass production surface treatment of DPC ceramic substrates.

❖ The self-developed and manufactured grinding equipment is not disclosed here due to confidentiality reasons.

昊光科技 INFO BRIGHT

Product Development

Surface Treatment

Ni/Au/Ag Chemical plating

Long-term research on surface treatment, metal replacement, and reduction mechanisms, such as semi-autocatalysis, electrolytic deposition, and alloy eutectic, ensures compatibility with semiconductor chip docking and substrate soldering and packaging requirements.

Equipment type:
Nickel-palladium-gold wire, silver chemistry wire, electric silver wire, electric gold wire

Process capability:
Ni - conventional: 5 μm ± 2.5
Pd palladium - thin palladium (replacement): < 0.025 μm
Thick palladium (reduction): < 0.05 - 0.3 μm
Au gold - gold chemistry: 0.025 - 0.08 μm
Semi-autocatalytic: 0.1 - 0.3 μm
Electro-gold (soft): 0.15 - 0.5 μm
Electro-gold (hard): 0.1 - 1 μm
Ag silver - silver chemistry: 0.25 - 1 μm
Electro-silver: ≥ 1 μm

全方位制程镍鈀金、银、锡等表面处理

昊光科技
INFO BRIGHT

Production

Hole-filling plating

Daily capacity:
80-100 square meters

Grinding and polishing

Daily capacity:
80-100 square meters

Probe testing

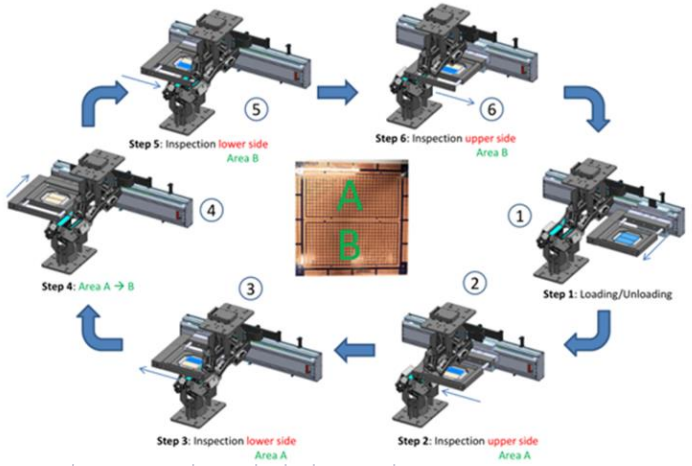
Daily capacity:
80 square meters

全方位制程镍钯金、银、锡等表面处理

Surface treatment

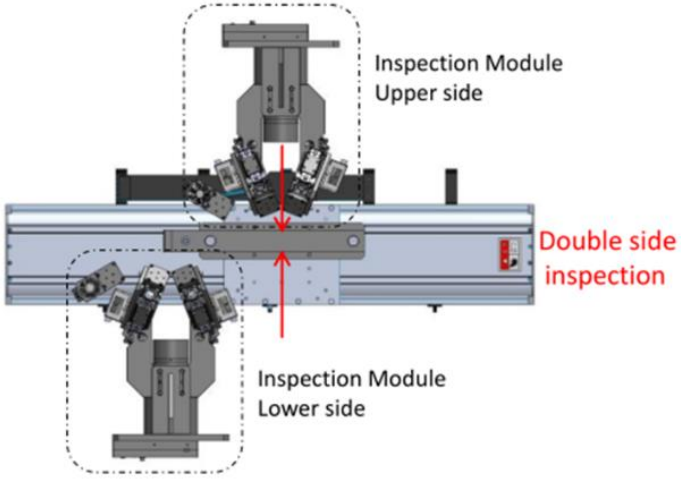
Daily capacity:
100 square meters

IPQC Equipment



High resolution substrate scanner optical system

AOI Optical Inspection System



Metal surface (gold, silver, bronze) scanner

Our team collaborated with international scientific research institutions to develop an independent intellectual property (IP), DPC ceramic substrate special AI quality control system. This system addresses the need for automatic QC optical inspection equipment required for mass production of ceramic substrates.

