Industrial AI 3D Machine Vision
Hardware & Software Products
Total Solutions

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HANCHINE

Ms.Alisa Tel(WhatsApp):+86 16621718129


HANCHIE

Zhejiang Hanchine AI Technology Co, Ltd.

Address: 8F, Building 3, Lvchuang Plaza, No. 1508 West Wenyi Road, Yuhang District, Hangzhou

Production Center: 1st Floor, Building B4, No. 50 Jinshan 1st Road, Ninghai County, Ningbo

Website: www.hanchine.cn

www.hanchine.com

Tel:571-87835995

Email:info@hanchine.com


3D

**Vision to Think. Intelligence to Act**



# COMPANY PROFILE

Zhejiang Hanchine AI Technology Co, Ltd.(HANCHINE) (HANCHINE) is a high-tech enterprise specializing in artificial intelligence and 3D machine vision technologies. It provides hardware and software products as well as total solutions for 2D/3D vision inspection, measurement, positioning, and robotic random bin picking.

Founded in 2017 by a PhD team from Zhejiang University, the company has an R&D team of over 30 members, with more than 70% holding master's or doctoral degrees. Its 3D cameras, random bin picking systems, and 2D/3D fusion solutions have been mass-applied in industries including general semiconductors, 3C electronics, plastics and chemicals, and bearings.

Headquartered in Hangzhou, the company has a complete R&D and manufacturing system, certified with ISO9001:2015, and owns more than 40 domestic and international patents. Based on self-developed algorithms and AI technologies, it has launched multiple innovative solutions in robotic grasping, depalletizing & palletizing, and high-precision appearance inspection.

**30%+**
**R&D Team**

**70%+**
**Postgraduates (Master/PhD)**

**40+**
**Patents**

## CORE ADVANTAGES

### Self-developed Software

- Full-stack self-developed underlying vision algorithms
- Deeply integrated 2D & 3D vision inspection
- Industry-specific self-developed AI models

### Self-developed hardware

- Proprietary brand serialized industrial-grade 3D cameras
- Adaptable to full scenarios of industrial inspection,measurement,and recognition

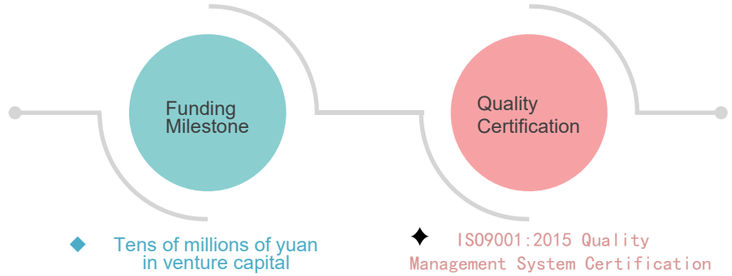
### R&D team

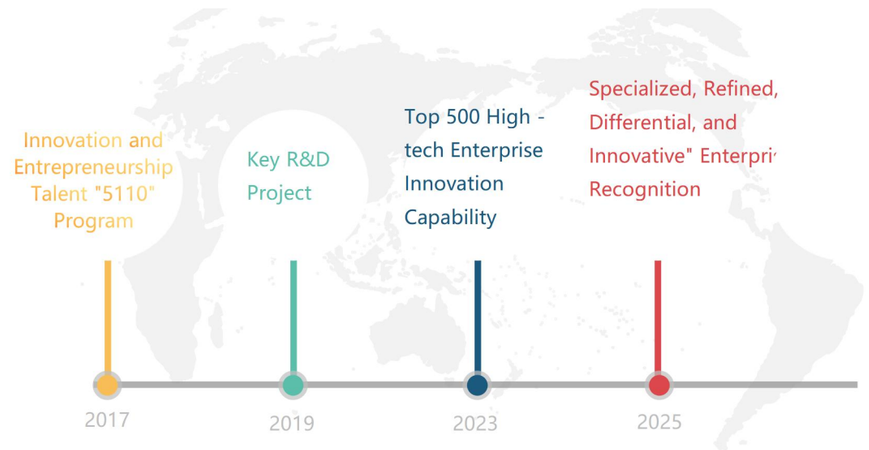
- Core technical team with master/doctor degrees mainly from Zhejiang University
- 30+ R&D team

### Patented Technology

- Over 40 patents obtained (including 13 invention patents)
- Hosted provincial/municipal key R&D projects

## DEVELOPMENT HISTORY



## Ceramic Substrate AOI Inspection Machine

High-precision automatic system integrating automatic loading/unloading, optical imaging, intelligent processing and sorting. It replaces manual visual inspection to identify various defects such as bubbles, scratches and cracks.

