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什么是AOI自动光学检测

What is Automated Optical Inspection?

当下生产制造业的质检环节中, 如要配置自动化质检, AOI自动光学检测是较为常见的方式。尤其在精密电子配件领域更为盛行。

In today's manufacturing quality inspection processes, AOI (Automated Optical Inspection) is a widely adopted solution for configuring automated quality control. It is particularly prevalent in the field of precision electronic components.

AOI优势

Advantages of AOI:

高效快速, 适合大批量生产

High Efficiency & Speed – Ideal for Mass Production

高精度&一致性

High Precision & Consistency

高速检测

High-speed inspection

微米级检测

Micron-level detection accuracy

24/7连续工作

24/7continuous operation

无疲劳误差

No fatigue-related errors

早期缺陷预防, 降低报废成本

Early Defect Prevention – Reduces Scrap Costs

灵活适应多种产品

Flexible Adaptation to Various Products

实时反馈

Real-time feedback

可编程调整

Programmable adjustments

数据可追溯

Traceable data records

3D AOI可测高度

3D AOI capable of height measurement

质检方式 Inspection Method	AOI优势 AOI Advantages
人工目检 Manual Visual Inspection	更快、更准、无疲劳, 适合复杂元件 Faster, more accurate, fatigue-free operation; ideal for complex components
ICT (针床测试) In-Circuit Test	无需物理接触, 可检测外观缺陷 (如焊锡、极性错误), 而 ICT 仅能测电气性能 Contactless inspection capable of detecting visual defects (e.g., soldering issues, polarity errors), while ICT only tests electrical functionality
功能测试 (FCT) Functional Test	AOI 能在组装早期发现问题, 避免功能测试时的高成本返工 AOI can detect problems in the early stages of assembly, avoiding high cost rework during functional testing
X-ray 检测 X-ray Inspection	AOI 成本更低, 且无需辐射防护, 适合表面缺陷检测 AOI has lower costs and does not require radiation protection, making it suitable for surface defect detection

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► 一键闪测仪

One-Touch Flash Tester

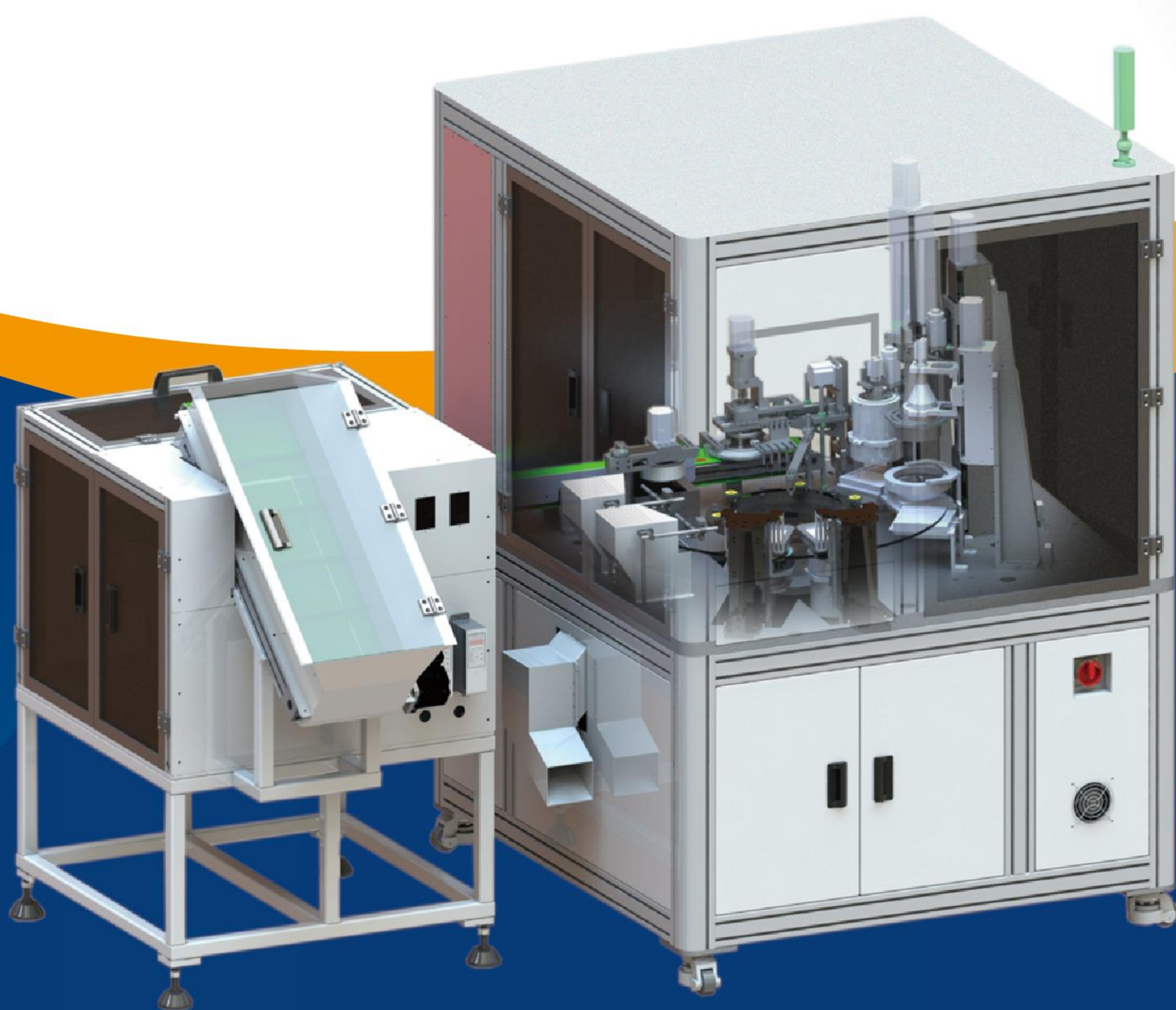
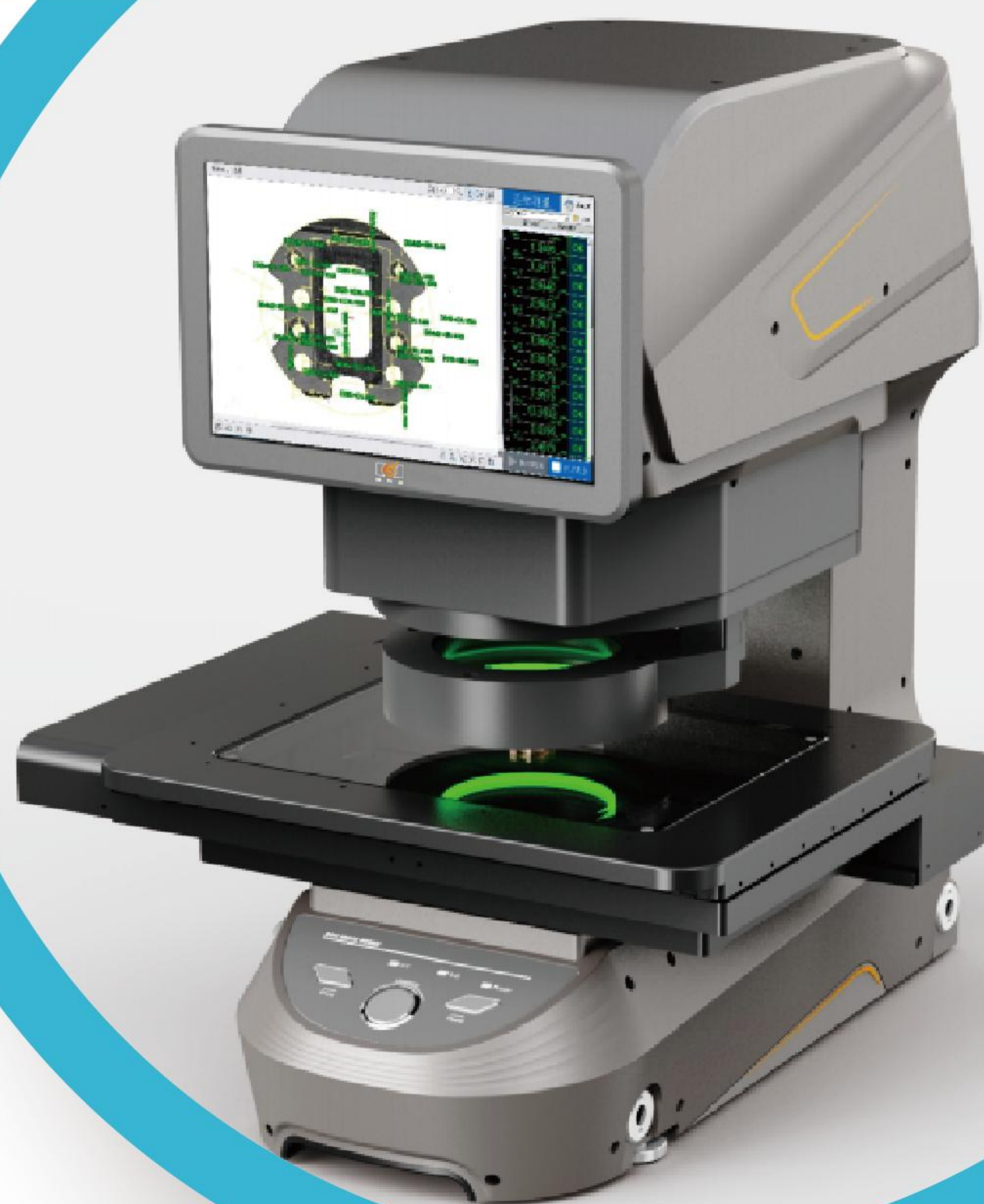
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AOI

光学自动检测

Automated Optical Inspection



一键闪测仪
One-Touch Flash Tester
&
AOI检测标准机
AOI Standard Machine

将非标检测设备模块化/标准化
Modularization/Standardization of Custom Inspection Equipment

关于我们About us

走进智能化 Entering Intelligent Automation

➡ 厦门总部 ◀



博视源是专业从事机器视觉系统研发、集成和服务的高新技术企业。我司自主研发并销售了多相机一体智能模具监视器、多种视野的一键闪测仪、CCD算法通用平台、智能AOI全检标准机、医疗器械毛发异物检测非标机、晶圆半导体检测机等机器视觉系统，致力于为制造型企业提供更智能更精准的机器视觉解决方案。

公司在细分领域模具监视系统目前已实现年销量**10000**台以上,销售和服务网络已覆盖国内**34**个省区,同时也在海外的**日本、西班牙、越南、泰国、印度**等国家逐步扩张中。我司在**厦门、无锡**均建有工厂,现在拥有全职代理商**30**家,合作经销商**50**家以上,售后服务同步覆盖,为客户设备维护提供了优质保障。

Boshiyuan has established itself as a leader in the niche market of mold monitoring systems, with an annual sales volume exceeding 8,000 units. Our sales and service network covers all 34 Chinese provinces and is expanding globally, including Japan, Spain, Vietnam, Thailand, and India. With factories in Xiamen and Wuxi, we have 30 authorized agents and 50+ distributors, supported by comprehensive after-sales service to ensure reliable equipment maintenance.



➡ 无锡分公司 ◀



Boshiyuan is a high-tech enterprise specializing in the R&D, integration, and service of machine vision systems. We independently develop and sell a range of machine vision products, including:Multi-phase integrated intelligent mold monitors,One-click flash measuring instruments with various FOVs (fields of view),Universal CCD algorithm platforms,Intelligent AOI (Automated Optical Inspection) standard machines,Customized medical device hair/foreign object detection systems,Wafer/semiconductor inspection equipment,Committed to innovation, we provide manufacturing enterprises with smarter and more precise machine vision solutions.



博视源重视技术自主创新,设立多个核心技术研发部,其核心成员多在2D/3D机器视觉、AI深度学习、精密机械控制、高精密光学等有足够的经验积累,拥有机器视觉领域相关经验8年以上,整体团队配置在同领域中处于行业中上水准。



Boshiyuan prioritizes independent technological innovation, with dedicated R&D divisions focusing on core technologies. Our key team members possess 8+ years of experience in critical fields such as:2D/3D machine vision,AI and deep learning,Precision motion control,High-accuracy optical systems,With this expertise, our cross-disciplinary team ranks among the upper tier of industry standards, ensuring cutting-edge solutions in machine vision.