Production Capacity of Ceramic Circuit Board

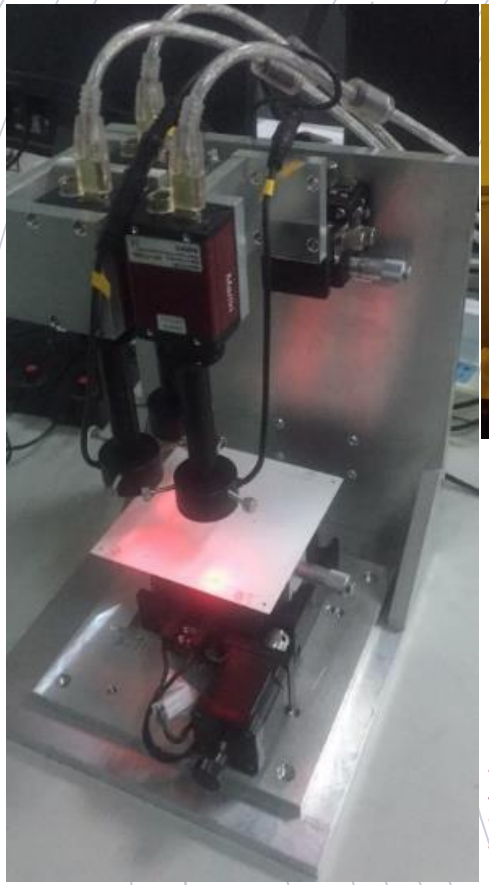
- Daily Capacity：30m^2

(Approximately equal to 4000 Sheets of 109.4 mm x 54 mm)

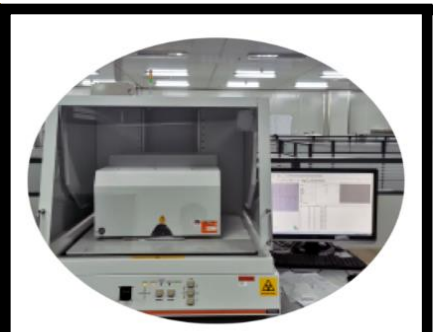
- Major bottleneck is Appearance inspection

(The implementation of an Optical Inspection System is poised to resolve this challenge)