### Functions

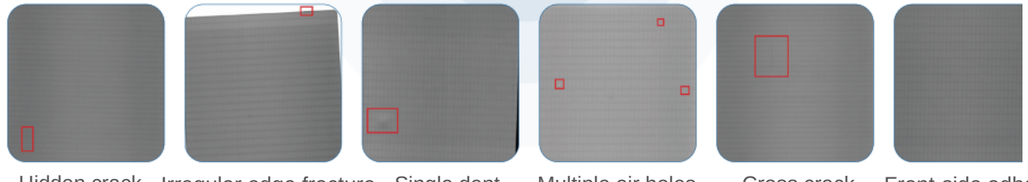
- Small board ⩽84mm, large board ⩾84mm
- Detect over 10 types of defects including bubbles, dents, cracks, at a speed ⩾60 pcs/min
- Classification OK / Rework / NG via deep learning + traditional algorithms

### Technical Parameters

| | |
|---|---|
| Inspection Product | Chip resistor ceramic substrate |
| Inspectable Dimensions | Length 70mm, Width 60mm, Thickness 0.2mm-0.5mm |
| Defect Types | Solid spots/irregular lines/linear scratches, arc/linear texture concave/convex,bright/dark spots, air bubbles, pinholes sticking,chipping, spots, dirt |
| Inspection Method | Four-station, on-line matrix scanning |
| Inspection Speed | 60 pcs/min or higher |
| Power & Air Supply | 380V，0.6MPa |
| Mechanical Modules | Precision loading, stable transmission, unloading & sorting |
| Algorithm Software | Result output, statistics, display, interaction, multi-level user permissions |



Detectable Defects



Hidden crack | Irregular edge fracture | Single dent | Multiple air holes | Cross crack | Front-side adhesion

### Application Case

**• Project Background**

- Large number of personnel for appearance inspection, high staff turnover, prone to missed inspections
- Need for automated full inspection to upgrade quality control

**• Core Challenges**

·Micro-defects (e.g., micro-cracks) are tiny and variable in morphology
- Traditional image algorithms miss inspections easily

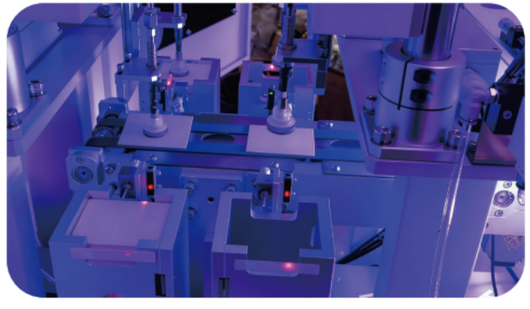
·High-speed full inspection requires extremely high recognition accuracy and low false rejection rate
·Extremely high demand for intelligence

**• Solutions**

- AI deep learning model (massive sample training, near-zero micro-crack missed detection rate)
- High-precision line-scan camera (stable image acquisition)
- Fully automatic data closed-loop (loading/unloading + 100% on-line inspection, result upload & tracea

### Application Value

Near-zero missed detection rate for micro-cracks100% on-line inspectionEmpowering quality control upgrade for high-end ceramic substrates





# ONLINE PRECISION MEASUREMENT EQUIPMENT

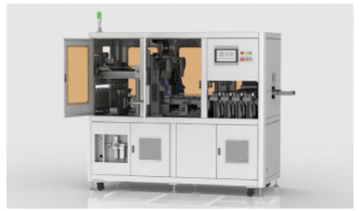
## Ceramic Substrate 3D Warpage Measuring Machine

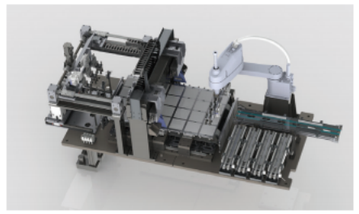
Ultra-high-precision linear motor + high-precision 3D scanning captures the surface of ceramic substrates to obtain 3D point cloud data for parallel computation. It features a processing speed of up to 40 million points/second and a repeatability accuracy of ±0.005mm.