博视源AOI检测设备

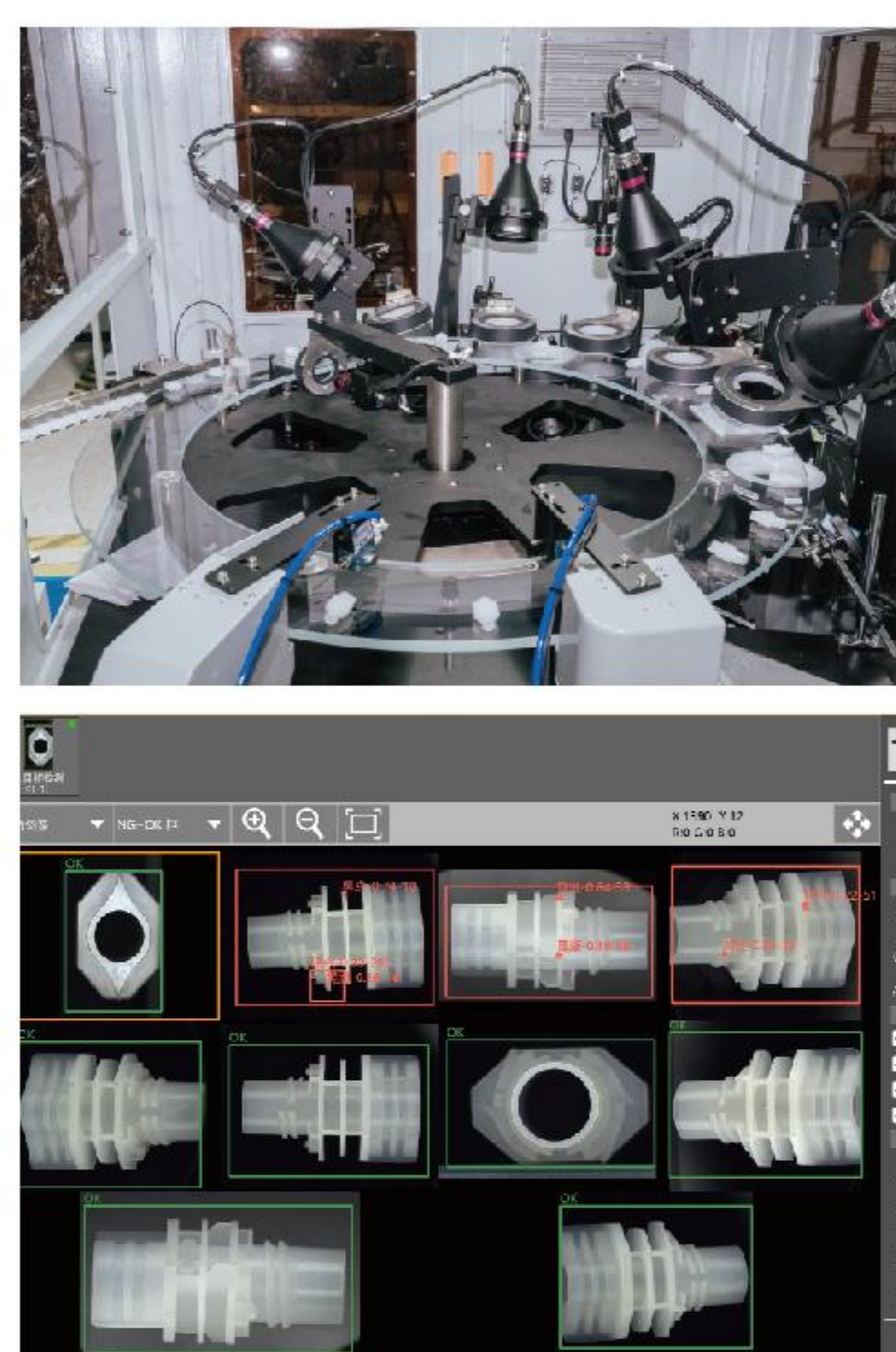
Boshiyuan AOI Equipment

生产线产品全检+自动化设备

Production Line Full Inspection + Automated Equipment

AOI智能全检系列设备

AOI Intelligent Full Inspection Series Equipment

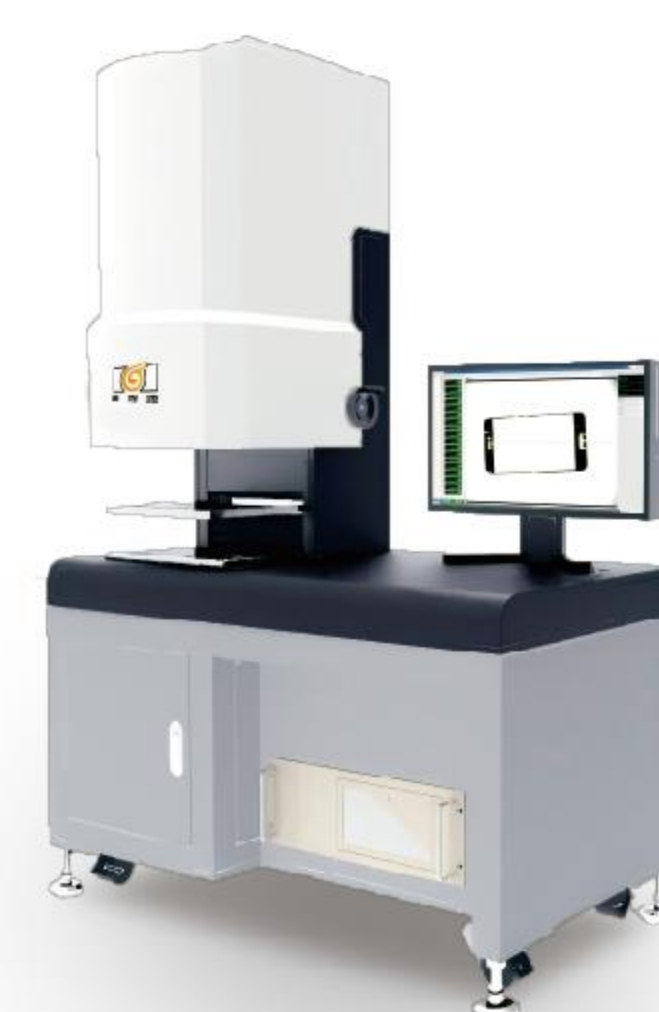
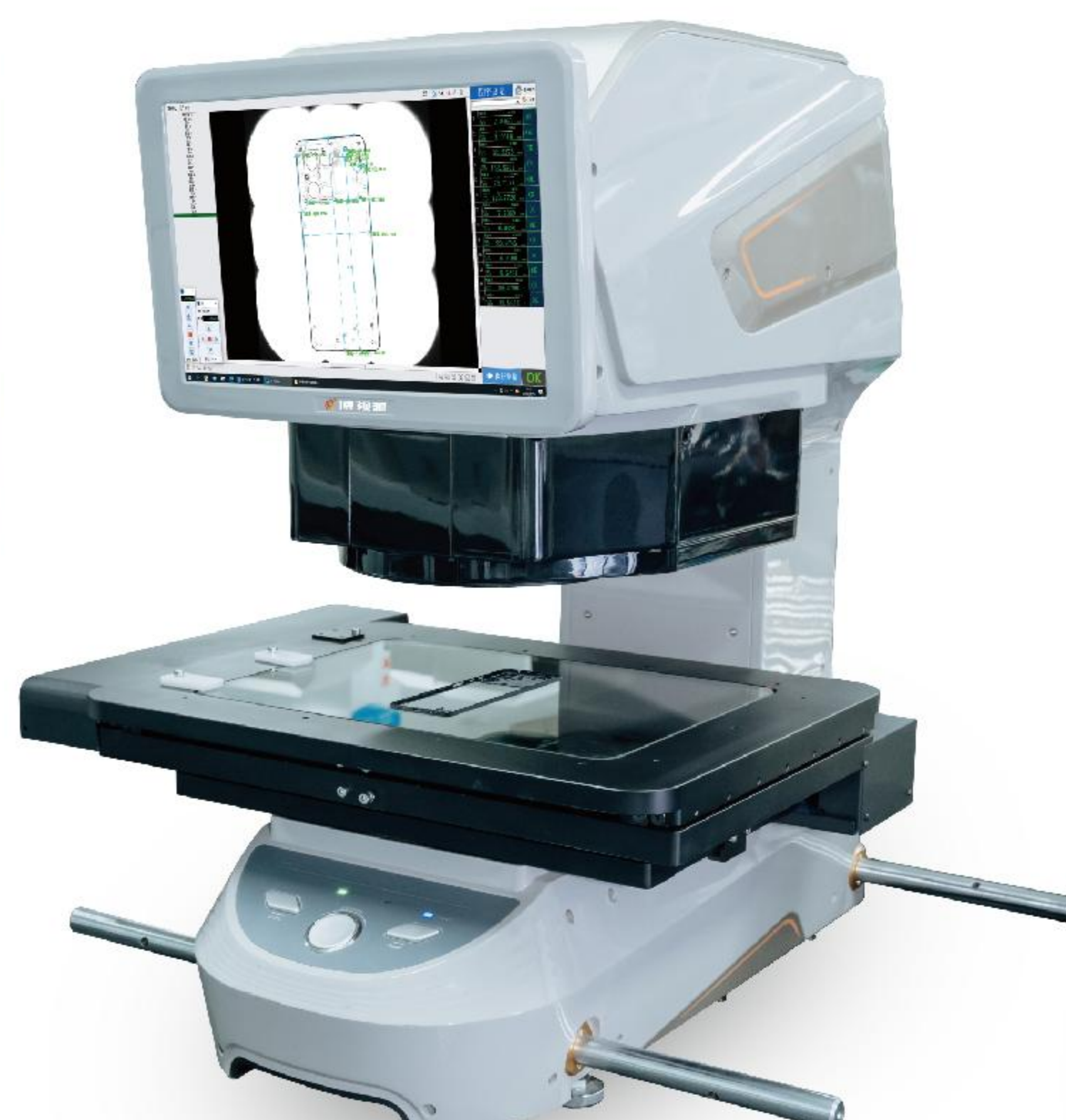
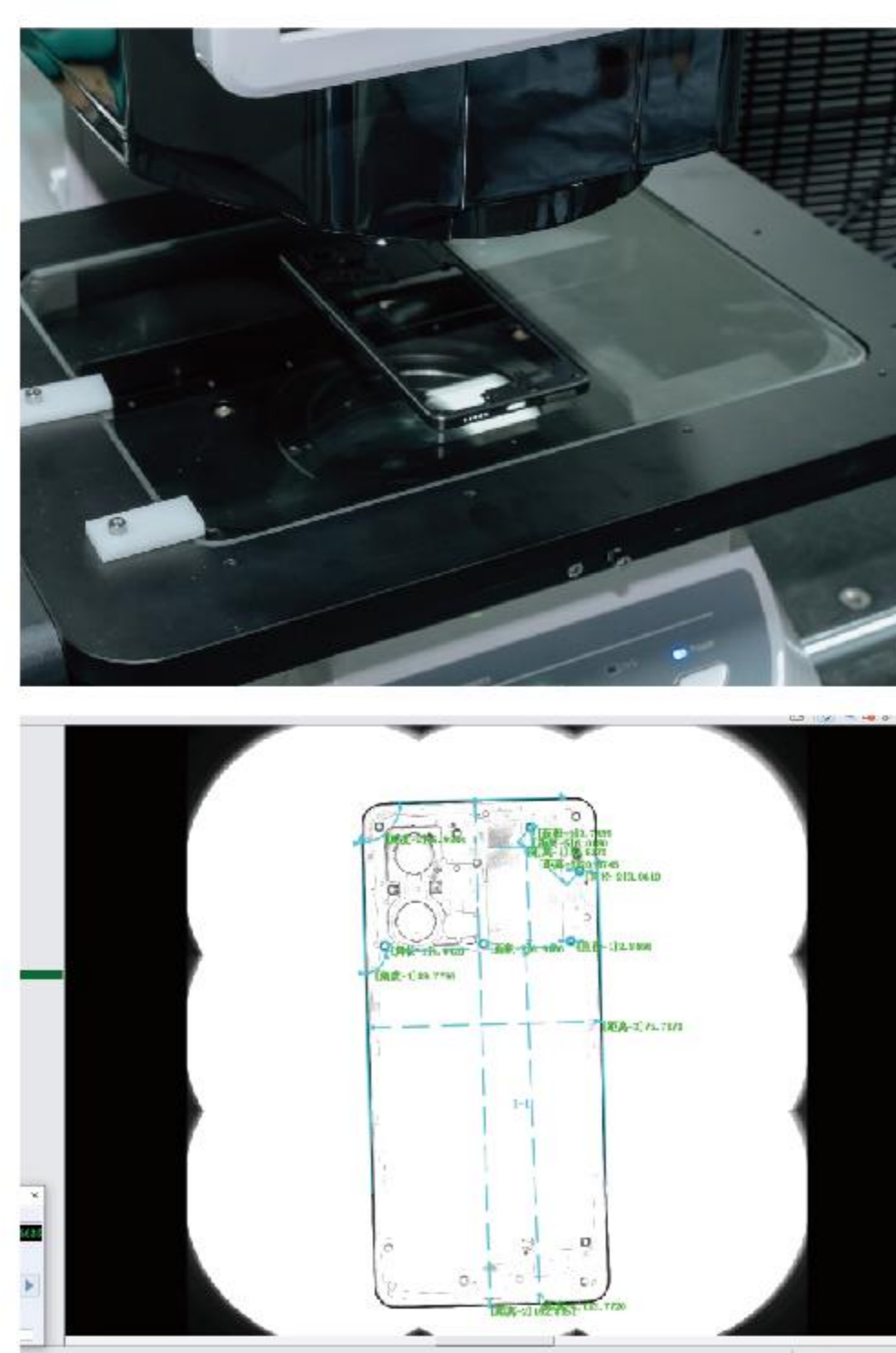


案例:继电器外壳AOI检测机 Case Study: Relay Housing AOI Inspection Machine

其他案例 Other Case Studies

快速抽检设备

Rapid Sampling Inspection Equipment



拼接视野闪测仪 Stitched FOV Flash Tester

其他视野闪测仪 Other FOV Flash Testers



方案评估实力

Program evaluation strength

博视源基于市场上客户的检测需求，制作了多个评估工具，组装成多款集成工具设备，可对打光拍摄质量和效率进行实际演练，且该工具通用于市面上 90% 以上的产品视觉检测环境。通过质量与效率双维度的硬件评估与数据计算，即可得出实现度极高的方案评估结果。

Based on the testing needs of customers in the market, boshiyuan has made a number of evaluation tools and assembled three integrated tools and equipment, which can carry out practical exercises on the quality and efficiency of lighting and shooting, and the tools are universal in the marketMore than 90% of the product visual inspection environment. Through the hardware evaluation and data calculation of the two dimensions of quality and efficiency, the scheme evaluation results with high degree of realization can be obtained.



- 01 厦门总实验室 | Xiamen General Laboratory
- 02 无锡实验室 | Wuxi Laboratory
- 03 东莞实验室 | Dongguan Laboratory
- 04 宁波实验室 | Ningbo Laboratory
- 05 青岛实验室 | Qingdao Laboratory

在多个省份组建打光实验室,设备齐全,确保精准且高效评估

Establishing lighting laboratories in multiple provinces with complete equipment to ensure accurate and efficient evaluation



评估设备所含机构

Institutions included in the evaluation equipment



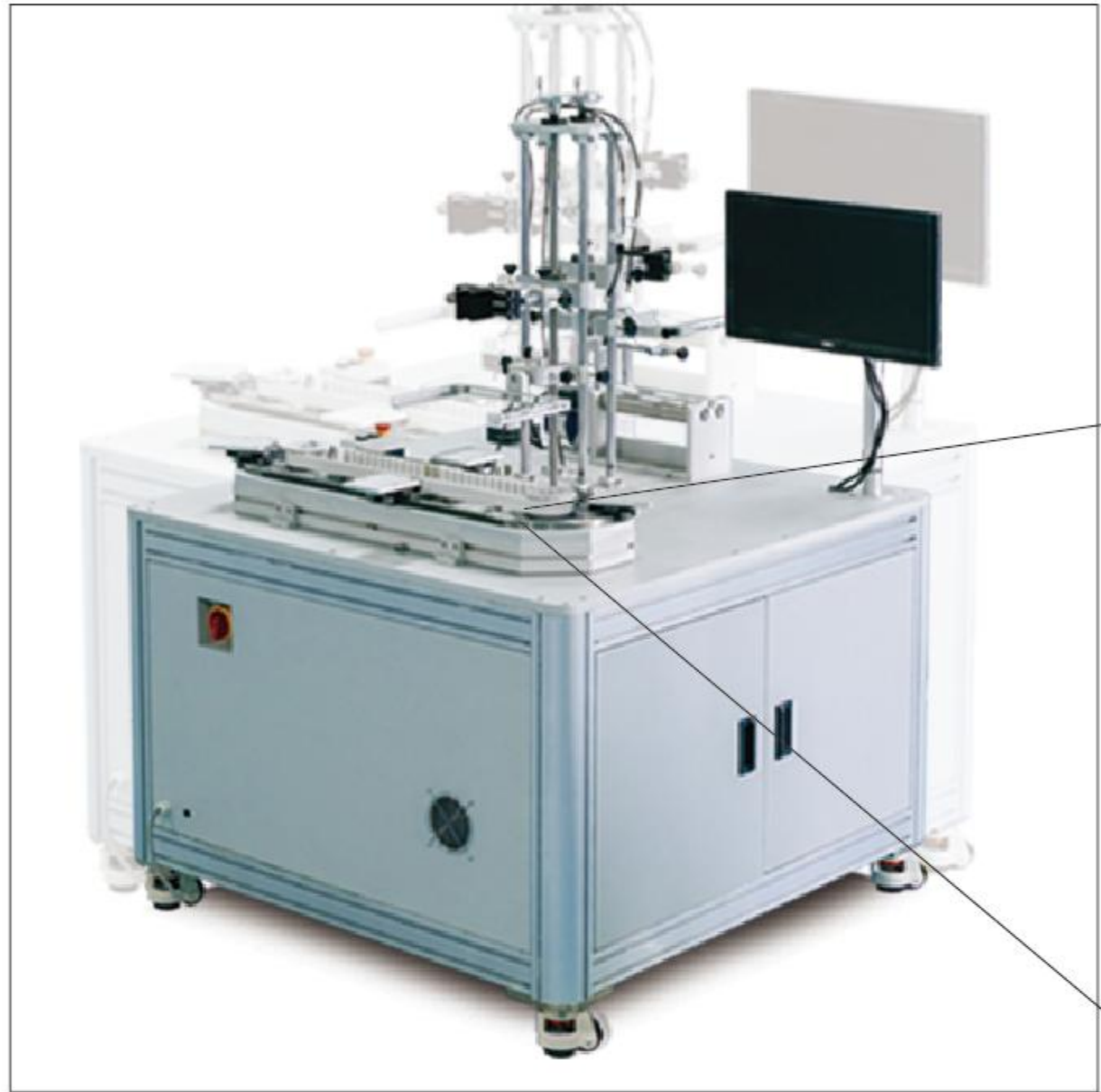
线扫相机机构 Line scan camera mechanism

2D线扫、3D线扫
2D line scan, 3D line scan

2D线扫:用于大体积产品检测的方案评估。
2D line scan: scheme evaluation for large volume product detection.

3D线扫:用于产品有高度、平整度、曲面度检测的方案评估。
3D line scan: it is used to evaluate the scheme of product height, flatness and camber detection.

(Accuracy)精度:3200points

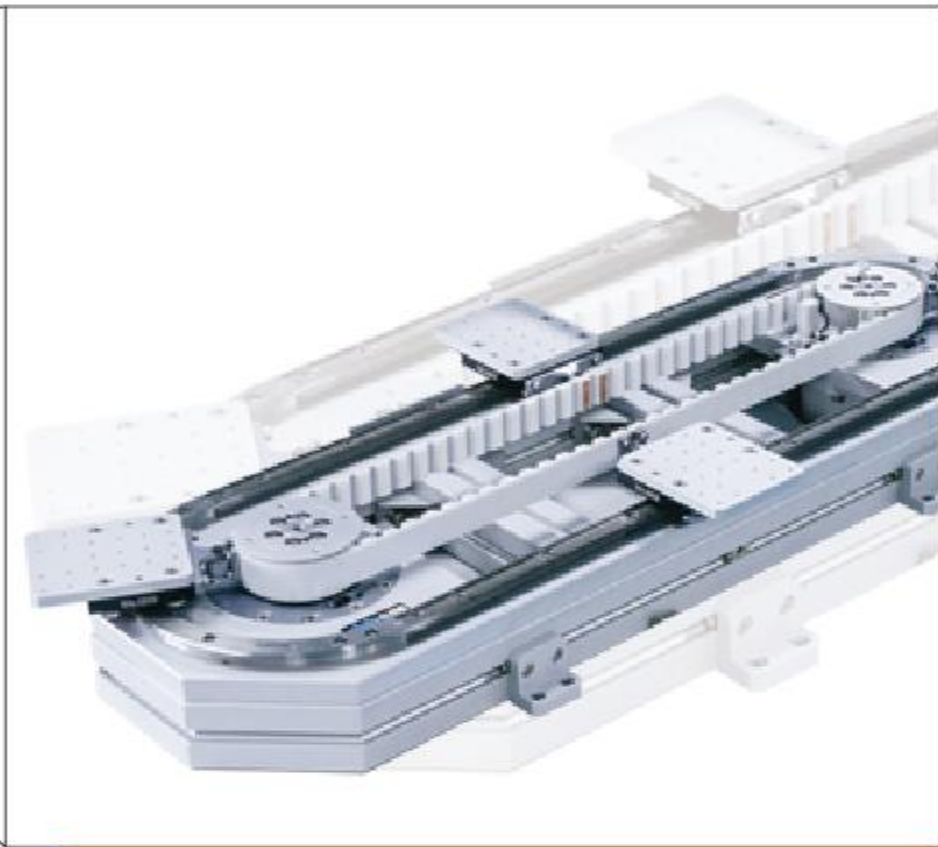


环形检测机机构 Ring detector mechanism

检测效率:1s/圈
Detection efficiency: 1s / cycle

用于确定打光方案后的效率评估。
Used for efficiency evaluation after determining the lighting scheme.

可检测产品:150mm*150mm
Detectable products: 150mm * 150mm



滚轮检测机机构 Roller detector mechanism

可检测圆柱直径:5mm-60mm
Detectable cylinder diameter: 5mm-60mm用于圆轴状物体外观检测评估，通常与线扫相机配合。

It is used for the appearance inspection and evaluation of circular and axial objects, and is usually matched with a line scan camera.

可检测产品:150mm*150mm
Detectable products: 150mm * 150mm

检测效率:调速盒-调速0-1400(T)/min
Detection efficiency: speed control box



光学测试台 Optical test bench

设备作用:
Quipment includes:
用于静态视觉方案测试
Used for static vision scheme test

支持物料
Supporting materials

(L)长: 1mm-1500mm
(W)宽: 1mm-1500mm
(T)高: 1mm-500mm



软件模块
Software Module

尺寸测量 | 精准定位 | 异物检测 | 输入输出 | 预处理 | 外观缺陷检测

Size measurement | precise positioning | foreign object detection | input/output | preprocessing | appearance defect detection

工具列表 请输入查找关键字! 查找 清除

瑕疵/污点

缺陷对比

块状物

积垢类

边缘毛刺

圆孔缺陷

背景灰度差

划痕毛刺

缺陷检测

AI通用

AI目标检测

AI...