IPQC Equipment



Line Graphic Displacement Detection Systems

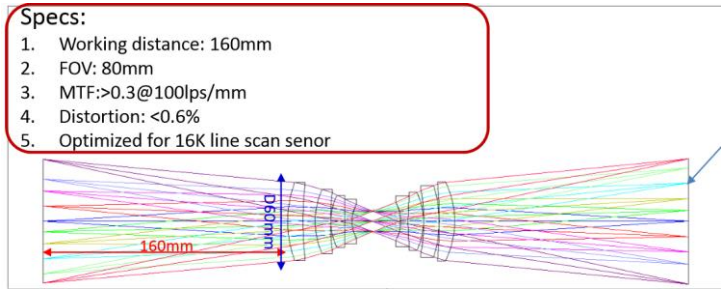


德国 Fischer
膜厚检测

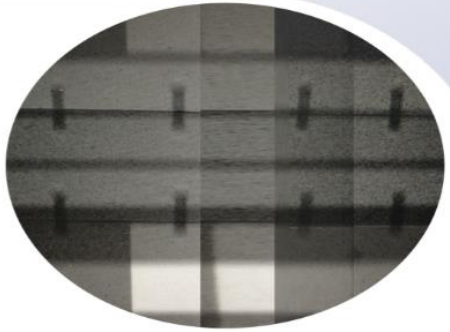
线扫描孔形、裂纹、
金属表面纹理

爱思佩克 ESPEC
冷热冲击试验装置

Hole Position
Detection Systems



AOI line scan lens
design

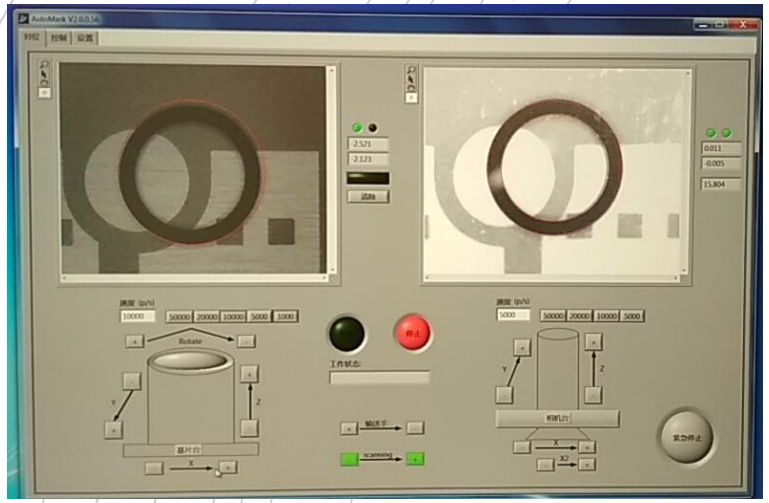


X射线填孔电镀检查

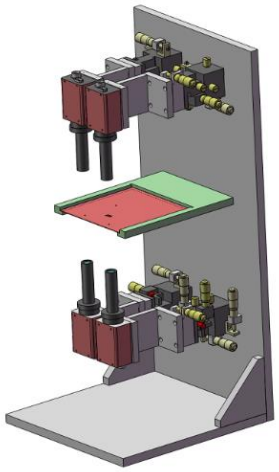
VEECO AFM
原子力显微镜

Comprehensive Process Quality Control for DPC Ceramic Substrate

Complete set of process equipment

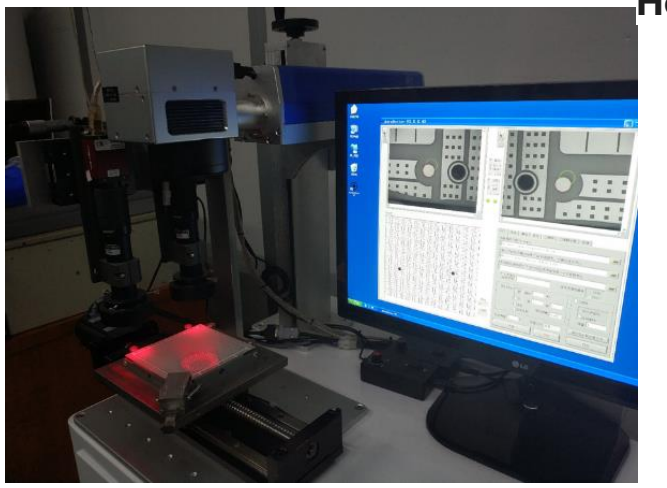


Line graphic displacement detection systems



Hole Position Detection Systems

全方位制程镍钯金、银、锡等表面处理



Automatic Laser Marking Systems for Defect Detection

Bed of Nails Testing

Smart Manufacturing

MBSE system engineering specifications are in line with long-term corporate development goals

MES 生产执行管理系统运作中

智能制造物联系统建立中

MBSE Model-Based System Engineering

Vision

Committed to be the leading manufacturer of DPC ceramic substrates

objectives for the next three years

- ❑ Achieving High-Quality DPC-Based Production and Expanding Inorganic Substrate Supply for Advanced Semiconductor Packaging Interposers
- ❑ Advancing PVD and PECVD-Based Scientific Reactive Sputtering Deposition Processes and Expanding Application of Semiconductor Advanced Packaging Chemistry
- ❑ Expanding Investment in Semiconductor Packaging Alloy Solder Materials Science and Surface Treatment Technology
- ❑ Expanding Semiconductor Advanced Packaging Microstructure Deposition and Forming Processes in Alignment with Industry Supply Chain needs
- ❑ Achieving Machine Replacement of Human Labor and High Automation of All Processes

昊光科技
INFO BRIGHT

THANK YOU