

CORPORATE PRESENTATION · 2026

# Shenzhen Jingguanying Electronics Co., Ltd.

( TELECONIX INC. )

High-Reliability & High-Frequency FPC Interconnect Solution Expert

IN-HOUSE FULL PROCESS

AUTOMOTIVE & MEDICAL DUAL CERTIFIED

LCP HIGH-FREQUENCY BREAKTHROUGH

4 JOINT UNIVERSITY LABS



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CEC Zhenhua · HIT Shenzhen · Beihang University · SZU

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# Executive Overview & Multi-Plant Footprint

## Establishment

Founded in 2008; Shenzhen core factory established in 2013, supported by Dongguan plant and regional offices in Jiangsu and Taiwan.

## Operational Scale

12,000 m<sup>2</sup> total plant area, 300+ total staff, with dedicated R&D and QC personnel exceeding 100 specialists.

## Designed Capacity

Annual designed FPC capacity breaking 400,000 m<sup>2</sup>, ensuring robust scale and high-volume delivery fulfillment.

## Global Reach

Full-chain custom FPC manufacturing (Single / Double / Multilayer & Rigid-Flex) serving domestic Tier-1 chains and exporting across Europe, America, and Asia.



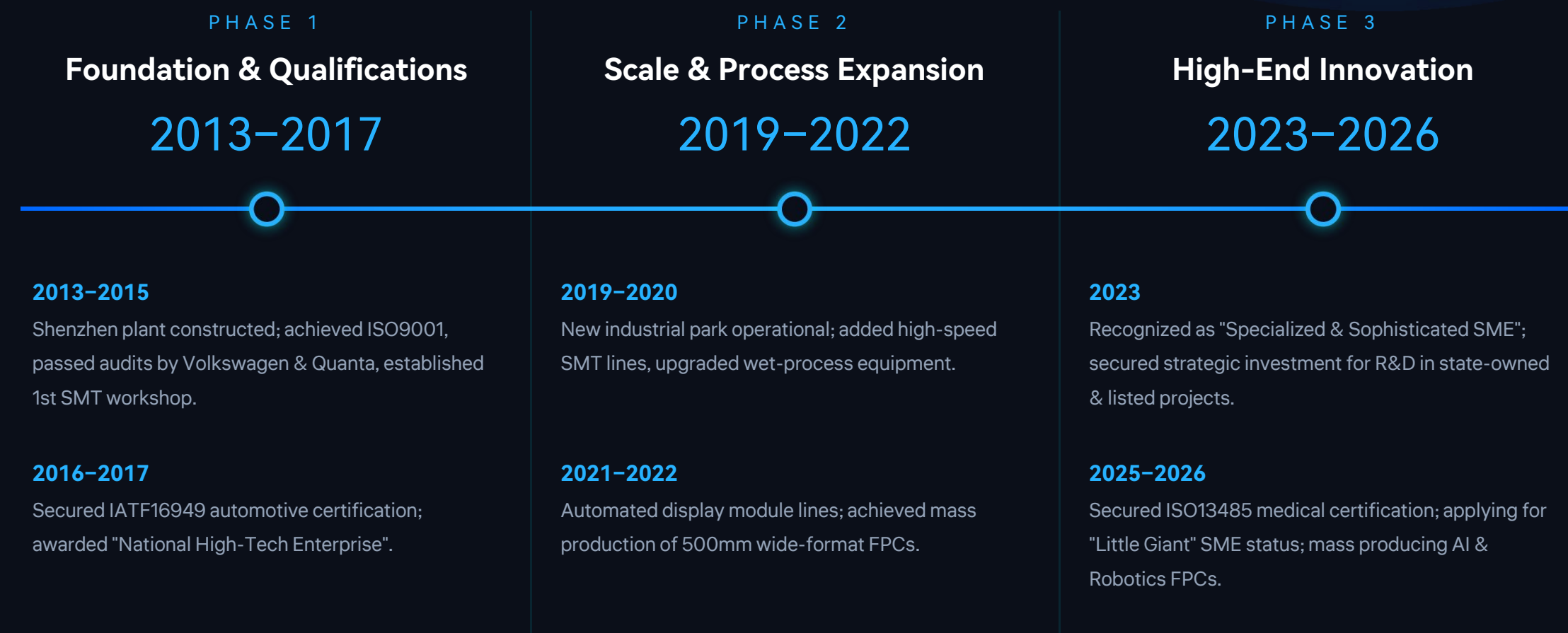
300+

Total Staff

400,000 m<sup>2</sup>

Annual FPC Capacity

# Corporate History & Strategic Evolution (2013–2026)



# High-Barrier Qualifications & Industry Certifications



## Automotive & Medical Accreditation

### IATF16949

Automotive Electronics QMS

### ISO13485

Medical Devices QMS

### UL

Safety Standards



## Quality & Environmental Compliance

### ISO14001

Environmental Management

### ISO45001

Occupational Health & Safety

### QC080000

Hazardous Substance Process Mgmt



## Intellectual Property Baseline

### National High-Tech Enterprise

Official Recognition

### 8 Core Patents

Invention / Utility Models

### 11 Software Copyrights

Proprietary Software Assets

# High-Barrier Qualifications & Industry Certifications



## High barriers to entry into the industry

We have established a quality defense line that meets stringent standards by obtaining IATF16949 automotive electronics, ISO13485 medical device and UL product safety certifications.

## System improvement and technological accumulation

It has ISO14001/45001 system certification, has won honors such as "High-tech Enterprise", holds 8 patents and 11 software copyrights, and has built core technology barriers.