直线毛刺

RGB色彩检测

圆孔毛刺

平均值/散度

斑点检测

轮廓斑点检测

斑点坐标转换

辅助工具

近似直线

圆的拟合

曲线拟合

辅助圆

点点中点

圆到圆心

圆心

圆到点

水平线

轮廓/圆点

曲线

中间圆

曲线/圆边缘交点

曲线交点

曲线拟合

拟合圆

点线垂直

点线垂直

旋转直线

平移线

二角内切圆

测量工具

弧长

圆上毛刺

计算器

C角

圆/圆距离

圆/圆十字

圆/圆距离

圆/圆

比较大小

多点直线度

曲线

点点距离

轮廓等-转换

R值

圆/圆距离

圆/圆距离

曲线拟合

医疗检测

自动斑点

缺陷检测

检测个数

提出四大模块概念

Propose the concept of four major modules

将非标设备标准化

Standardize non-standard equipment

视觉模块
Vision Module

传统视觉:正面尺寸检测 | 侧面尺寸检测 | 上表面外观缺陷检测 | 下表面外观缺陷检测 | 上侧面外观缺陷检测 | 下侧面外观缺陷检测

线扫相机模块:2D线扫 | 3D线扫

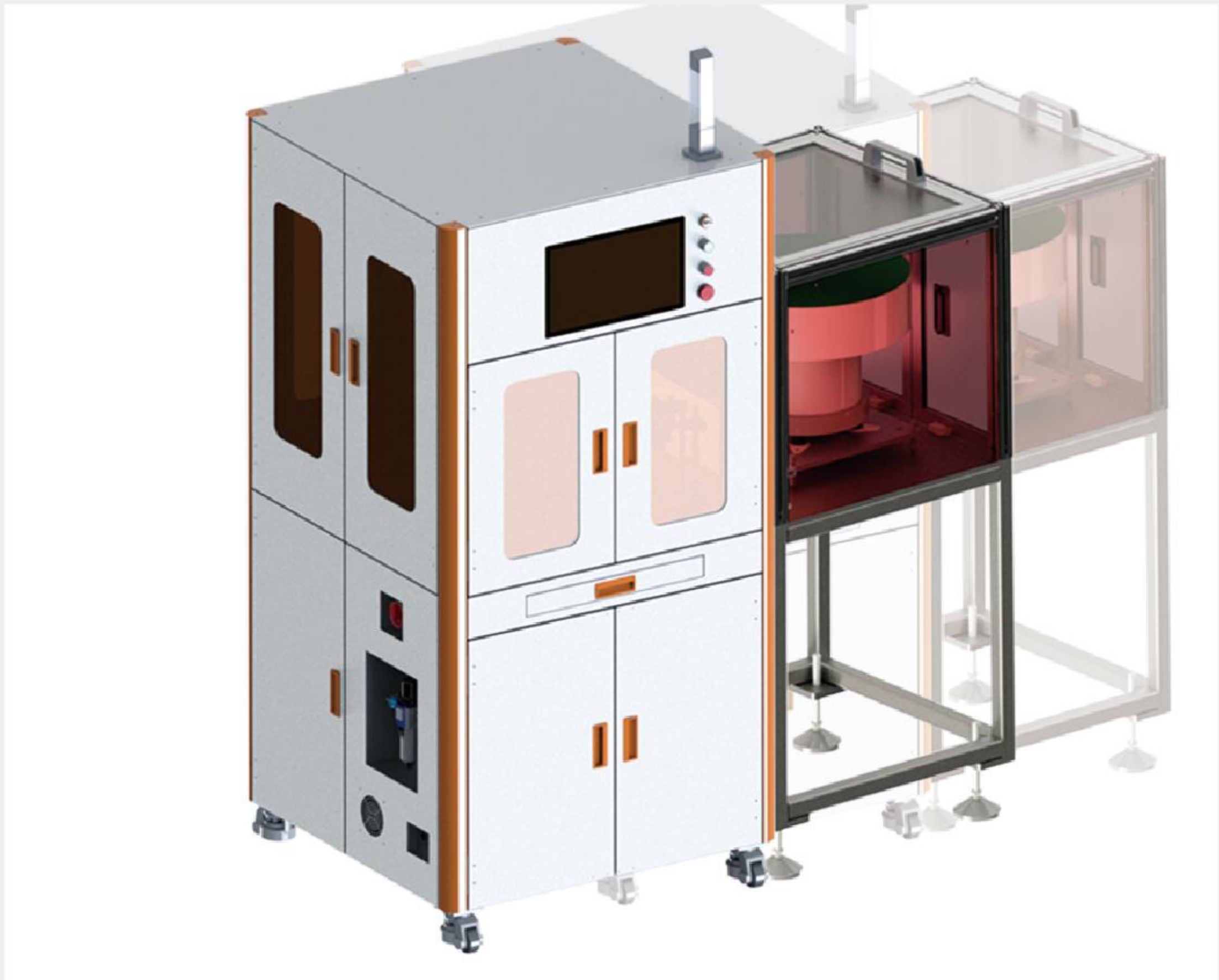
Traditional Vision: Front Size Detection | Side Size Detection | Upper Surface Appearance Defect Detection | Lower Surface Appearance Defect Detection | Upper Side Appearance Defect Detection | Lower Side Appearance Defect Detection

Line scanning camera module: 2D line scanning | 3D line scanning

外形模块
Appearance module

上料区 | 检测区 | 下料区

Loading area | Testing area | Unloading area



推出AOI智能全检平台

Launching AOI Intelligent Full Inspection Platform

上下料模块
Loading and unloading module

柔性振动盘+PPU机械手

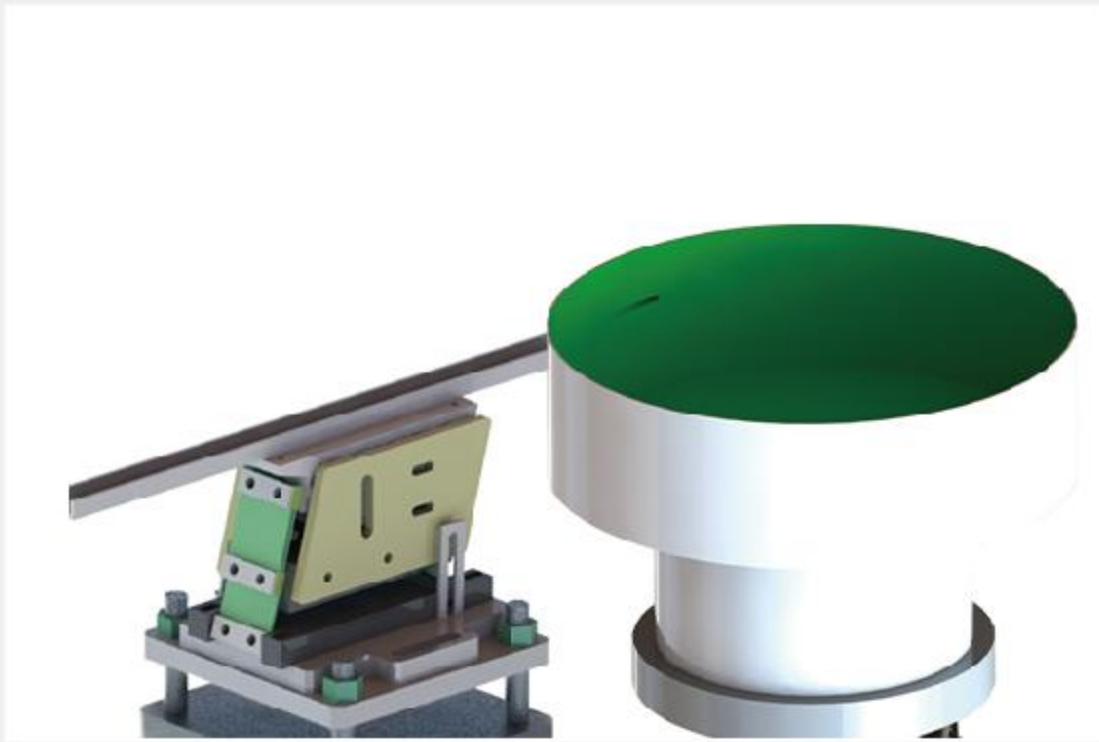
振动盘+直振盘

皮平带

Flexible vibration disk+PPU robotic arm

Vibration disk+straight vibration disk

Leather flat belt



软件模块Software module

市面上的非标设备使用系统多使用C-SHARP为客户独立开发的操作系统，而C-Sharp语言程序需运行在虚拟机上，所以主机性能无法完全释放，运行效率被限制；且功能封装，运行无法直达底层，运行效率进一步被限制；程序仅可适用于Win系统，且二次扩展硬件匹配度低，市面上可兼容的硬件少。

Non standard devices on the market often use operating systems independently developed by C-SHARP for customers, and C-Sharp language programs need to run on virtual machines, so host performance cannot be fully released, and running efficiency is limited; And the functionality is encapsulated, making it impossible to run directly to the underlying layer, further limiting the efficiency of operation; The program is only applicable to Win systems and has low hardware compatibility for secondary expansion, with few compatible hardware available on the market.



运行慢
Slow operation



操作复杂
Complex operation



兼容性差
Poor compatibility

我们的软件则规避了这些缺点Our software avoids these drawbacksV21

功能强大powerful function



280%

采用c++编译型语言，直达底层，运行效率至少提高280%

Using C++compiled language, directly reaching the bottom layer, improving running efficiency by at least 280%

经过多年积累和市场验证,组建了专属算法库。视觉功能多样,有视觉需求无需再次开发,可直接调用

After years of accumulation and market validation, a dedicated algorithm library has been established. Visual functions are diverse, and there is no need for further development if there are visual needs, which can be directly called



集成算法库
Integrated algorithm library



采用一键测量仪的视觉检测程序,精度高

Visual inspection program using a one click measuring instrument with high accuracy

新增柔性振动盘集成功能,视觉直通振动盘,连接更快更稳定

New flexible vibration disc integration function added, visually connecting to the vibration disc for faster and more stable connection



连接稳定快速
High precision



3D定位引导
3D positioning guidance

新增3D定位引导,支持机器人3D无序抓取

Added 3D positioning guidance, supporting 3D unordered grabbing by robotic hands

可匹配AI深度学习,通过模型不断训练,持续提高检测精度并降低误检率

Matchable AI deep learning, continuously training models to improve detection accuracy and reduce false detection rates



AI算法深度学习
AI algorithm deep learning

操作简便easy to operate



品标定功能的运行逻辑简便且清晰,一键完成,调试更快

The operation logic of the product calibration function is simple and clear, completed with one click, and debugging is faster



将运动控制写入程序,自动化(如上料/剔除)功能与视觉程序无需多系统连接,同一平台设置更稳定、通讯速度更快、工程切换更便捷

Write motion control into the program, and the automation (such as material removal) function and visual program do not require multiple system connections. The same platform settings are more stable, communication speed is faster, and engineering switching is more convenient



匹配联网功能,工程师可远程售后调试和持续训练模型

Matching the networking function, engineers can remotely debug and continuously train the model



UI深度优化,人机交互更便捷,用户可自行设定与修改视觉检测工程

UI deep optimization for more convenient human-computer interaction, allowing users to set and modify visual inspection projects on their own

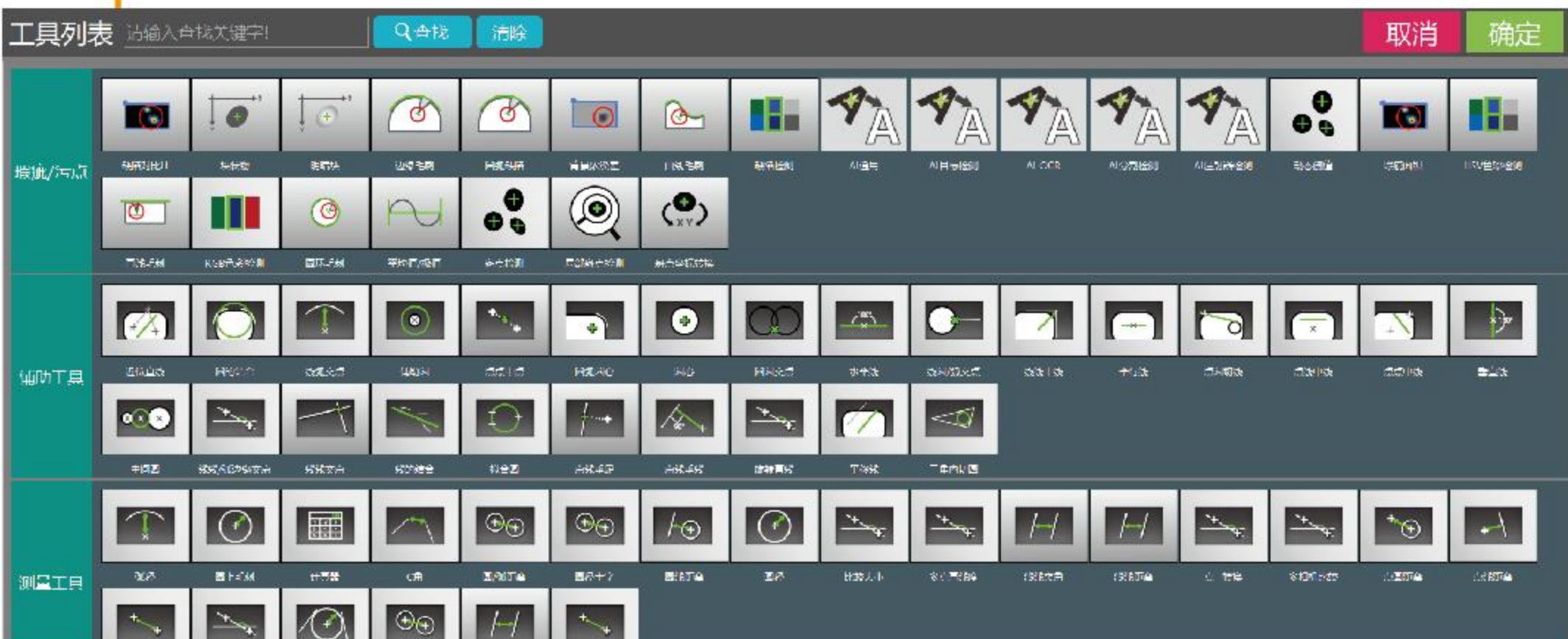
兼容性强easy to operate

程序底层逻辑优化,支持标准通讯协议。基于C++语言的二次开发优势,主机系统与第三方硬件程序的兼容性更好

Optimize the underlying logic of the program and support standard communication protocols. The advantage of secondary development based on C++language is better compatibility between host systems and third-party hardware programs

使用Qt开发,可根据客户的需求和限制,轻松选择移植到安卓/win/嵌入式Linux等多种平台

Developed using Qt, users can easily choose to port to various platforms such as Android/Windows/embedded Linux based on their needs and limitations



AI深度学习算法-模型训练

AI Deep Learning Algorithm - Model Training



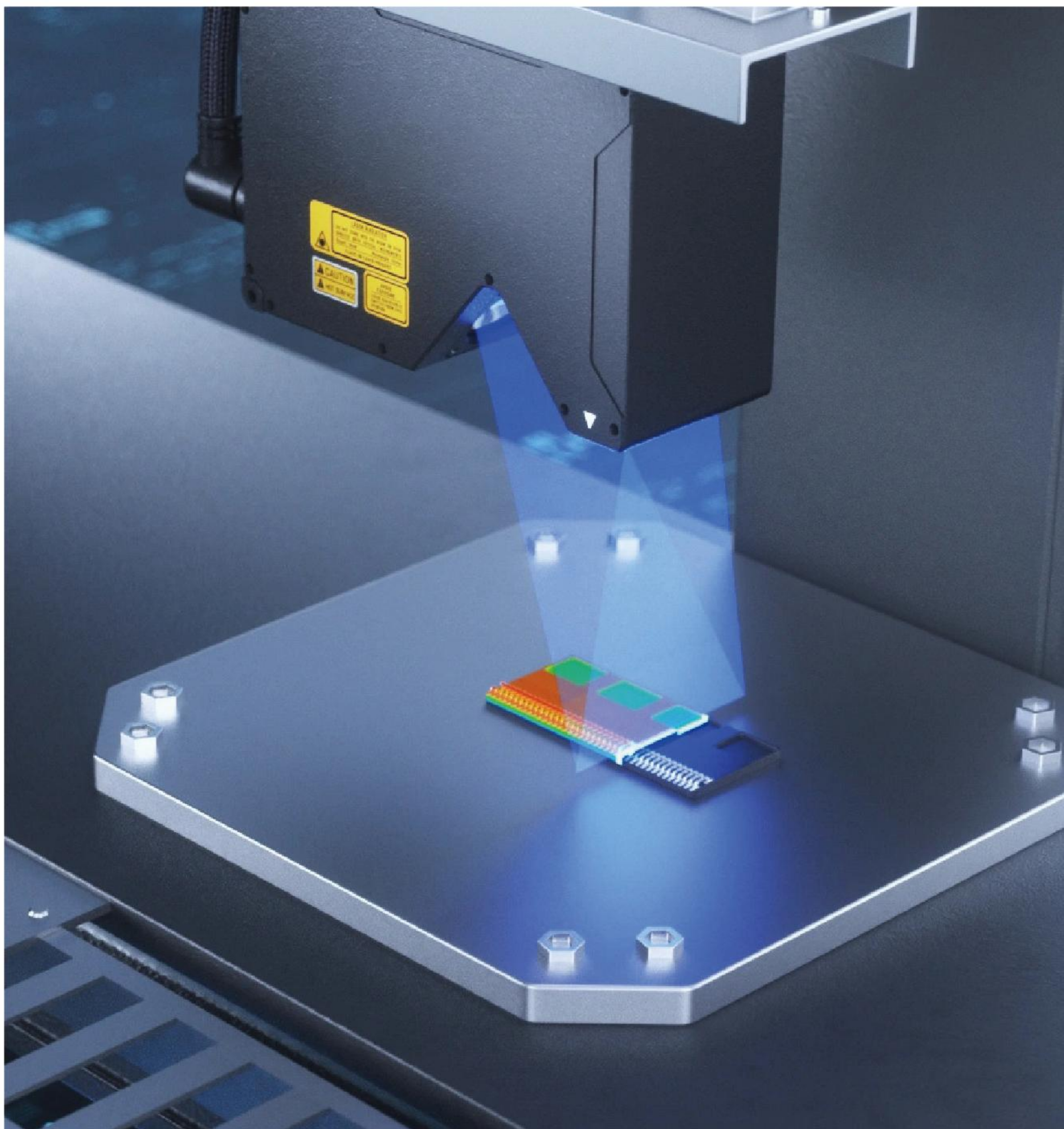
可提升类目 Improvable Categories		AI深度学习训练模型 AI Deep Learning Training Models	
缺陷检测 Defect Detection	精准度 Precision	通过大量数据训练, 识别细微 / 复杂缺陷 Identifies subtle/complex defects via extensive data training	
	适应性 Adaptability	自动适应光照 / 背景变化 Adapts to lighting/background changes automatically	
尺寸测量 Dimension Measurement	灵活性 Measurement - Flexibility	训练后快速切换测量不同产品 Switches between measuring different products quickly after training	
	精度稳定性 Accuracy Stability	不同角度 / 光照下保持高精度 Maintains high accuracy under various angles/lighting	
产品分类与识别 Product Classification	复杂特征识别 Complex Feature Recognition	学习多维度特征, 精准区分相似产品 Learns multi - dimensional features for accurate similar - product recognition	
	学习更新 Learning & Updating	通过数据更新学习新产品特征 Updates new product features via data iteration	
异常检测与预警 Anomaly Detection	数据挖掘 Data Mining	处理海量数据, 发现隐藏异常模式 Processes massive data to identify hidden anomalies	
	智能化 Intelligence	自动学习异常判断逻辑 Auto - learns anomaly judgment logic	
数据驱动的优化 Data - Driven Optimization	深度分析 Deep Analysis	深度分析多源数据, 挖掘非线性关联 Deeply analyzes multi - source data to uncover non - linear correlations	
	优化策略 Strategy Generation	直接生成参数优化策略 Generates parameter optimization strategies directly	
多模态信息融合 Multi - Modal Fusion	融合能力 Fusion Capability	自然融合图像 / 声音 / 振动等多模态数据 Naturally fuses multi - modal data (image/sound/vibration)	
	综合决策 Comprehensive Decision	通过多模态融合能做出更全面准确的决策 Enables comprehensive/accurate decisions via multi - modal fusion	

视觉模块 Visual module



线扫成像-线扫相机

Line Scan Imaging - Line Scan Camera



优势1: 在2D检测上, 可去除因反射率、形状不同而发生的干扰部分。依据稳定的形状进行检测。

优势2: 在3D检测时, 可根据稳定的轮廓测量角度、R角等各种尺寸。

优势3: 只需三步即可完成测量、检测所需的设定。

Advantage 1: In 2D detection, interference caused by different reflectivity and shape can be removed. Detect based on stable shape.

Advantage 2: In 3D detection, various dimensions such as angles and R angles can be measured based on stable contours.

Advantage 3: Only three steps are required to complete the measurement and detection settings.