### Functions

Supports warpage classification, with an efficiency 80 pcs/min
Supports continuous-line and single-line operati

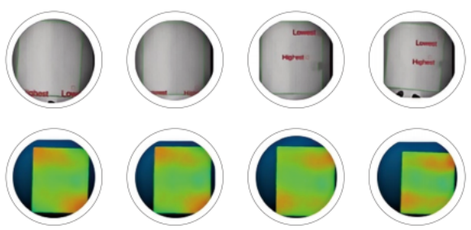




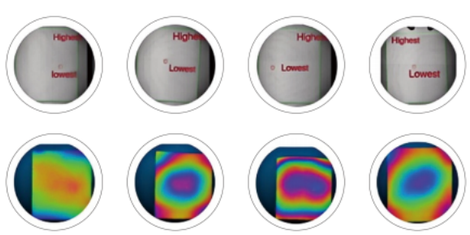


### Test Results

OK Group



NG Group



### Application Case

**• Project Background**

• Alumina ceramic substrates for MLCCs
·Strict requirements for flatness
·Low efficiency and poor
·consistency of manual pallet inspection

**Core Challenges**

·Extremely small warpage
·High repeatability accuracy requirements
·Large daily inspection volume, requiring matching production capacity,Consistent high-speed inspection

**• Solution**

Line laser camera + ultra-high-precision linear motor, repeatability accuracy of 0.01mm

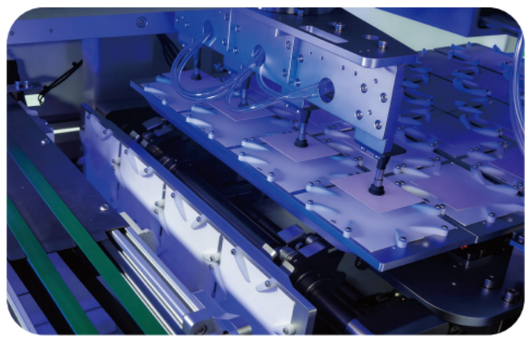
Transmission + 5 pieces parallel processing, speed of 100 pcs/min

On-line inspection, sorting and recording

### Application Value



0.01mm precision + 100 pcs/min speed
High-precision, high-efficiency full inspection of flatness on-line

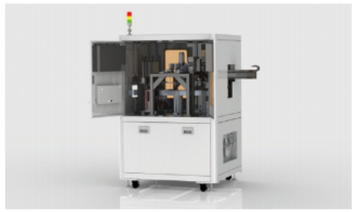


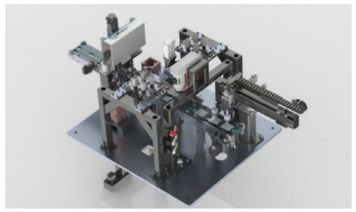
# Ceramic Substrate Dimension Measuring & Sorting Machine

## Functions

XY-axis dimension measurement with a rate 60 pieces/min
Process flow: Loading Measuring Unloading stations
Equipped with a human-machine interface for recording and display







## Technical Parameters

| Structure Dimensions | Motion Accuracy | Inspection Accuracy | Magazine Inner Dimensions | Vision Measurement System | Light Source |
|---|---|---|---|---|---|
| Lenght680mm<br>Width790mm<br>Height1550mm | 0.1mm | 0.005mm | 64mmx74mm<br>Product placement effective height 250mm | High-resolution camera+double telecentric lens+ sub-pixel precision measurement algorithm | Custom parallel light source<br>Half-life: 60,000 hours |

## Application Case

**Project Background**

- 100+ grade RANK sorting required at substrate factorie
- Upstream equipment output: 100 pcs/pack
- Automated packaging

**Core Challenges**

- Numerous sorting grades, accuracy requirement ±0.005mm
- Traditional contact methods risk damaging substrates
- Vision systems need to balance high precision and high Takt Time Efficiency

**Solutions**

Multi-camera vision system (with high-precision calibration consistency) + 3D packaging machine

Fully automatic sorting, counting, boxing, coding and data traceability, replacing manual operations

## Application Value



Enables high-precision flexible sorting
Automates the full upstream and downst ream processSignificantly improves pro duction efficiency and quality control