FPC process yield

96%



SMT Placement First-Pass Rate

99.8%



On-time delivery rate

≥98%



Overall customer satisfaction

≥95



SMT daily chip assembly capacity exceeded 5 million units, fully guaranteeing the demand for large-scale, high-quality delivery.

# Core Operational & Delivery Metrics Dashboard

96.0%

FPC Manufacturing  
First-Pass Yield (FPY)

99.8%

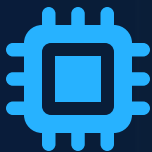
SMT Component Placement  
First-Pass Yield

≥98.0%

On-Time Order Delivery  
Fulfillment Rate

≥95/100

Comprehensive Customer  
Satisfaction Score



> 5.0 MILLION POINTS / DAY

SMT daily placement capacity guaranteeing high-volume fulfillment

# Global Client Base & Terminal Brand Ecosystem

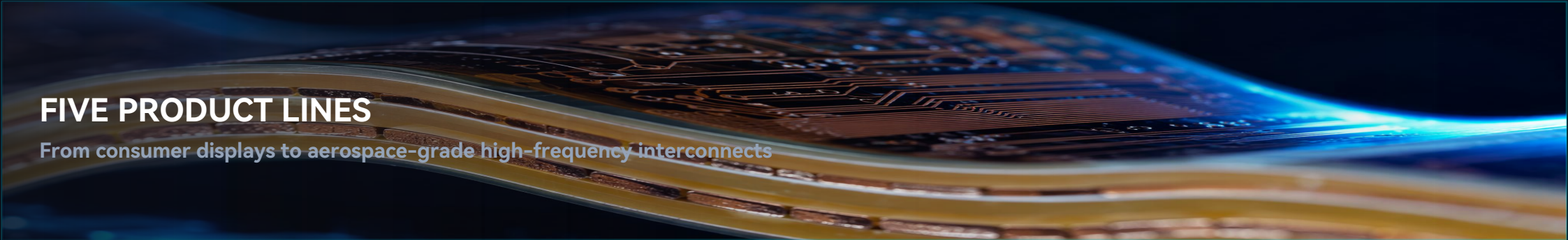
Enterprise  
Clients



End  
customer



# Core Product Line Matrix Overview



## FIVE PRODUCT LINES

From consumer displays to aerospace-grade high-frequency interconnects

01



### Display & Backlight FPC

Custom sizes and specs for mainstream display panels with high signal stability.

02



### Automotive FPC

Center consoles, headlamps, and BMS sensing harnesses; high thermal & vibration resistance conforming to AEC-Q200.

03



### Medical FPC

Micro-flex circuits for endoscopes and wearable health monitors complying with biocompatibility standards.

04



### Robotics FPC

Designed for robot joints and dexterous hands with high dynamic bending endurance.

05



### Special Custom FPC

Engineered on demand for aerospace, defense, and AI compute center requirements.

## Product Line 1: Display & Backlight FPC

### L1

#### ◆ Broad Compatibility

Covering various panel sizes and specifications for mainstream OLED and LCD display modules.

#### ◆ High-Speed Signal Integrity

Optimized for MIPI interface protocols with tight impedance control down to  $\pm 5\%$ .

#### ◆ Reliable Connection

Engineered for long-term continuous signal stability in consumer electronics and industrial displays.



MIPI · IMPEDANCE CONTROL DOWN TO  $\pm 5\%$

## Product Line 2: Automotive & BMS FPC



**AEC-Q200 AUTOMOTIVE GRADE COMPLIANT**

# L2

### ◆ AEC-Q200 Compliant

Full compliance with automotive grade temperature and environmental stress standards.