2D光学成像-工业相机模组

2D Optical Imaging - Industrial Camera Module

可实现自动调节相机参数,可以根据成像效果自动调节光源高度,切换相机和光源更便捷,检测多面缺陷。

Can automatically adjust camera parameters, adjust the height of the light source according to the imaging effect, switch between camera and light source more conveniently, and detect multiple defects



下表面八棱镜外观检测
Appearance inspection of octaprism on the lower surface



正面外观缺陷检测
重复精度:±5px 最大视野:100mm
最高高度:100mm
Front appearance defect detection
Repetitive accuracy: ± 5px
Maximum field of view: 100mm
Maximum height: 100mm



上侧面外观缺陷检测
重复精度:±5px 最大视野:80mm
最高高度:30mm
Upper Side appearance defect detection
Repetitive accuracy: ± 5px
Maximum field of view: 80mm
Maximum height: 30mm



上表面外观缺陷检测
重复精度:±5px 最大视野:80mm
最高高度:30mm
Upper surface appearance defect detection
Repetitive accuracy: ± 5px
Maximum field of view: 80mm
Maximum height: 30mm



侧面外观缺陷检测
重复精度:±5px 最大视野:80mm
最高高度:30mm
Side appearance defect detection
Repetitive accuracy: ± 5px
Maximum field of view: 80mm
Maximum height: 30mm



下表面外观缺陷检测
重复精度:±5px 最大视野:80mm
最高高度:30mm
Lower surface appearance defect detection
Repetitive accuracy: ± 5px
Maximum field of view: 80mm
Maximum height: 30mm



下侧面外观缺陷检测
重复精度:±5px 最大视野:80mm
最高高度:30mm
Low side appearance defect detection
Repetitive accuracy: ± 5px
Maximum field of view: 80mm
Maximum height: 30mm

上下料模块 Loading and unloading module ➡

振动盘

功能:用于设备上的物料平稳运输,通常与直振、过渡转盘配合上料。
优势:将产品以一定的角度或位置上料。
适用领域:5mm-30mm左右的产品。

Vibration plate

Function: Used for smooth transportation of materials on equipment, usually in conjunction with direct vibration and transitional turntables for loading.
Advantage: Load the product at a certain angle or position.
Applicable field: Products with a size of around 5mm-30mm.



视觉定位→柔性振动盘+机器人手

功能:配合机器人抓取,将细小物料按照要求平铺展示或检测平台。
优势:①对物料损伤小;②摆料位置精度0.1mm。
适用领域:尺寸较小且检测精度要求较高的产品的上下料和摆料。

Visual positioning → Flexible vibrating disc+robotic arm

Function: In conjunction with robot grabbing, it can display or detect small materials on a flat platform according to requirements.
Advantages: ① minimal damage to materials; ② The accuracy of the material placement position is 0.1mm.
Applicable field: Loading, unloading, and placement of products with small dimensions and high detection accuracy requirements.

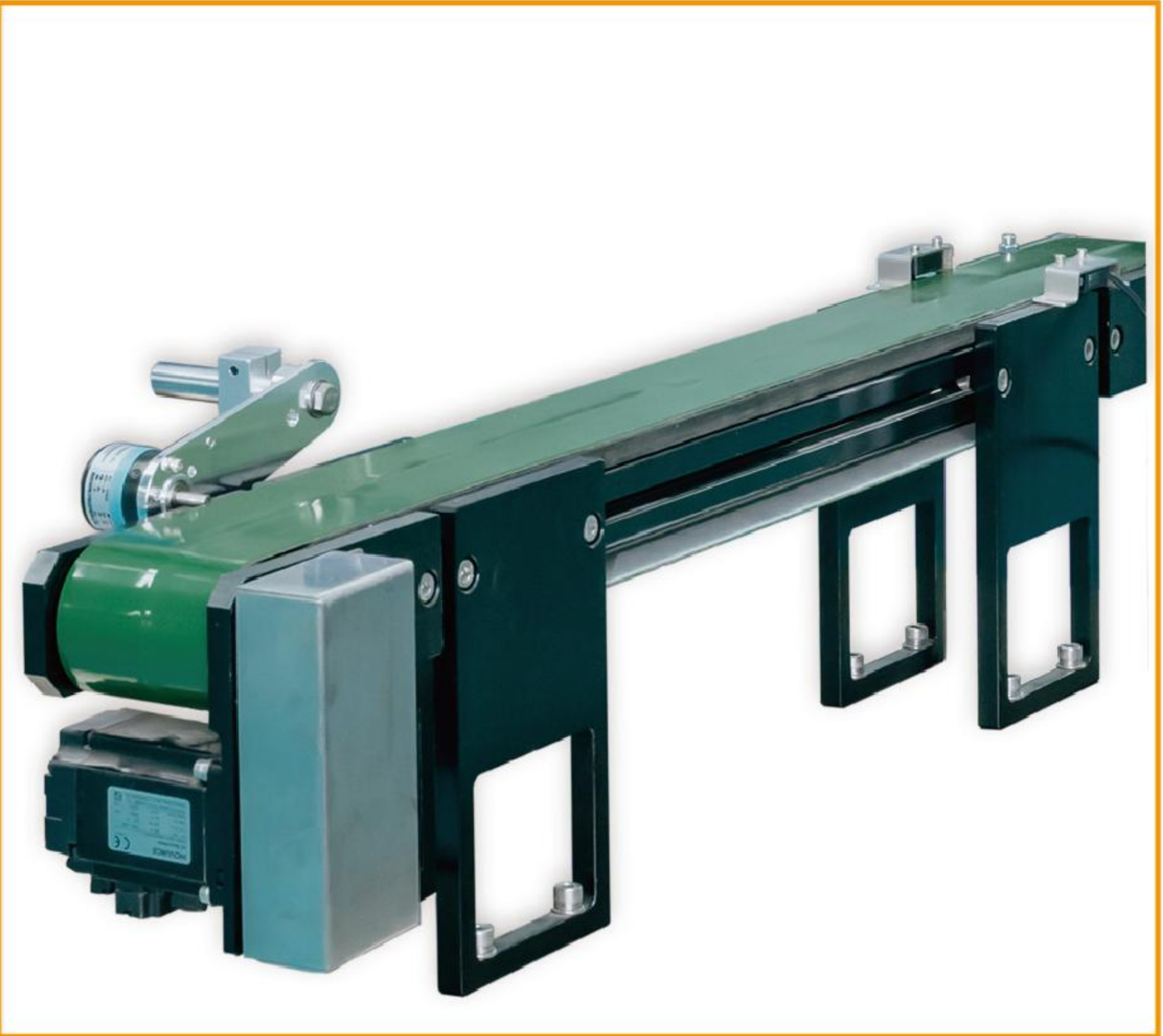


运输皮平带

功能:用于设备上的物料平稳运输,通常与振动盘或机械手、机器人,生产线,人工对接配合上料。
优势:①造价实惠②输送效率高。
适用领域:上下料、摆料、做移动检测平台(适合对检测精度要求不高的产品。)

Transport leather flat belt

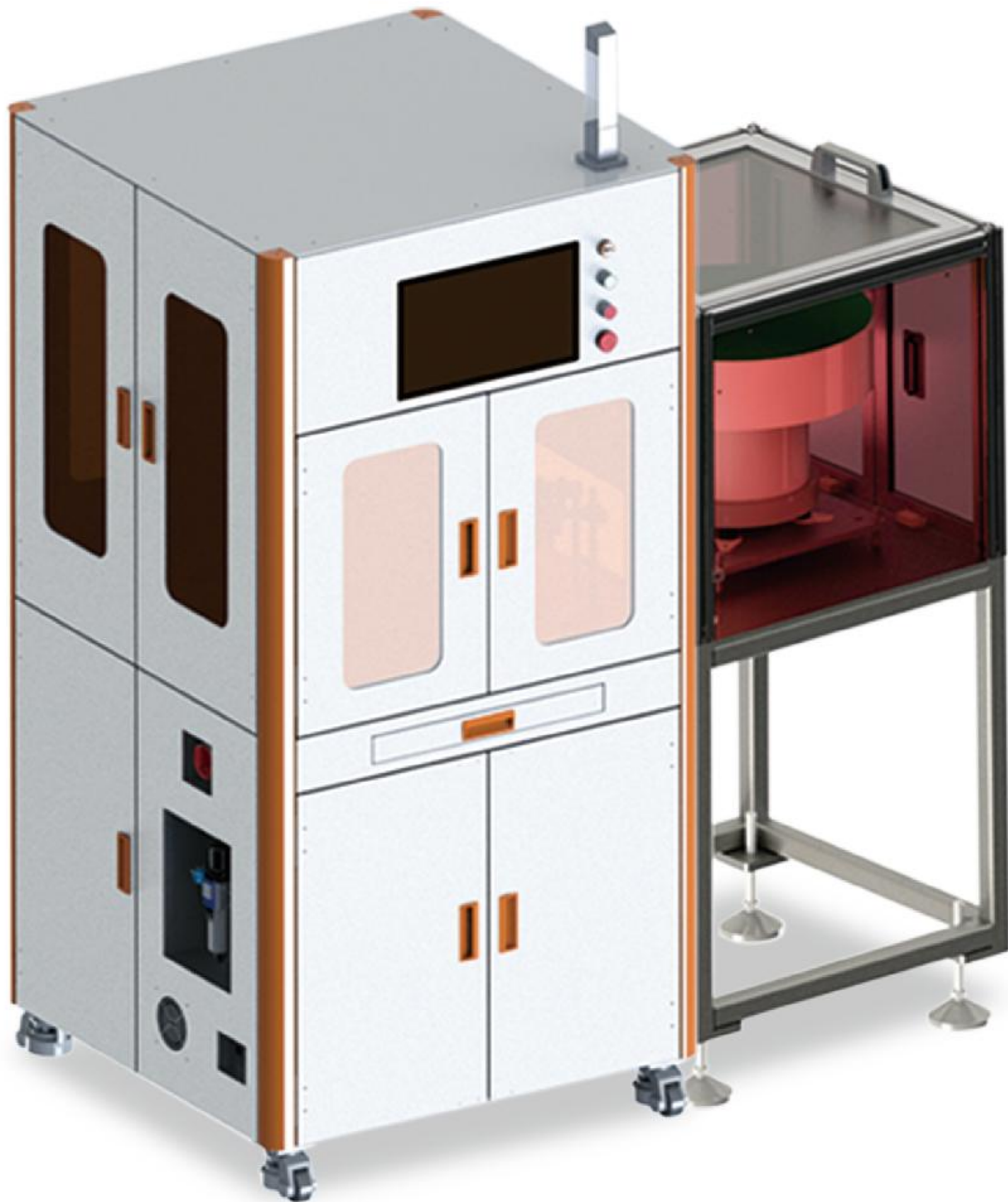
Function: Used for smooth transportation of materials on equipment, usually in coordination with vibrating discs or robotic arms, robots, production lines, and manual loading.
Advantages: ① Affordable cost ② High conveying efficiency.
Applicable fields: loading and unloading, material placement, and mobile detection platform (suitable for products with low requirements for detection accuracy)



外形模块 Appearance module

我司针对客户的生产定制方案,提供标准机外形和全检机外形进行选择。不同的机型,所能包含的机构套组也不相同,可自行选择搭配。
Our company provides customized production solutions for customers, offering a selection of standard machine shapes and full inspection machine shapes. Different models can contain different sets of mechanisms, and can be matched and chosen by oneself.

AOI标准机 AOI standard machine



型号:BSY-AM-2

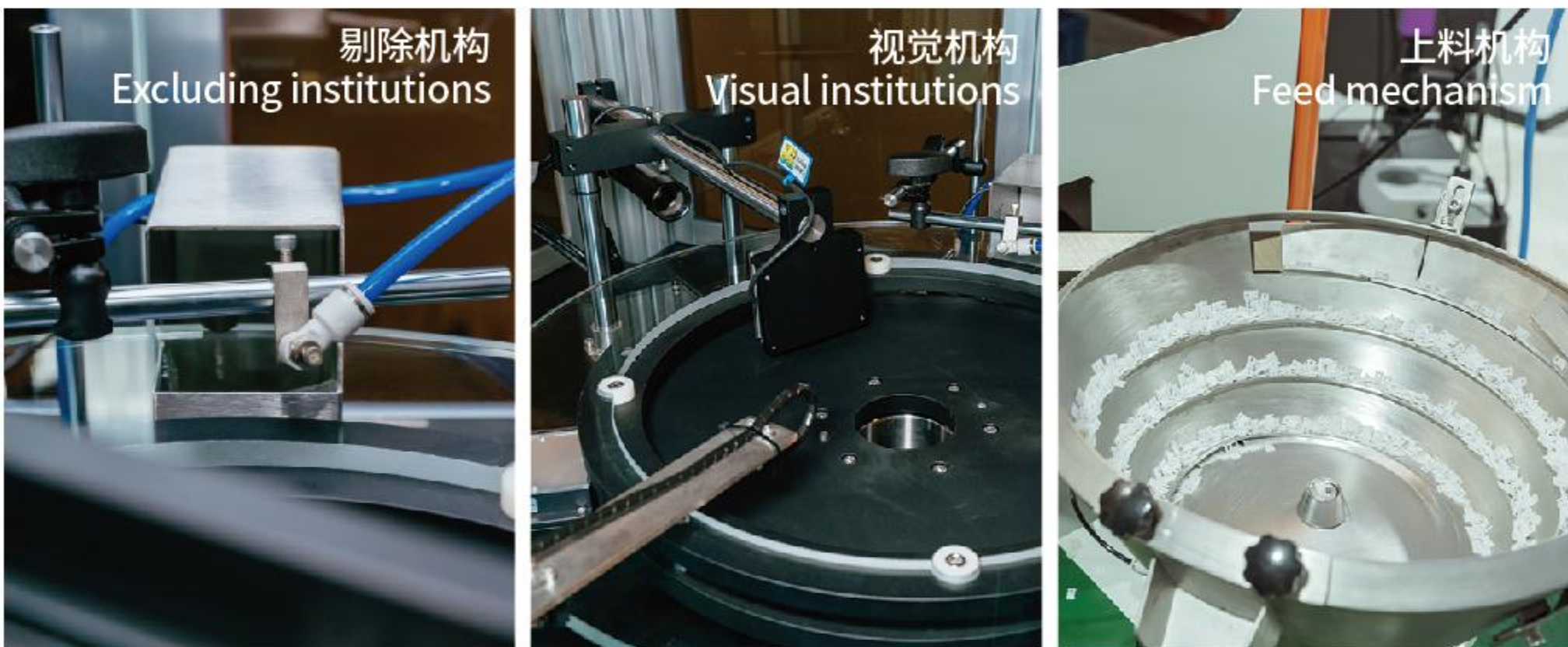
尺寸:1700mm*1200mm*1800mm

检测效率:75pcs/min

Model: BSY-AM-2

Size: 1700mm * 1200mm * 1800mm

Detection efficiency: 75pcs/min



AOI全检机 AOI full inspection machine



型号: BSY-AH-5

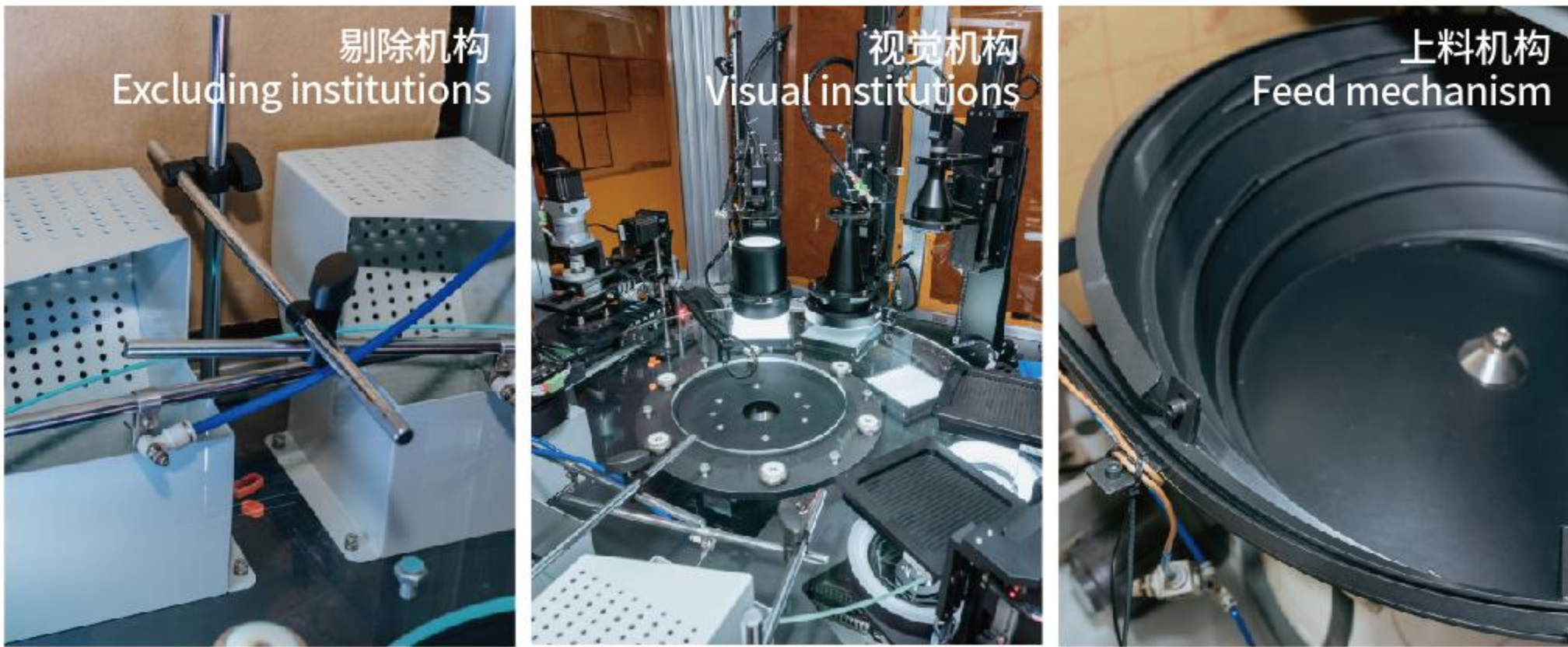
尺寸: 2400mm*1400mm*1900mm

检测效率: 80pcs/min

Model: BSY-AH-5

Size:2400mm * 1400mm * 1900mm

Detection efficiency: 80pcs/min



这样一台AOI智能检测设备就完成了,从方案定制到设备出货调试,我们都严格一手抓,为客户降低成本,缩短交期,提高生产效率,是我们做AOI智能全检设备一直以来的宗旨。
This AOI intelligent detection device has been completed. From scheme customization to equipment shipment debugging, we strictly grasp it from the beginning, reducing costs, shortening delivery time, and improving production efficiency for customers. This has always been our goal in making AOI intelligent full inspection equipment.