### ◆ Wide Application Range

Deployed across ADAS lidar / cameras, automotive displays, headlamp backlights, and BMS battery sampling arrays.

### ◆ Harsh Environment Endurance

Superior resistance to high / low temperature shocks and continuous mechanical road vibration.

## Product Line 3: Medical & Bio-compatible FPC

# L3

### ◆ ISO13485 Certified

Produced under strict medical quality management systems.

### ◆ Micro-Precision Layout

Micro-miniature trace dimensions supporting ultra-fine endoscope camera flex connections.

### ◆ Biocompatibility Standards

Materials selected to meet non-toxic, highly reliable biological contact requirements.



ISO13485 MEDICAL QUALITY SYSTEM

## Product Line 4: AI & Robotics Joint FPC



MILLIONS OF DYNAMIC BENDING CYCLES

# L4

### ◆ High Dynamic Flexing Life

Built to withstand millions of continuous, high-frequency dynamic bending cycles.

### ◆ Custom Motor Fitting

Precision layout matching compact interior joint motors and servo drive modules.

### ◆ Low Signal Attenuation

Ensuring real-time, zero-delay control data feedback for precision robotic movement.

## Product Line 5: Defense & Special Custom FPC

# L5

### ◆ Tailored Engineering

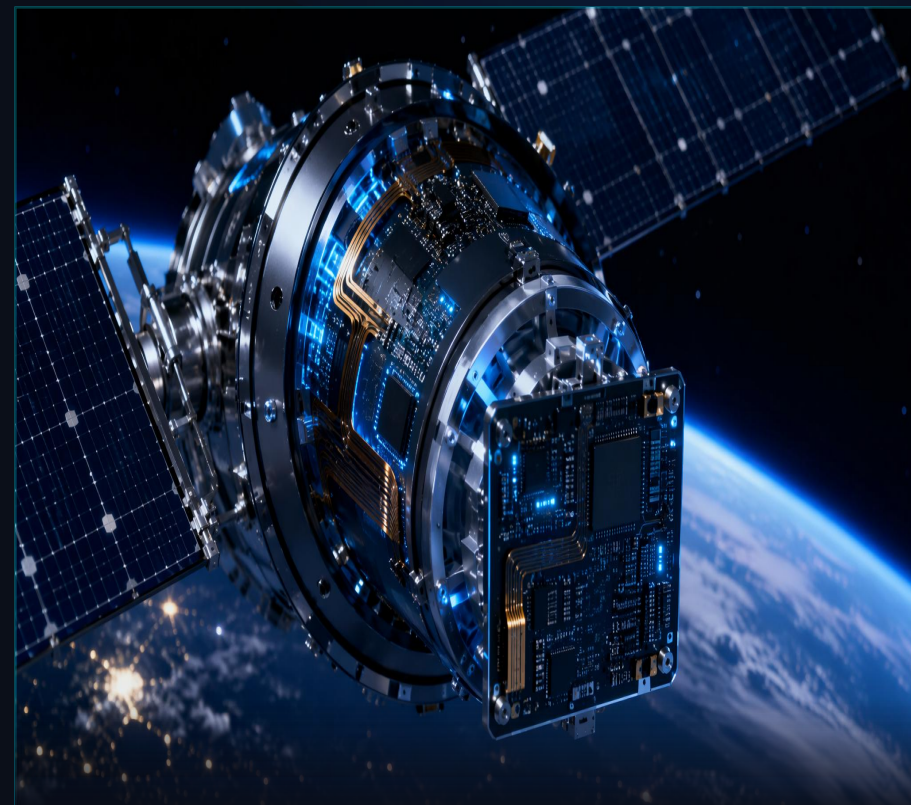
Custom designed to match exact electrical, physical, and environmental constraints.

### ◆ High-Frequency Substrates

Utilizing LCP and low-loss materials for satellite payloads and airborne systems.

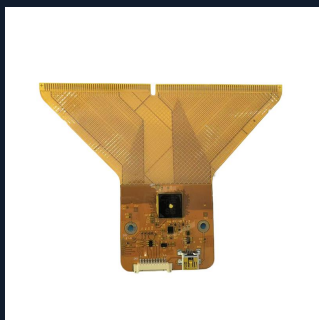
### ◆ Strict NDA Protocols

Complete security and confidentiality guaranteed for all custom defense projects.



LCP HIGH-FREQUENCY · NDA SECURED

# Product Showcase



Industrial control equipment  
display screen



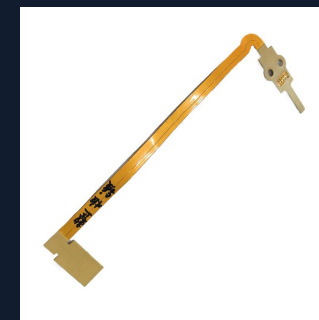
Ministry of National Defense  
mobile phone main line



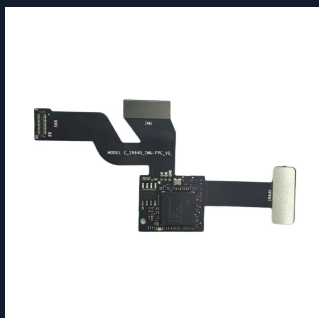
Robot motor FPC



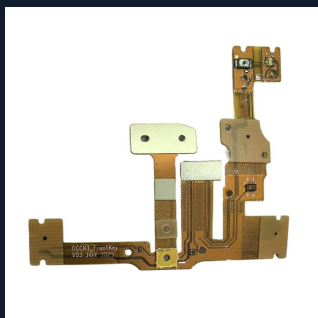
Robot joint motor



Robotic dexterity



High-definition lens of drone



Bodyguard



11.95-inch tablet computer



Gastrointestinal endoscopy



In-vehicle display screen

# Comprehensive Technical Capabilities & Manufacturing Specs

| ITEM                   | CATEGORY                               | CAPABILITY & SPECIFICATION                            |
|------------------------|----------------------------------------|-------------------------------------------------------|
| Min Line Width / Space | Single / Double Side · Multilayer Flex | 0.04 / 0.04 mm (1.6 mil) · 0.05 / 0.05 mm (2.0 mil)   |
| Min Hole Diameter      | Mechanical Drilling · Laser Microvia   | ø0.1 mm (4 mil) · ø0.05 mm (2 mil)                    |
| Dimensional Tolerance  | Line / Contour · Hole Diameter         | ±10% (W ≥ 0.05 mm) / ±0.05 mm · ±0.05 mm (R ≥ 0.6 mm) |
| Layers & Thickness     | Single / Double / Multilayer           | 1 to 8 Layers (single layer min 0.056 mm)             |
| Surface Finish         | Immersion Gold / ENIG / ENEPIG / Tin   | Au: 0.03–0.2 µm / Pd: 0.05 µm / Sn: 5–15 µm           |
| Impedance Control      | Differential / Characteristic          | 100 ±10% Ω / 50 ±10% Ω (High-end MIPI down to ±5%)    |



# Moat 1: In-House Full-Process Technology

0.04/0.04 mm

## Line Precision

Mass production at 0.04/0.04 mm line width / space.

ø0.05 mm

## Microvia Control

Mechanical drill ø0.1 mm, laser blind via ø0.05 mm.

±0.05 mm

## Strict Tolerances

Line tolerance ±10%, hole / contour tolerance within ±0.05 mm.

0.056 mm

## Layer & Thickness

Min single-layer thickness 0.056 mm, 1–8 layer mass production.

MIPI ±5%

## Impedance Precision

Differential 100 Ω ±10%, single 50 Ω ±10%, MIPI down to ±5%.



IN-HOUSE  
FULL PROCESS

# In-House Production Process Breakdown

## 01 FRONT-END PROCESS

01 Substrate Cutting

02 Laser / Mechanical Drilling

03 Black Hole Processing

04 VCP Copper Plating

## 02 MID-END PROCESS

01 Dry Film Etching

02 CVL Pressing

03 Coverlay Processing

04 Immersion Gold Surface Finish

## 03 BACK-END PROCESS

01 ET Electrical Testing

02 AOI / X-Ray Full Inspection

03 Final QC & Packaging

## Moat 2: Advanced Equipment & Automation Infrastructure



Imported High-Precision Production Lines

### ◆ Etching & Plating

Megaro etching line, Coby VCP copper plating line.

### ◆ Drilling & Exposure

Han's CNC & Tianma drilling machines, Cnano LDI laser direct imaging systems.

### ◆ Automated Assembly

Bangzheng auto-coverlay laminators and Roll-to-Roll (R2R) continuous automated production lines.

## SMT Smart Manufacturing & Full Inspection Equipment Matrix

### ◆ High-Speed Placement

JUKI RS-1 / 2070 and YAMAHA YSM20 high-speed SMT mounters.

### ◆ Thermal & Printing Inspection

JT reflow soldering ovens, Sinic-Tek SPI solder paste inspection.

### ◆ Quality Inspection Matrix

Mingray AOI optical inspection, Hongyitai ICT, Zhengye TDR impedance testing, and BLAED environmental test chambers.



SMT Cleanroom · High-Speed Placement

## Moat 3: Full Product Portfolio Integration

# ONE-STOP FPC + SMT INTEGRATION

From bare flex circuits to turnkey assembly — one supplier, full accountability.