案例详解

Case Explanation

*部分案例 Part case

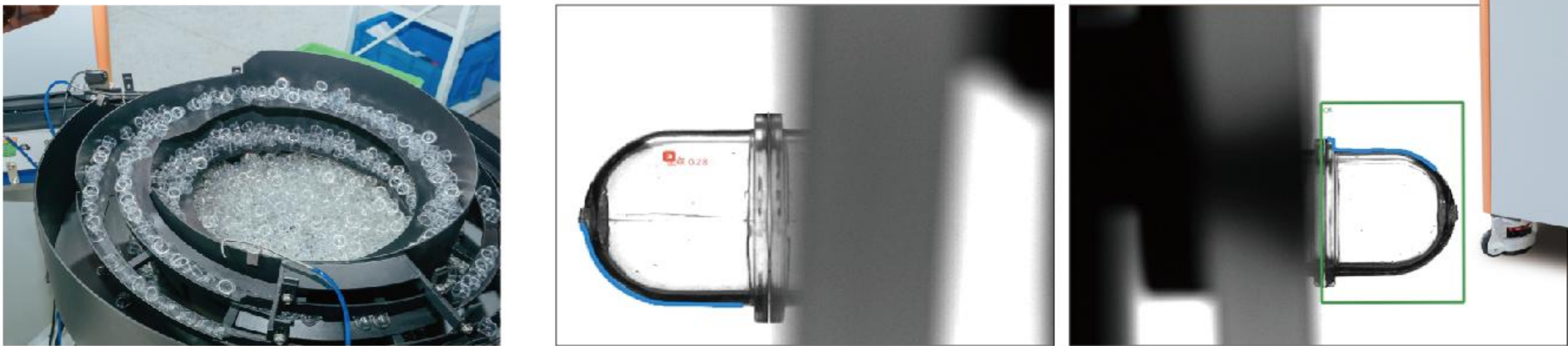
油杯AOI检测机

Oil cup AOI detection machine

检测内容:①边缘缺料②顶部黑点/底部黑点/侧面黑点③毛刺④高度测量

检测效率:2个/秒

Detection content: ① Edge shortage ② Top black spot/bottom black spot/side black spot ③ Burr ④ Height measurement
Detection efficiency: 2 pieces/second



*已加入AI算法
*Added AI algorithm

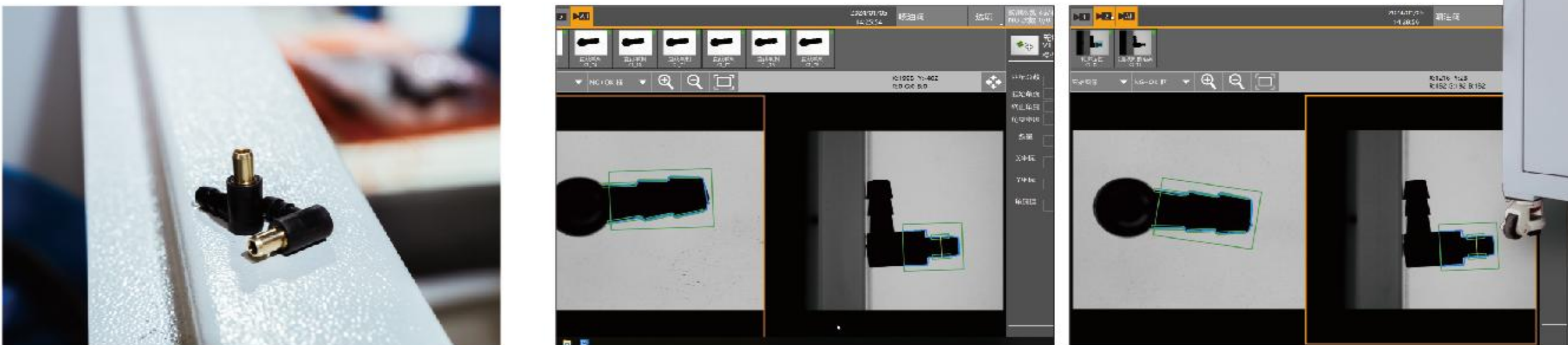
喷油阀AOI检测机

Injection valve AOI detection machine

检测内容:①铜管直径检测②产品混料判断③模接线有无毛刺检测

检测效率:100个/分钟

Detection content: ① Copper tube diameter detection ② Product mixing judgment ③ Mold wiring burr detection
Detection efficiency: 100 pieces/minutes



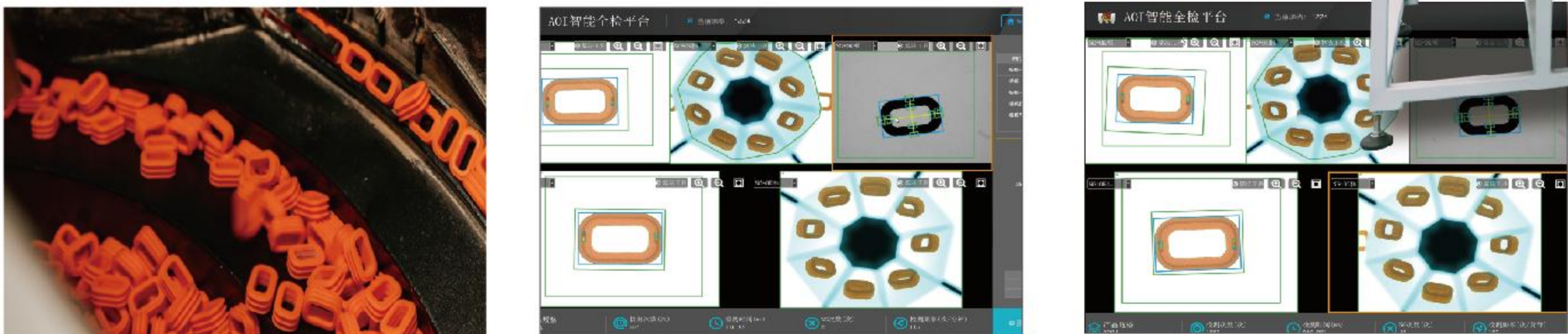
液态硅胶缺陷检测机

Plastic ring AOI testing machine

检测内容:①外观尺寸检测②脏污、黑点、毛刺

检测效率:80个/分钟

Detection content: ① Appearance and size inspection ; ② Dirty, black spots, and burrs
Detection efficiency: 80 pieces/minute



*已加入AI算法
*Added AI algorithm

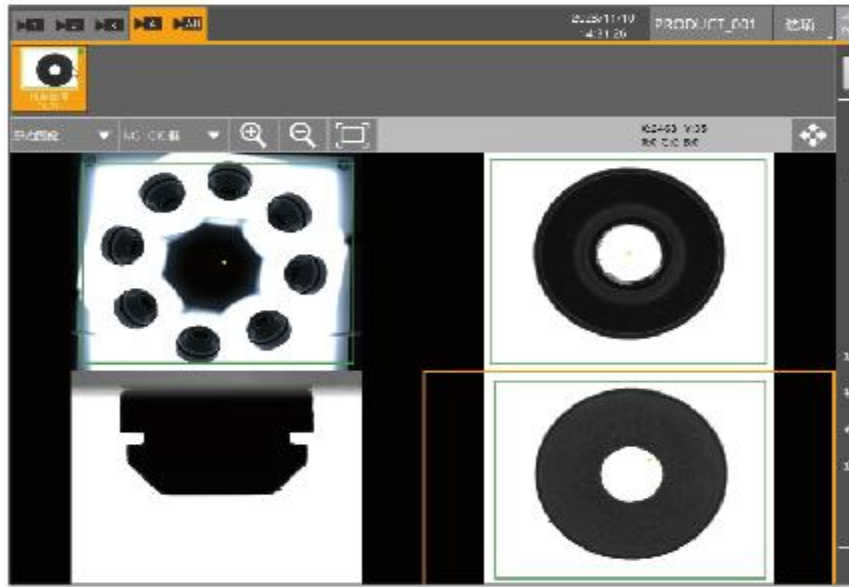
圆橡胶件AOI外观检测机
AOI appearance inspection machine for round rubber parts

检测内容:①台阶直径测量②物料圆柱侧边缺料/开裂检测③底面缺料检测④顶面开裂检测

检测效率:140个/分钟

Detection content: ① Step diameter measurement ② Material cylinder side missing/cracking detection ③ Bottom missing material detection ④ Top cracking detection

Detection efficiency:140 pieces/minutes



*已加入AI算法
*Added AI algorithm

汽车卡扣检测包装机
Plastic ring AOI testing machine

检测内容:五个面的缺陷检测①侧面缺胶;②堵孔;③混料

检测效率:100个/分钟

Detection content: Defect detection on five surfaces: ① Lack of adhesive on the side; ② Blocking holes; ③ Mixing materials
Detection efficiency: 100 pieces/minutes



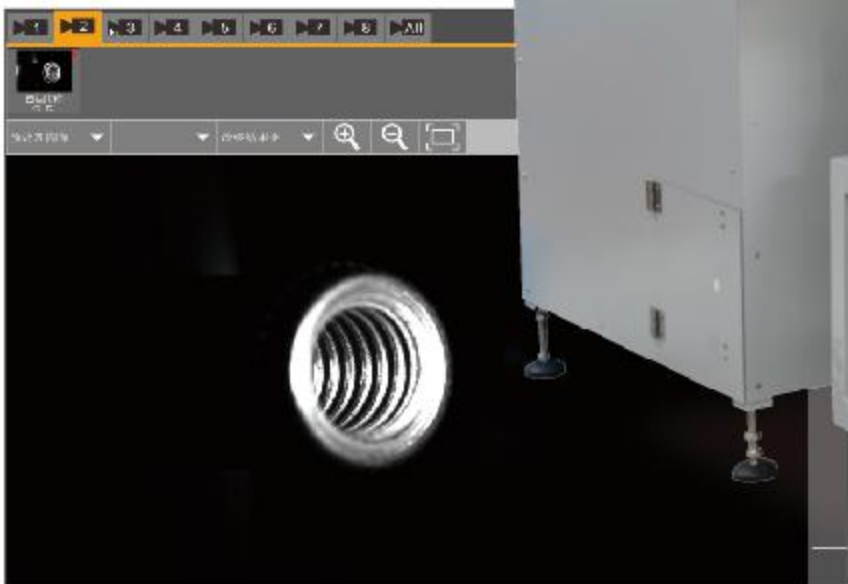
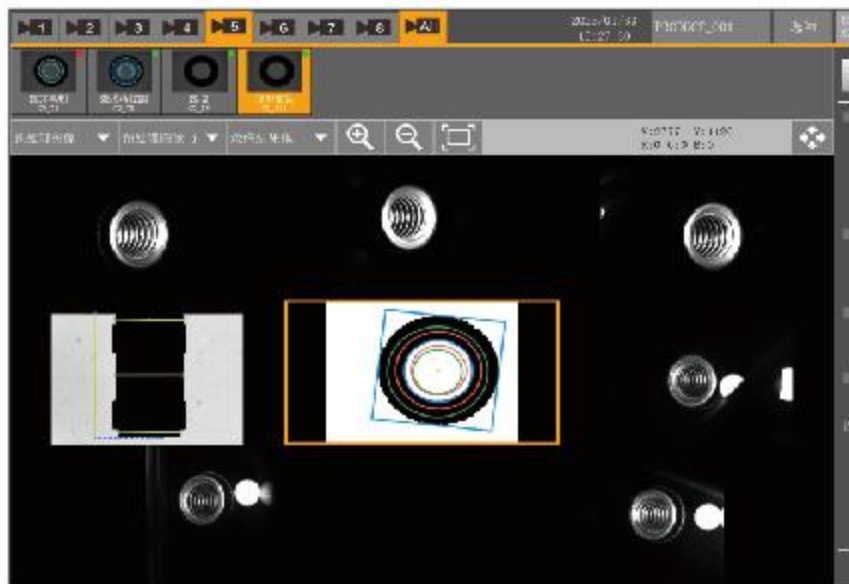
*已加入AI算法
*Added AI algorithm

螺纹柱内螺纹检测机
Thread detection machine for internal threads

检测内容:①牙峰缺失②外轮廓尺寸③牙峰毛刺④牙峰异物

检测效率:400个/分钟


Detection content: ① Tooth peak missing ② Outer contour size ③ Tooth peak burrs ④ Tooth peak foreign body
Detection efficiency: 400 pieces/minutes



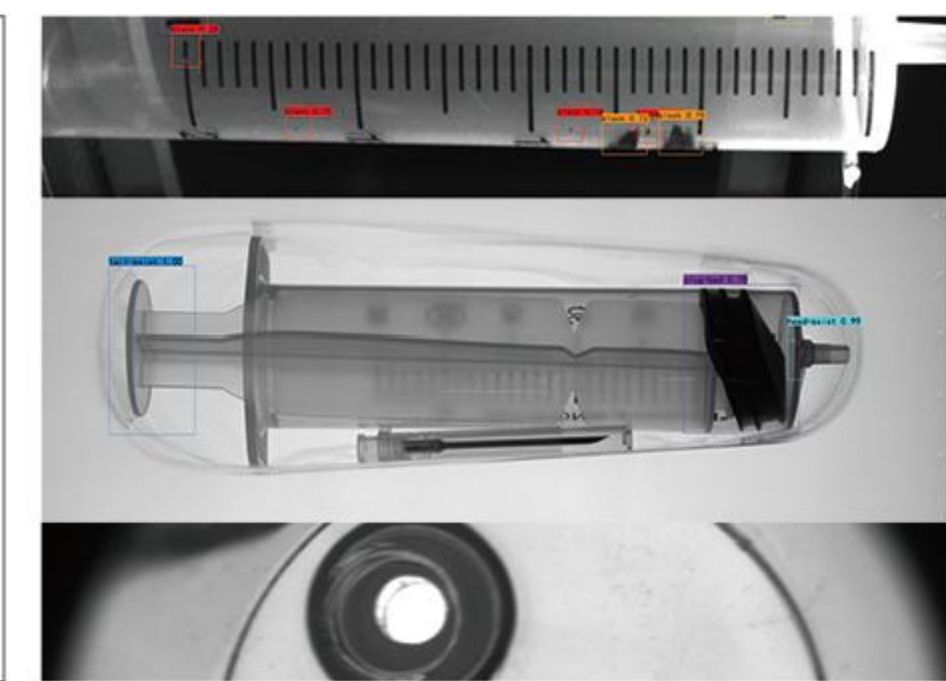
AOI视觉检测

在各行业的应用

The application of AOI visual inspection in various industries



医疗针筒
Medical syringe



检测图
Detection diagram

检测内容：①检测注射器筒内有无异物 ②检测有无胶塞，胶塞缺陷③检测是否缺针、缺护套

Detection content:① Check whether there is any foreign matter in the syringe barrel ;② Check whether there is a rubber plug and the rubber plug is defective;③ Check whether the needle and sheath are missing




铝件
Aluminum parts



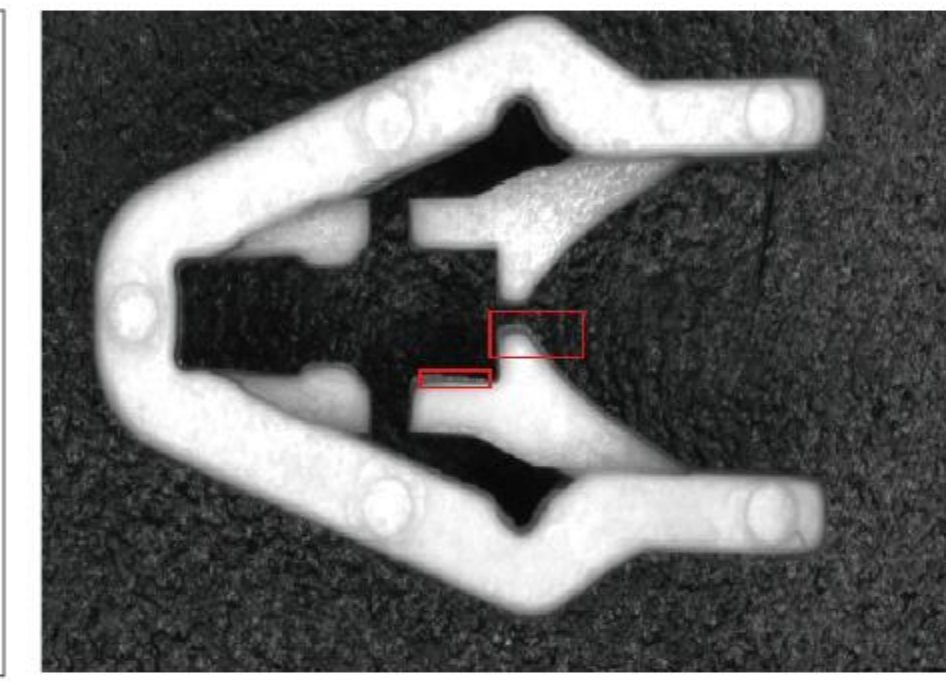
检测图
Detection diagram

检测内容：①检测尖尖包铝、膨胀、缺损、磨铝、破损、变色②检测圆弧面疤痕 ③检测斜边疤痕 ④尺寸检测

Detection content:① Detect the aluminum coating, expansion, defect, aluminum grinding, damage and discoloration of the tip; ② Detection of arc surface scar ;③ Detection of bevel scar; ④ Size detection



塑料工件
Plastic workpiece



检测图
Detection diagram

检测内容：①检测是否缺料 ②检测是否有毛边

Detection content:① Check whether there is material shortage ;② Check whether there is burr



金属钥匙
Metal key



检测图
Detection diagram

检测内容：①检测鼻头尺寸 ②检测外径尺寸 ③检测平行度 ④检测表面划伤、露铜发黄、压伤

Detection content:① Check the nose size; ② Check the outer diameter size; ③ Check the parallelism;④ Detect surface scratch, exposed copper yellowing and crush



塑料汽车件
Plastic auto parts



检测图
Detection diagram

检测内容：①检测卡子有无

Detection content:① Check if the clip is present



塑料花篮配件
Plastic flower basket accessories



检测图
Detection diagram

检测内容：①检测是否压伤②检测是否划伤

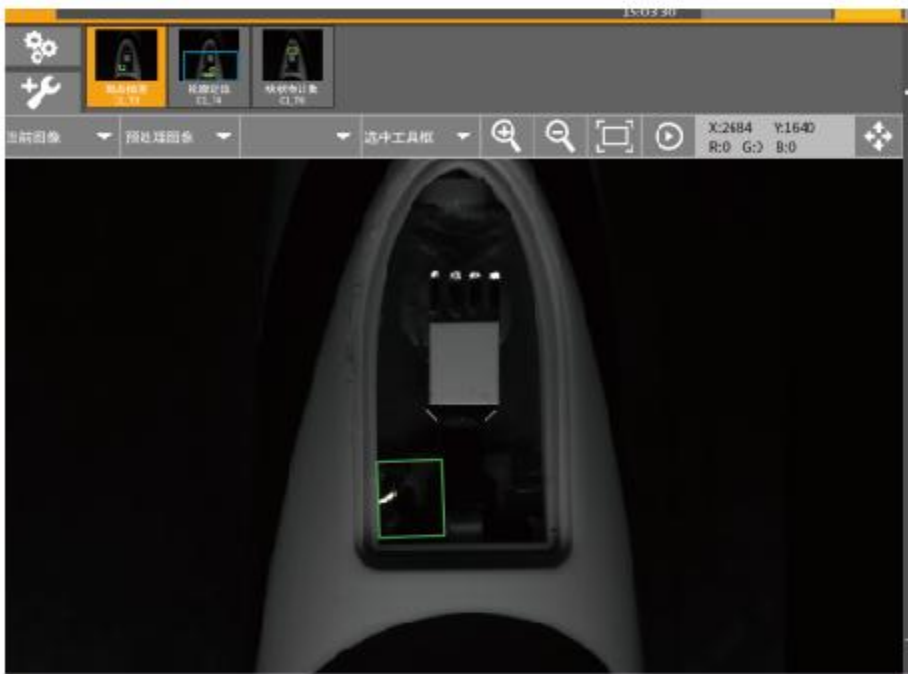
Detection content:① Check whether it is crushed ;② heck whether it is scratched