### Standard PI-FPC

High-volume, flexible wiring for consumer and display electronics.



### High-Frequency LCP-FPC

Low-loss flex boards for 5G/6G, millimeter-wave radar, and aerospace links.



### Rigid-Flex R-FPC

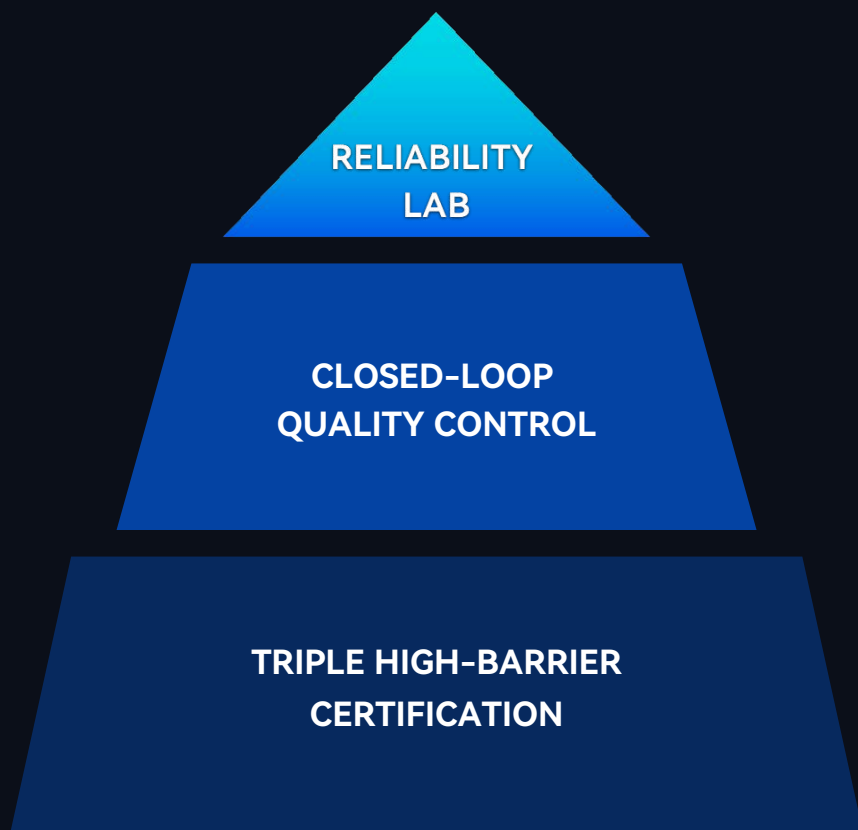
High-density 3D structural boards eliminating wire harness connectors.



### Turnkey SMT Assembly

Full in-house component sourcing and high-density SMT placement.

## Moat 4: Closed-Loop Quality System & Lab Testing



### ◆ Triple High-Barrier Certification

Certified IATF16949 (Automotive), ISO13485 (Medical), and QC080000 (Hazardous Substance Process Management).

### ◆ Closed-Loop Quality Control

Standardized quality checkpoints implemented from raw material incoming inspection to final shipping.

### ◆ In-House Reliability Testing

Self-reliant laboratory conducting TDR impedance, thermal shock, and bending endurance tests.

## Moat 5: Material Self-R&D & High-Frequency LCP Breakthroughs

### ◆ LCP Technology Mastery

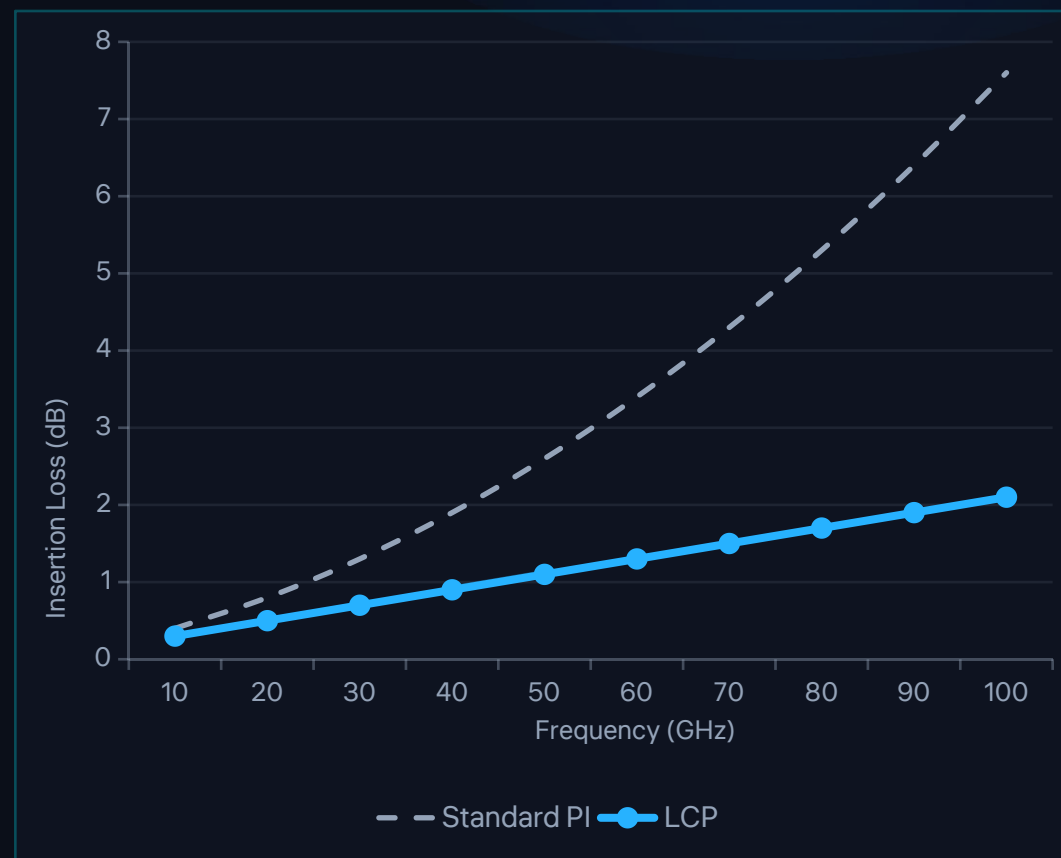
Fully mastered LCP fabrication process covering 10–100 GHz high-frequency transmission demands.

### ◆ Next-Gen Application

Tailored for 6G telecom links, millimeter-wave radar, and high-speed satellite payloads.

### ◆ Joint Research Barrier

Partnering with top universities to translate cutting-edge material research into mass-produced products.



Signal attenuation comparison — illustrative trend curve

# Deep Vertical 1: Commercial Aerospace & Defense

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## ◆ Low-Loss LCP Process

Utilizing low-loss LCP substrates for reliable high-frequency signal transmission in airborne systems.

## ◆ Rigorously Verified

Passed comprehensive EMC electromagnetic compatibility and extreme high / low-temperature reliability tests.

## ◆ Confidentiality Assured

Strictly adhering to non-disclosure protocols, keeping project details completely secure.

## Deep Vertical 2: Smart Automotive & AEC-Q200 Electronics

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### ◆ AEC-Q200 Certified

All automotive product lines pass AEC-Q200 car-grade qualification.

### ◆ Harsh Operating Conditions

Resistant to continuous vibration, thermal cycling, and high-current BMS loads.

### ◆ Tier-1 Integration

Successfully integrated into Mobitech, Volkswagen, Avatr, and major automotive Tier-1 supply chains.



## Deep Vertical 3: AI Humanoid Robotics & Dexterous Hands

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- ◆ **High Dynamic Endurance**

Mass producing joint motor and dexterous hand FPCs withstanding millions of bending cycles.

- ◆ **High-Frequency Signal Integrity**

Delivering zero-delay control data transmission for precision servo drives.

- ◆ **Global AI Deployment**

Successfully shipped in volume for overseas AI robotics and industrial automation projects.

## Deep Vertical 4: Drones, Medical Devices & Industrial Telecom



### Medical Sector

ISO13485 certified; mass producing FPCs for gastrointestinal endoscopes and wearable health trackers.



### High-End Drones

Image transmission and flight control soft boards for industrial aerial survey and security drones.



### Industrial Telecom

Volume supplier for Amazon and Baidu ecosystems; high anti-interference FPCs for CNC machine tools and video terminals.

# Strategic R&D Ecosystem: Industry-Academia-Research Synergy

Closed-Loop Innovation: Fundamental Research → Technology Transfer → Mass Production