AOI视觉检测 在各行业的应用

The application of AOI visual inspection
in various industries



电子手柄
Electronic handle



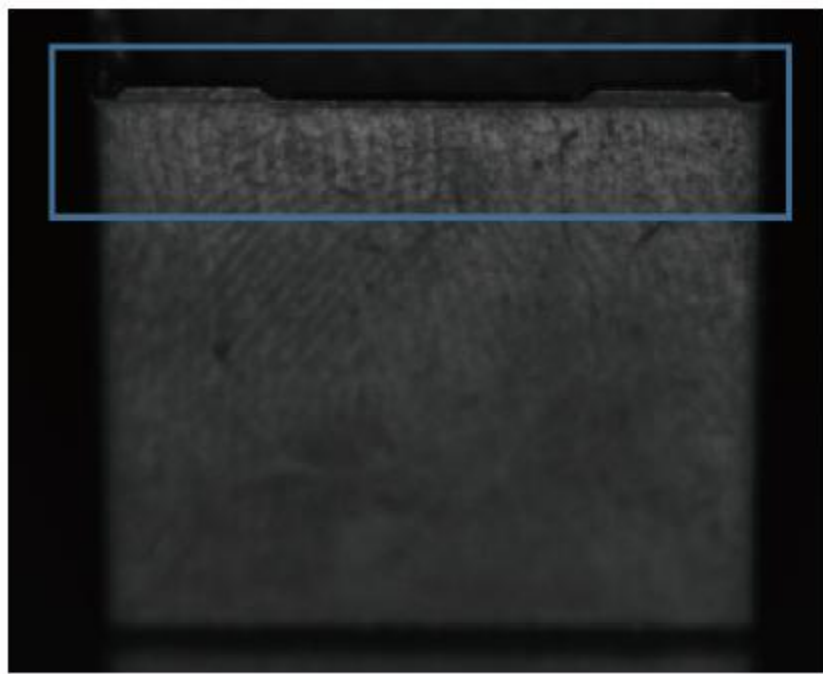
检测图
Detection diagram

检测内容：①检测是否缺角②检测焊锡连接是否异常

Detection content:① Check whether the angle is missing; ② check whether the solder connection is abnormal



注塑件
Injection molded parts



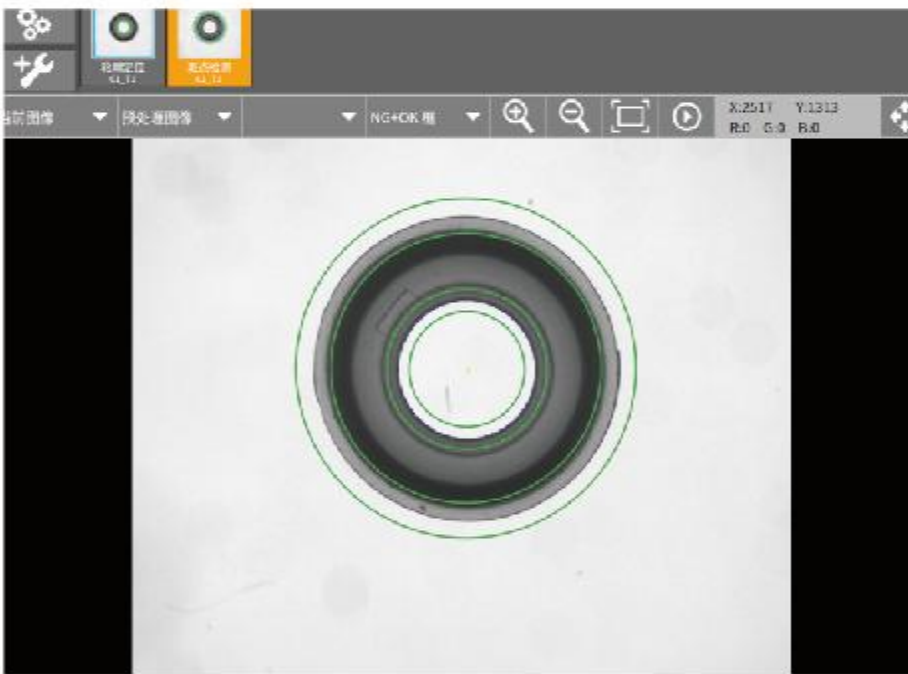
检测图
Detection diagram

检测内容：①检测外表面缺陷

Detection content:① Detection of external surface defects



塑料圈
Plastic ring



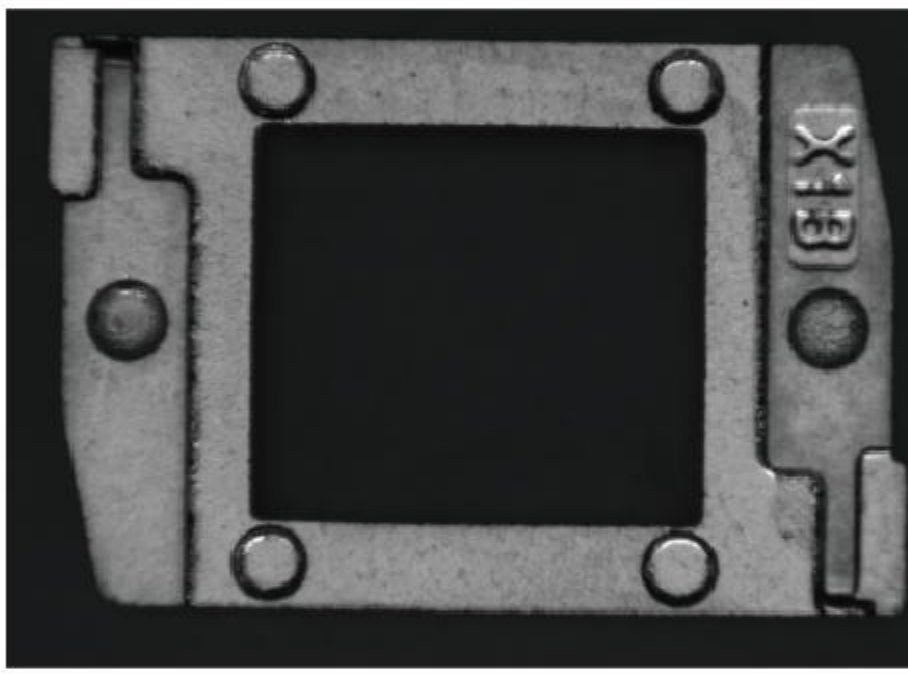
检测图
Detection diagram

检测内容：①检测是否缺料 ②检测是否有毛边

Detection content:① Check whether there is material shortage ;② Check whether there is burr



金属工件
Metal workpiece



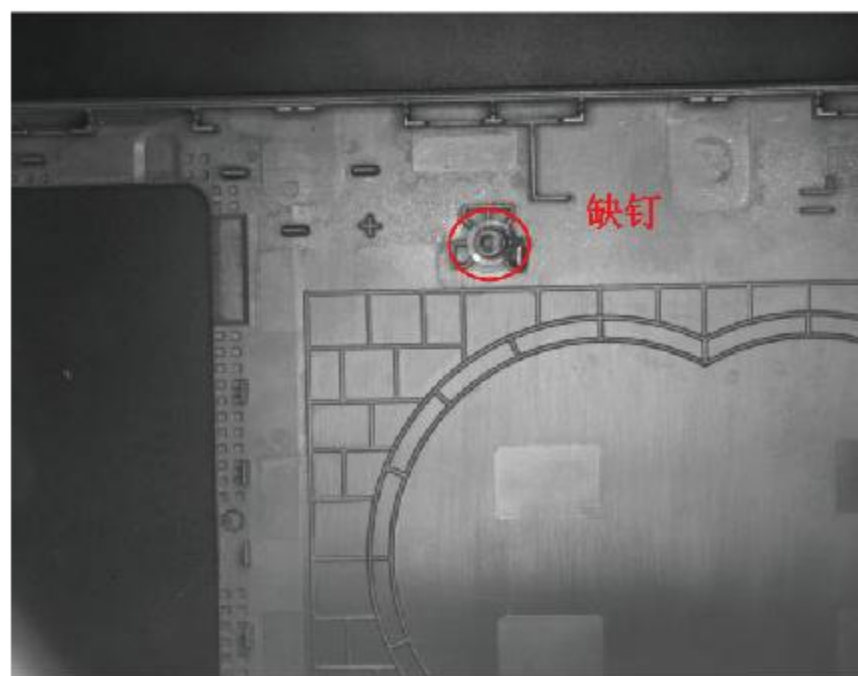
检测图
Detection diagram

检测内容：①检测凸点、凹坑、压、伤、缺损 ②检测内孔夹针、变形、鼓包、断裂 ③检测碰伤、混料、凹陷、定位孔异常

Detection content:① Detect bumps, pits, pressure, damage and defects; ② detect the pinch pin,deformation, bulge and fracture of the inner hole; ③ detect the bumps, mixed materials, dents and positioning hole abnormalities.



塑料电脑壳
Plastic computer case



检测图
Detection diagram

检测内容：①检测螺钉异常种类

Detection content:① Detect types of abnormal screws



树脂电阻
Resin resistance



检测图
Detection diagram

检测内容：①检测缺陷异常种类

Detection content:①Types of detected defects

一键闪测仪

One button measuring instrument

在产品生产中, 由于产品使用性质和生产线工艺质量的不同, 部分产品仅需进行抽检即可。而人工去检测有诸多不便, 因此就有了方便快捷抽检的一键闪测仪。

In product production, due to differences in the nature of product use and the quality of production line processes, some products only require sampling inspection. However, manual testing has many inconveniences, so there is a one click flash tester that is convenient and fast for sampling.

全新一代一键闪测仪

New generation One button measuring instrument

替代传统测量遗器

Replace traditional measuring instrumentsmeasuring instrument

测量操作简便
易上手
Simple measurement operation(Easy to use)

大批量同时测量
效率提升
Mass simultaneous measurement (Efficiency improvement)

标准化测量
避免人为操作失误
Standardized measurement (Avoid human error)

数据自动统计与分析
便于产品质量管理
Automatic data statistics and analysis (convenient for product quality management)



双视野-100&25(mm)
拼接大视野-300*200(mm)
Dual vision-100&25 (mm)
Splicing a large field of view-300*200(mm)

测量物件多样化

Diversity of measuring objects

测量电子、模具、注塑、五金、精密五金、精密冲压、接插件、连接器、钟表、仪器仪表零件等。

Measuring electronics, molds, injection molding, hardware,precision hardware,precision stamping, connectors,connectors,clocks,instrument parts,etc.

测量多样化
Diversified measurement methods

模拟检测图
Simulated detection chart

背光轮廓测量
Backlight profile measurement

模拟检测图
Simulated detection chart

上光特征捕捉测量
Glazing feature capture measurement

模拟检测图
Simulated detection chart

多图层测量
Multi-layer survey

优势对比

Advantage comparison

传统工具进行质检

Traditional tools for quality inspection



难以高精度测量

Difficult to measure with high accuracy

- 个人主观概念差异导致所选测量点不同
Individual subjective concept difference leads to different measurement points
- 照明方式容易受影响导致数值变化
The lighting mode is easily affected, resulting in numerical changes
- 个人主观概念差异导致对焦位置选择不同
Differences in personal subjective concepts lead to different focus positions



难以设定

Difficult to set

- 可观察范围小，识别不精准
Small observable range and inaccurate identification
- 毛刺和缺陷容易导致误检
Burr and defects easily lead to false inspection
- 没经过系统培训则无法使用测量
Measurement cannot be used without systematic training



测量费时

Time consuming measurement

- XY轴调整基准耗时大
It takes a lot of time to adjust the reference of XY axis
- 测量时间随测量部位增加而增加
The measurement time increases with the increase of measurement position
- 多个相同的目标物需逐一测量
Multiple identical targets need to be measured one by one



测量快速

Fast measurement

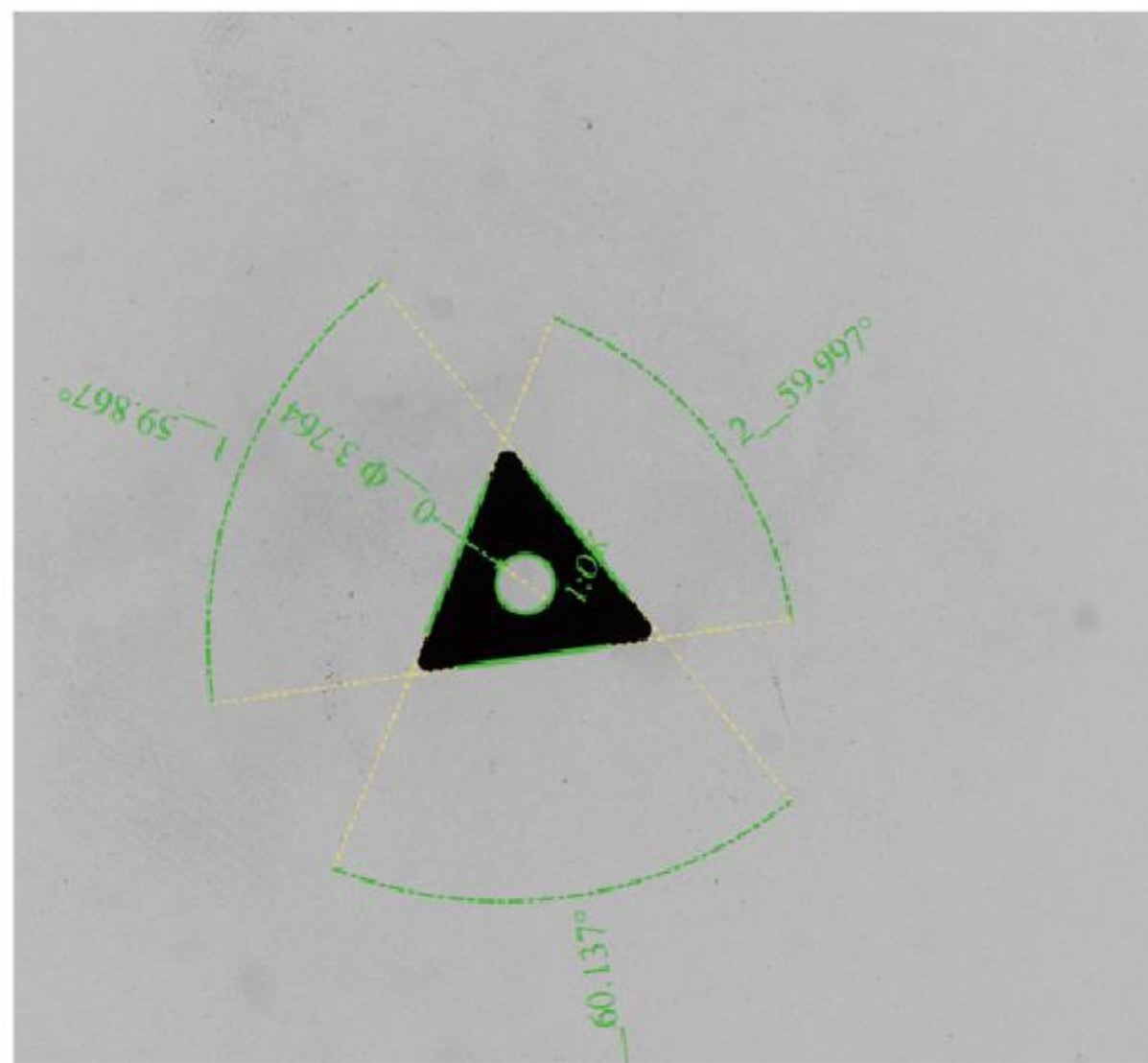
- 无需任何目标物定位
No target positioning is required
- 可同时测量100个目标物
100 targets can be measured simultaneously
- 自动照明，自动对焦，自动识别工程
Automatic lighting, automatic focusing, automatic recognition engineering



设定便捷

Convenient setting

- 单次成像&拼接成像方便快捷
Single-shot & Stitched Imaging: Fast & Convenient
- 可保存数百个工件工程，随时切换
Storage for 100+ Workpiece Programs with Instant Switching
- 程序操作图形化，简单易操作
Graphical Program Interface: User-Friendly



测量精度高

High measurement accuracy

- 集成复合光源，识别产品多类特征
Integrated composite light source to identify multiple features of products
- 双视野成像&拼接视野成像，无惧产品尺寸差异
Dual view imaging&splicing view imaging, fearless of product size differences
- 自研强大视觉算法，稳定精准
Self-developed powerful vision algorithm, stable and accurate

双成像一键闪测仪

Double field imaging one button flash tester

测量小工件时，可切换小视野相机，使成像更为清晰，数据更为准确；测量大工件时，切换大视野相机，使测量范围更广。

When measuring small workpieces, small field camera can be switched to make imaging clearer and data more accurate; When measuring large workpieces, switch the large field camera to make the measurement range wider.