CEC · Guizhou Zhenhua  
Research Institute



Harbin Institute of  
Technology



Beihang  
University



Shenzhen  
University



## R&D Partner 1: CEC · Guizhou Zhenhua Research Institute

### ◆ Strategic Defense Support

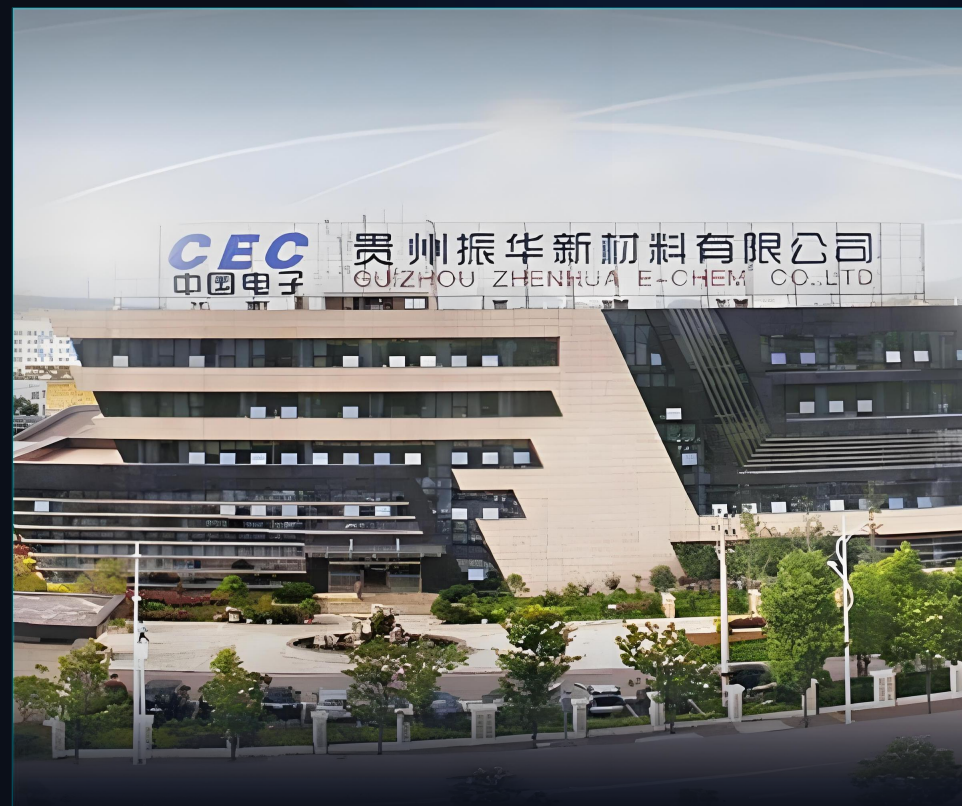
Zhenhua provides national-level lab support for high-frequency LCP materials and RF devices.

### ◆ Overcoming Technical Bottlenecks

Jointly resolving material loss and electromagnetic compatibility (EMC) in high-frequency transmission.

### ◆ Complete Closed Loop

National Key Lab Research + Teleconix Mass Production = Full Commercialization.



## R&D Partner 2: Harbin Institute of Technology



### ◆ Joint R&D Topic

"Extensible / Stretchable FPC Technology", tackling trace breakage under extreme dynamic mechanical fatigue.

### ◆ Technical Edge

Combining HIT's material mechanics expertise with Teleconix's manufacturing line to yield ultra-stretchable, fatigue-resistant FPCs.

### ◆ Target Application

Tailored for robot dynamic joints and wearable electronics undergoing continuous flexure.

## R&D Partner 3: Beihang University

### ◆ Joint R&D Topic

"Specialized FPC for Humanoid Robot Motors", boosting control signal transmission efficiency and dynamic reliability.

### ◆ Deep Integration

Merging Beihang's robotics dynamics research with Teleconix high-frequency interconnects to build motor-optimized high-speed FPCs.

### ◆ Core Value

Providing low-attenuation, high anti-interference signal paths for humanoid robot motion control.



## R&D Partner 4: Shenzhen University



### ◆ Joint R&D Topic

Exploring FPC dynamic fatigue limits under high-frequency robotic flexing conditions.

### ◆ Methodology

Utilizing SZU's material fatigue and reliability models to build scientific data analysis frameworks.

### ◆ Joint Test Lab

Co-developed dynamic fatigue test rig simulating millions of bending cycles on robot joints to drive continuous product lifespan extension.



# Strategic Future Roadmap: LCP Development & Beyond (2026–2030+)

SHORT-TERM · 2026–2027

## Mass Production Scaling

Scale mass production of high-frequency FPCs for automotive millimeter-wave radar and 6G telecom terminals.

MID-TERM · 2028–2029

## Ultra-Low Loss Material Breakthrough

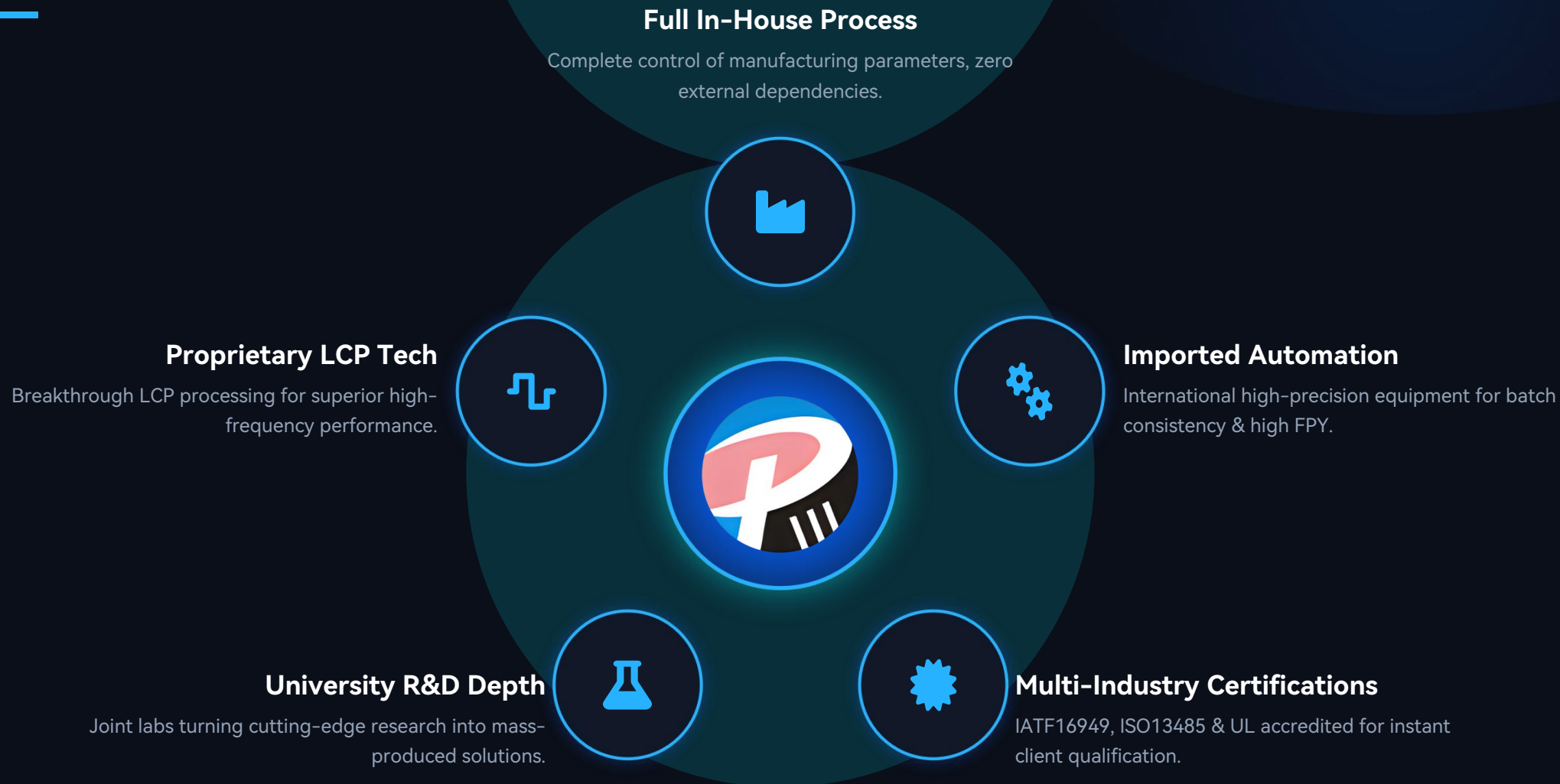
Develop modified ultra-low loss LCP materials to further decrease dielectric loss ( $\tan \delta$ ) and signal attenuation.

LONG-TERM · 2030+

## System-in-Package (SiP) Integration

Expand from bare FPC manufacturing into SiP packaging; enter terahertz communications and high-power special devices, evolving into a total system solution provider.

# Five Core Value Drivers for Global Clients



# Dual Delivery Model: Mass Scaling & Rapid Customization



## VOLUME MASS PRODUCTION

Fully equipped for continuous, high-volume automated production delivering cost efficiency and rapid turnaround.



## FLEXIBLE CUSTOM PROTOTYPING

Agile engineering setup capable of fulfilling low-volume, high-mix custom requirements for specialized projects.

&

# End-to-End Client Service & Quality Assurance Workflow



# THANK YOU

Looking Forward to Our Cooperation

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## **Shenzhen Jingguanying Electronics Co., Ltd. (TELECONIX INC.)**

Deeply rooted in interconnect technology, delivering high-reliability PCB / FPC solutions to create value together.



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