重复精度

Repeatability Accuracy

$\pm 2\mu\text{m}$

小视野 (25mm)
Small field of vision (20mm)

$\pm 4\mu\text{m}$

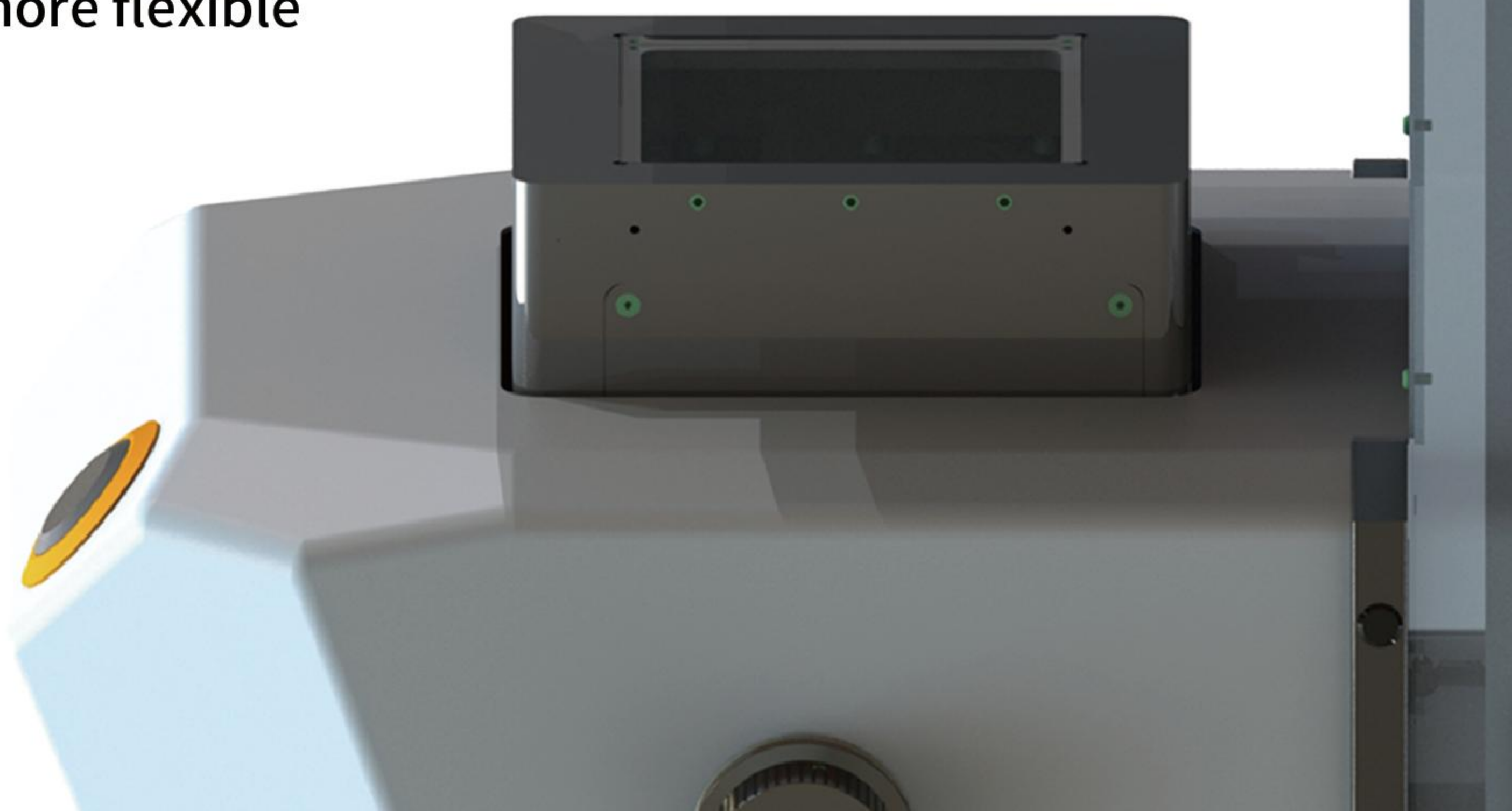
大视野 (100mm)
Large field of vision (96mm)

组合型复合光源

Combined Hybrid Lighting System

双相机，双视野，测量工件更灵活

Double cameras, double vision, more flexible measurement of workpiece



拼接款一键闪测仪

Splicing measuring instrument

一键闪测仪拼接款，可对大物件进行多方位拍摄，继而拼接成像，实现高精度检测。

One button measuring instrument splicing model can take pictures of large objects in multiple directions, and then image splicing to achieve high-precision detection.

重复精度

Repeatability Accuracy

高精度拼接模式： $\pm 2+L/50\mu\text{m}$
High precision splicing mode: $\pm 2+L/50\mu\text{m}$

广视野拼接模式： $\pm 4+L/50\mu\text{m}$
Wide field splicing mode: $\pm 4+L/50\mu\text{m}$



最大视野可支持
Maximum field of view can support
300*200mm



双远心镜头 | Dual telecentric lens

搭载了1200万像素CMOS的双远心镜头，超高清成像。
Equipped with a 12 megapixel CMOS dual telephoto lens for ultra high definition imaging.



可移动载物台 | Movable stage

配置可移动载物台，实现拼接成像，测量大物件无压力。
Configure a movable stage to achieve seamless imaging and measurement of large objects without pressure.



UI界面优化 | UI interface optimization

系统沿用简约UI界面，增添功能指引，便于操作。
The system adopts a simple UI interface and adds functional guidance for easy operation.

测量快速

Fast measurement

为传统机型2倍的测量数据速度

Twice the measurement data speed of traditional models



设定便捷

Convenient setting

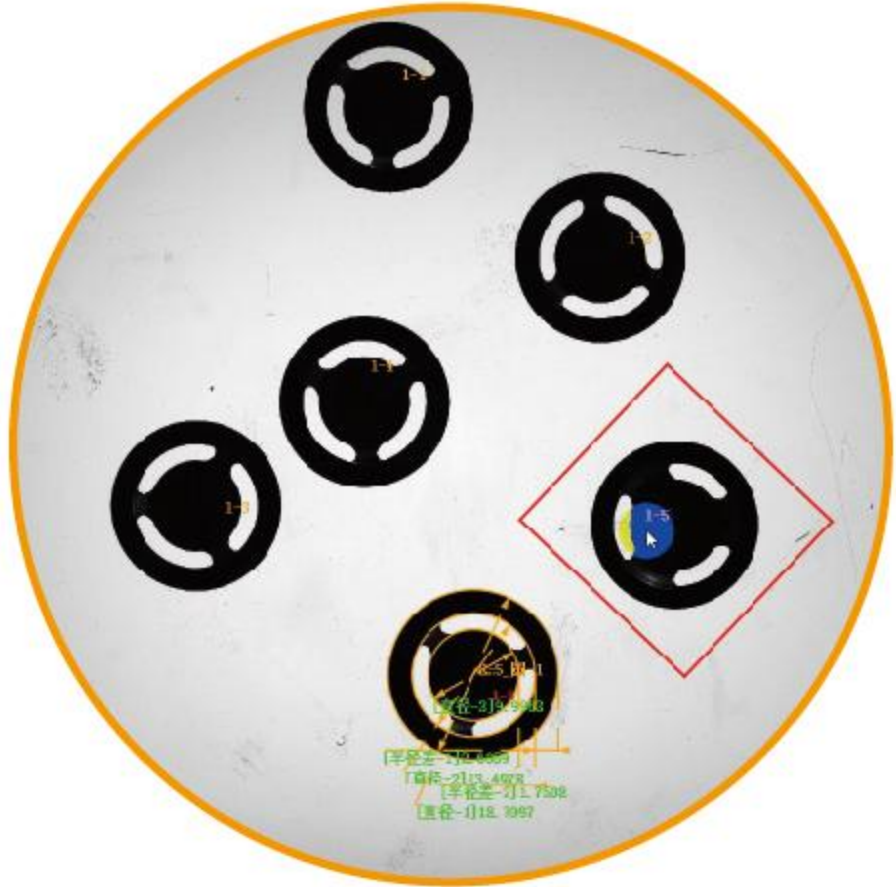
便捷的设定，任何人都能轻松操作

Convenient setting, easy operation for anyone

分组及具象化的菜单图标设计便于理解功能并设定

Grouping and representational menu icons are designed to facilitate understanding and setting of functions





双2000万像素相机

Dual 20MP Cameras

大小视野皆2000万像素, 搭配最新的边缘检测

测算法, 实现表面光自动测量

The system features two 20MP cameras covering both wide and narrow fields of view. By incorporating the latest edge detection algorithms, it achieves automated surface light measurement.



可调节光源

Adjustable Lighting System

内置亮度感应器, 自动调节灯光达到最佳视

觉效果

Adjustable Lighting System

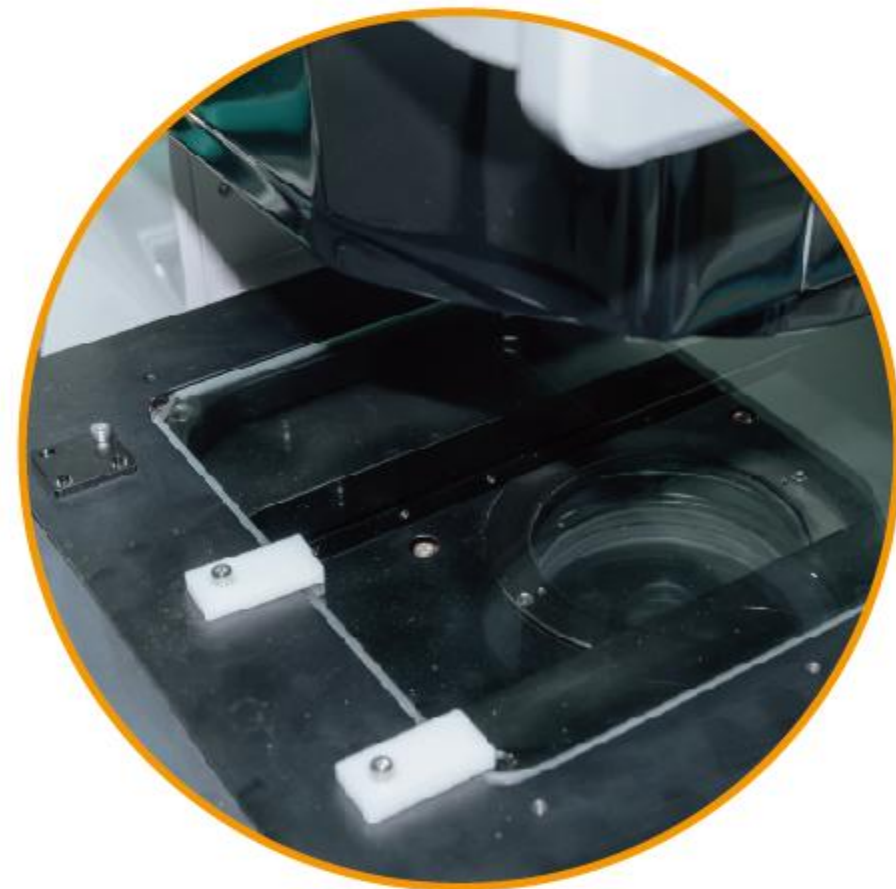


双倍率、高远心度双远心镜头

Dual-Magnification, High-Telecentricity, Double Telecentric Lens

载低畸变, 有段差及边缘位置视野, 图形不变形, 无需担心测量位置

The system features ultra-low distortion performance, maintaining image integrity even for stepped surfaces and edge positions. Measurement position accuracy is consistently guaranteed.



稳定大型载物移动平台

Stable Large-Stage Motion Platform

载物移动平台可测范围可达300*200*75 (mm)

Measuring range: 300×200×75mm (L×W×H)



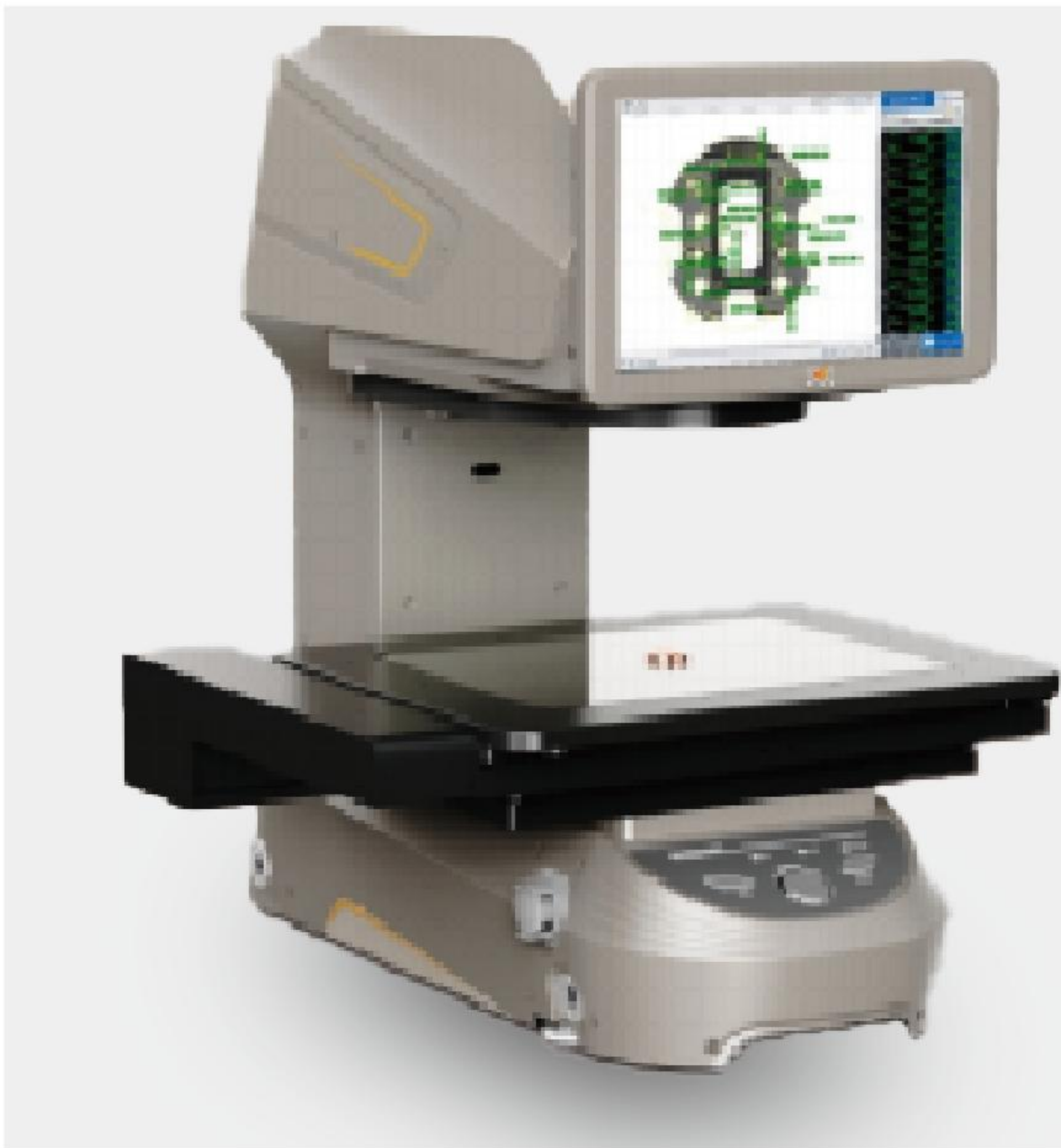
一键快速测量

One click quick measurement

放置后一键可完成测量

After placement, one click measurement can be completed





台式设计

Desktop Design Solution

小巧的桌上型架构，搬运方便，能够适应各种环境，适合产线线边尺寸快速测量

Features a compact benchtop structure that is easy to move and adapts to various environments, suitable for dimensional inspection alongside production lines.

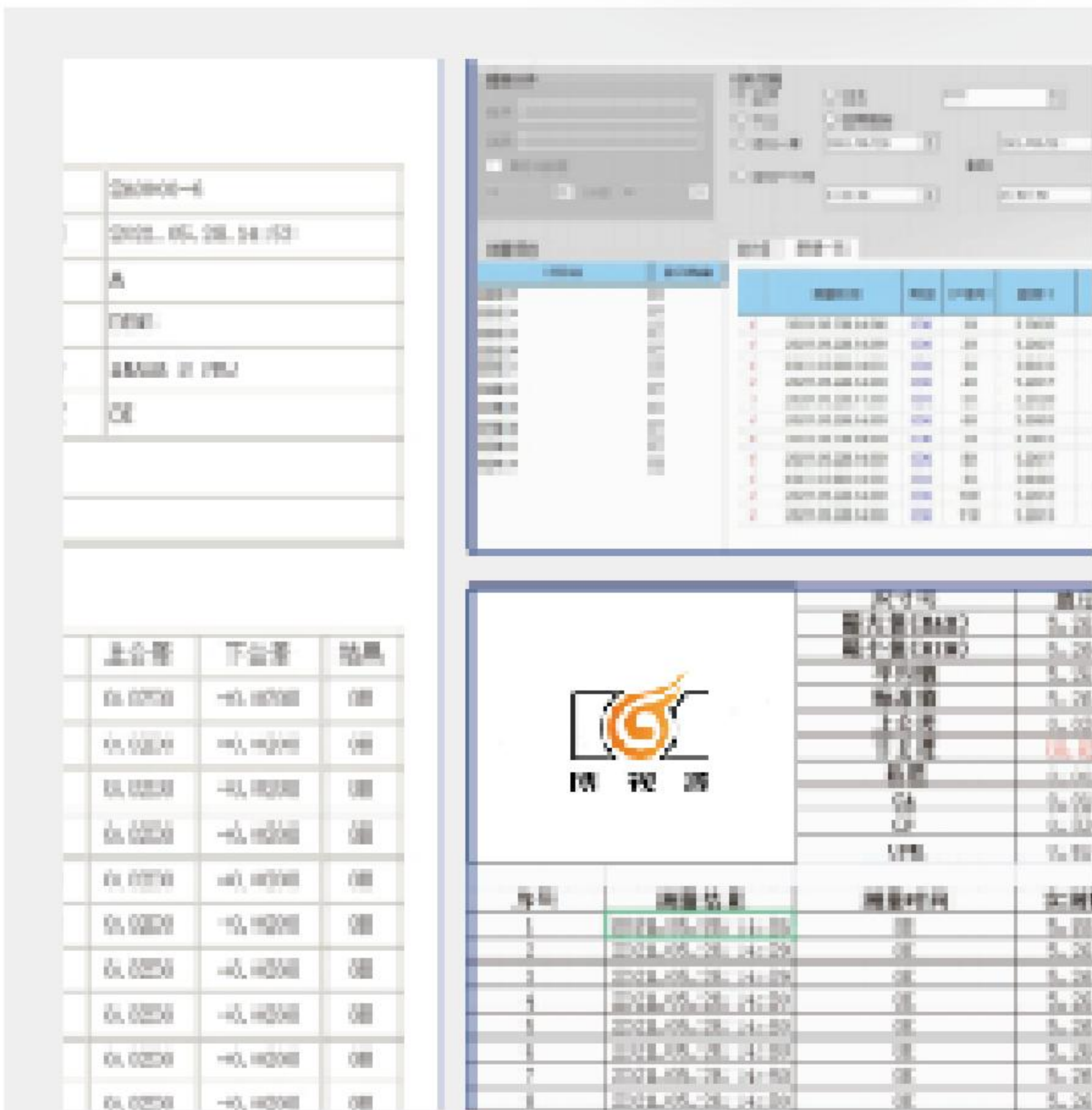


一键操作快速出数据

One-Touch Operation for Instant Results

通过定位功能 自动识别产品位置及方向，产品随机放置在平台上，仅按一键即可测量，也可搭配客户IO信号实现全自动测量。

The system automatically identifies product position and orientation through its positioning function. Simply place the product randomly on the platform and press one button to initiate measurement. It can also integrate with customer IO signals for fully automated measurement.



报告输出形式多样

可输出至客户指定数据库

Flexible Report Output Options

检测报告及统计报告都可通过一键完成制作，无需数据传输及电脑输入等繁琐的过程，支持多种格式。也可自动上传至客户数据管理系统。

The system exports data in multiple formats to specified databases. It generates inspection/statistical reports with one button press, removing manual data transfer needs. Reports can auto-upload to client DMS.

产品规格

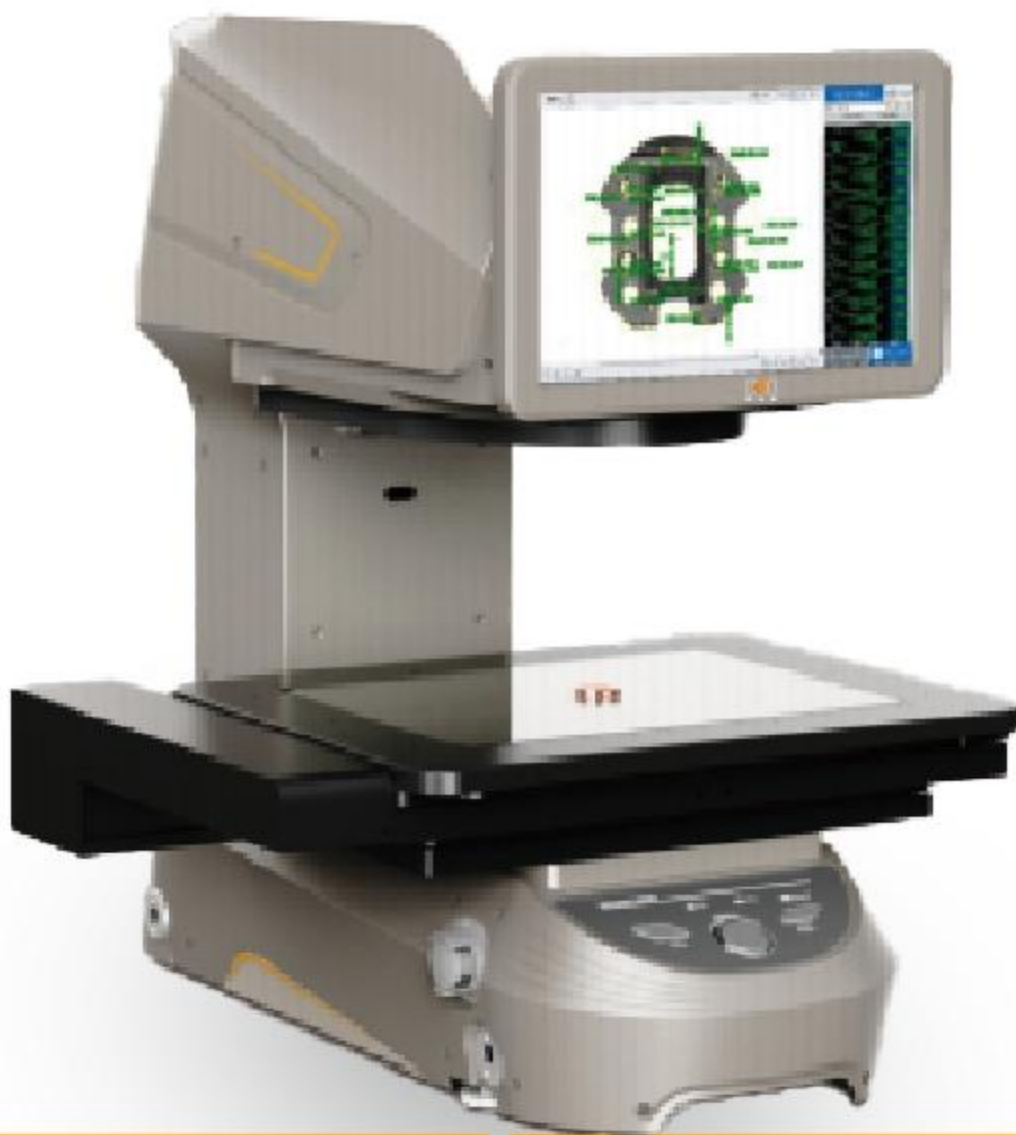
Product Specifications



设备型号 Module number		BSY-VD25/100
测量范围 Measurement Specifications	广视野模式 Wide-FOV Mode	φ100
	高精度模式 High precision mode	25x18mm
	测量高度 Gauge altitude	50mm
镜头视野范围 Lens Fov	高精度测量模式 High-Accuracy Measurement Mode	25x18mm
	广视野测量模式 Wide-FOV Measurement Mode	φ100
重复精度 Repeatability	高精度测量模式 High-Accuracy Measurement Mode	± 2 μm
	广视野测量模式 Wide-FOV Measurement Mode	± 4 μm
最小显示单位 Minimum Display Unit		0.1 μm
测量精度 Measurement Accuracy	高精度测量模式 High-Accuracy Measurement Mode	± 2 μm
	广视野测量模式 Wide-FOV Measurement Mode	± 4 μm
仪器重量 Instrument Weight		55KG
光学系统 Optical System	相机 Camera	1" 2000万 黑白相机 ,1" 1200万 黑白相机20MP 1" Monochrome Camera & 1" 12MP Monochrome Camera
	镜头 Lens	双倍率双侧远心光学镜头 Dual-Magnification Bilateral Telecentric Optical Lens
	表面光 Surface LightLens	两环可升降光源 Dual-Ring Adjustable Height Light Source
	轮廓光 Contour LightLens	绿色平行底光 Green Parallel Backlight
工作台承重 Stage Load Capacity		5KG
量测系统 Measurement System		BSYVision
供应电源 Power Supply		220V±10% ,50Hz
工作环境 Operating Environment		温度Temperature:20±3 °C; 湿度 Humidity: :30 -80%(无结凝) 振动Vibration: <0.002g 15HZ
外型尺寸 (L*W*H)mm		330×480×730mm

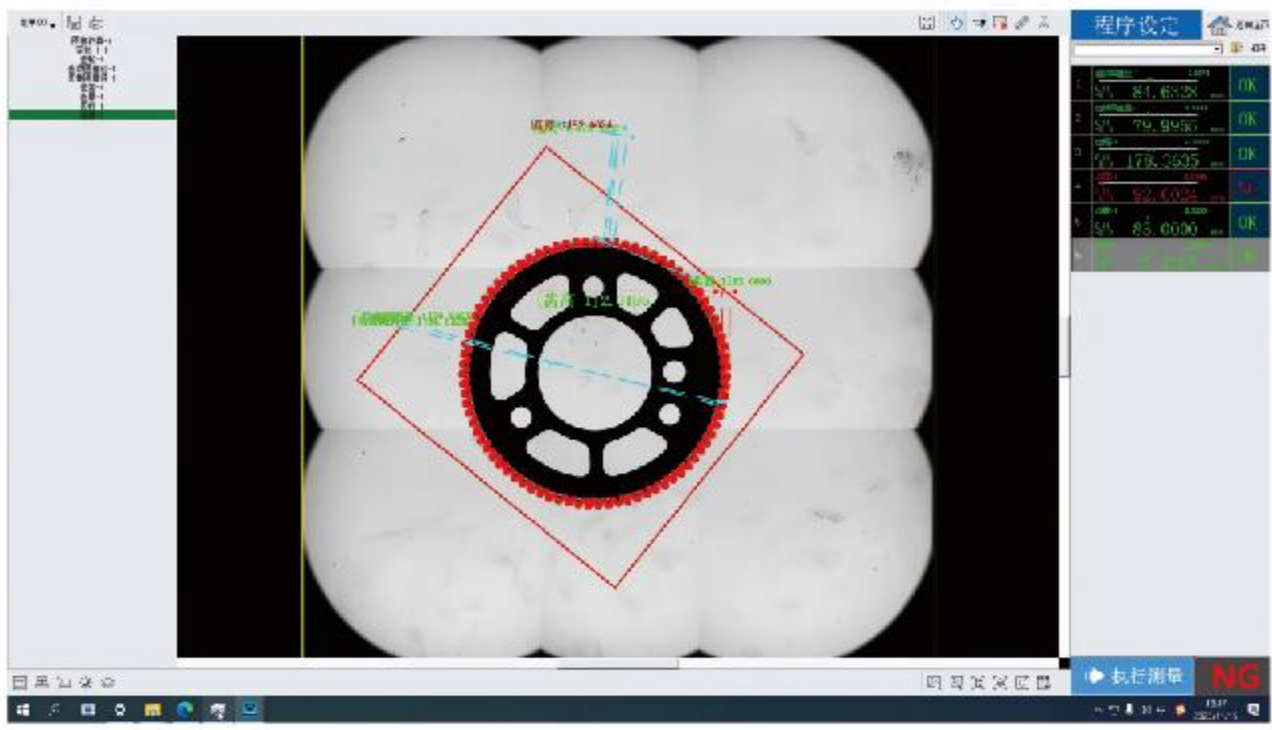
产品规格

Product Specifications



设备型号 Module number				BSY-VD25/100	BSY-VD25/100
测量范围 Measurement Specifications	广视野模式 Wide-FOV Mode		单次成像 Single imaging	26*18mm	
			拼接成像 Splicing imaging	100*100mm	200*120mm
	高精度模式 High precision mode		单次成像 Single imaging	φ100	φ100
			拼接成像 Splicing imaging	200*200mm	300*200mm
	测量高度 Gauge altitude			75mm	75mm
镜头视野范围 Lens Fov	广视野模式 Wide-FOV Mode	广视野模式 Wide-FOV Mode	广视野模式 Wide-FOV Mode	26mm X 18mm	
	高精度模式 High precision mode	高精度模式 High precision mode	高精度模式 High precision mode	φ100	
重复精度 Repeatability	广视野模式 Wide-FOV Mode	广视野模式 Wide-FOV Mode	广视野模式 Wide-FOV Mode	±2μm	
	高精度模式 High precision mode	高精度模式 High precision mode	高精度模式 High precision mode	±4μm	
最小显示单位 Minimum Display Unit				0.1μm	
测量精度 Measurement Accuracy	广视野模式 Wide-FOV Mode	单次成像 Single imaging		±2μm	
		拼接成像 Splicing imaging		±2+L/50μm	±2+L/50μm
	高精度模式 High precision mode	单次成像 Single imaging	单次成像 Single imaging	±4 μm	
		拼接成像 Splicing imaging	拼接成像 Splicing imaging	±4+L/50μm	±4+L/50μm
仪器重量 Instrument Weight				45KG	50KG
光学系统 Optical System		相机 Camera		1" 2000万 黑白相机 ,1" 1200万 黑白相机20MP 1" Monochrome Camera & 1" 12MP Monochrome Camera	
		镜头 Lens		双倍率双侧远心光学镜头 Dual-Magnification Bilateral Telecentric Optical Lens	
		表面光 Surface LightLens		两环可升降光源 Dual-Ring Adjustable Height Light Source	
		轮廓光 Contour LightLens		绿色平行底光 Green Parallel Backlight	
工作台承重 Stage Load Capacity				5KG	
量测系统 Measurement System				BSYVision	
供应电源 Power Supply				220V±10% ,50Hz	
工作环境 Operating Environment				温度Temperature:20±3℃; 湿度 Humidity:30 -80%(无结凝) 振动Vibration: <0.002g 15HZ	
外型尺寸 (L*W*H)mm				600*410*650mm	600*510*650mm

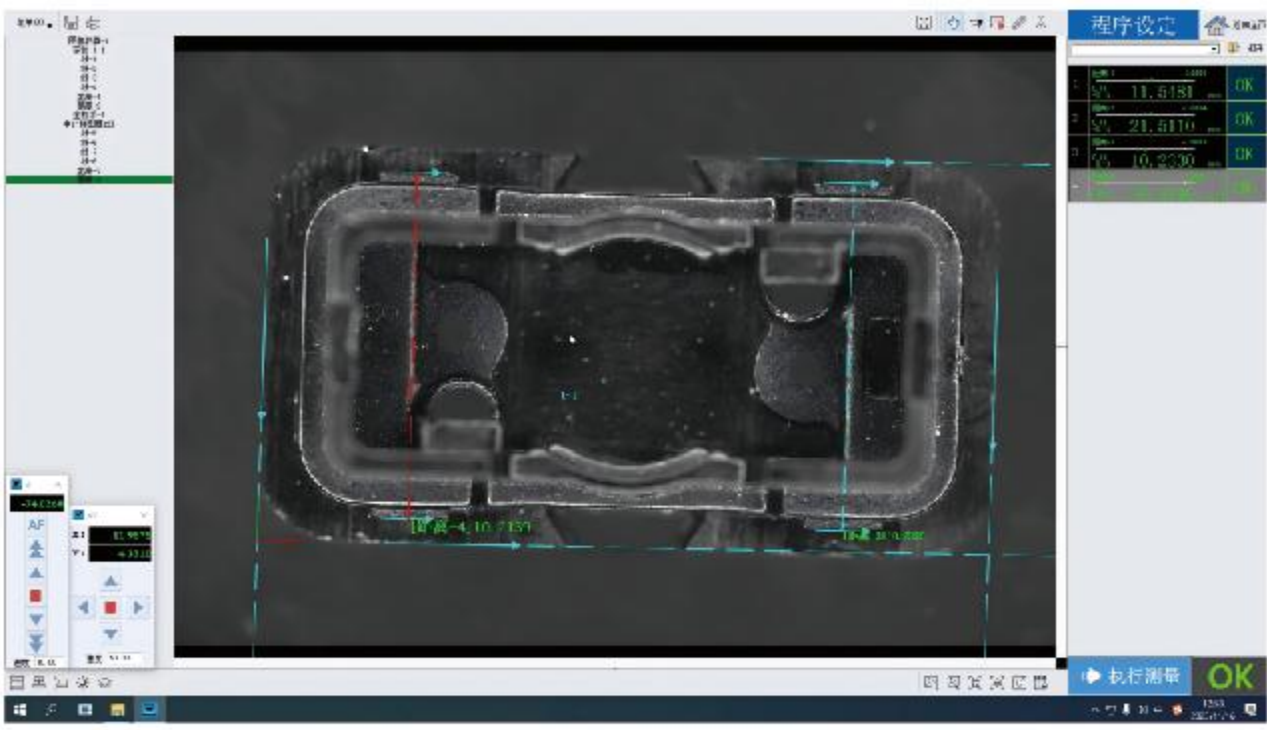
应用案例 | Application Cases



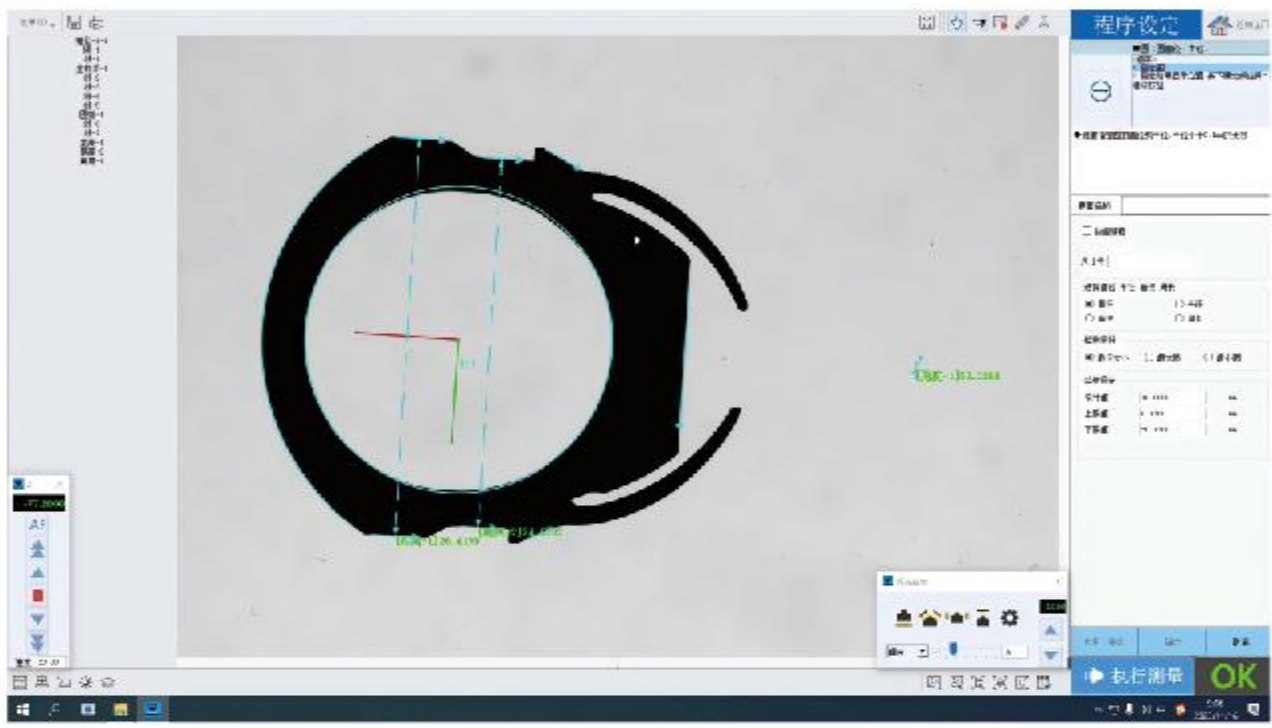
广视野模式拼接成像-齿轮零件
Image Stitching-Gear Parts



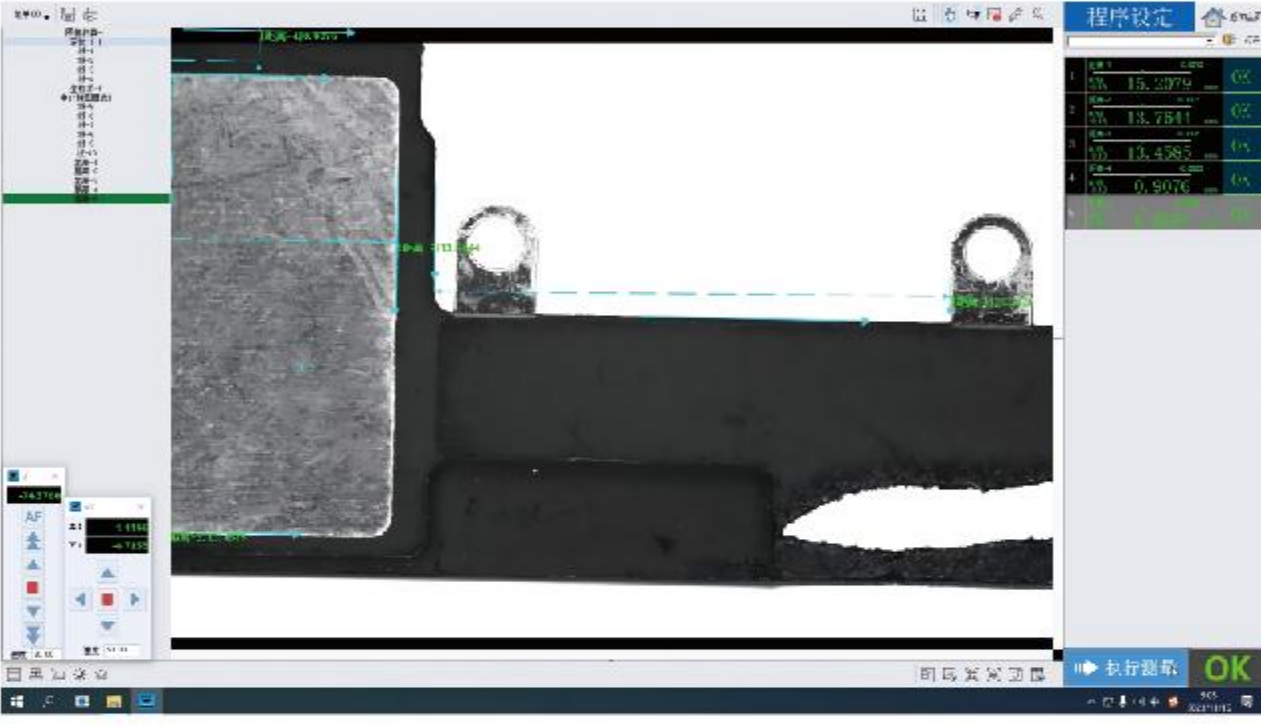
广视野模式拼接成像-手机中框
Wide-FOV Mode Image Stitching-Phone Midframes



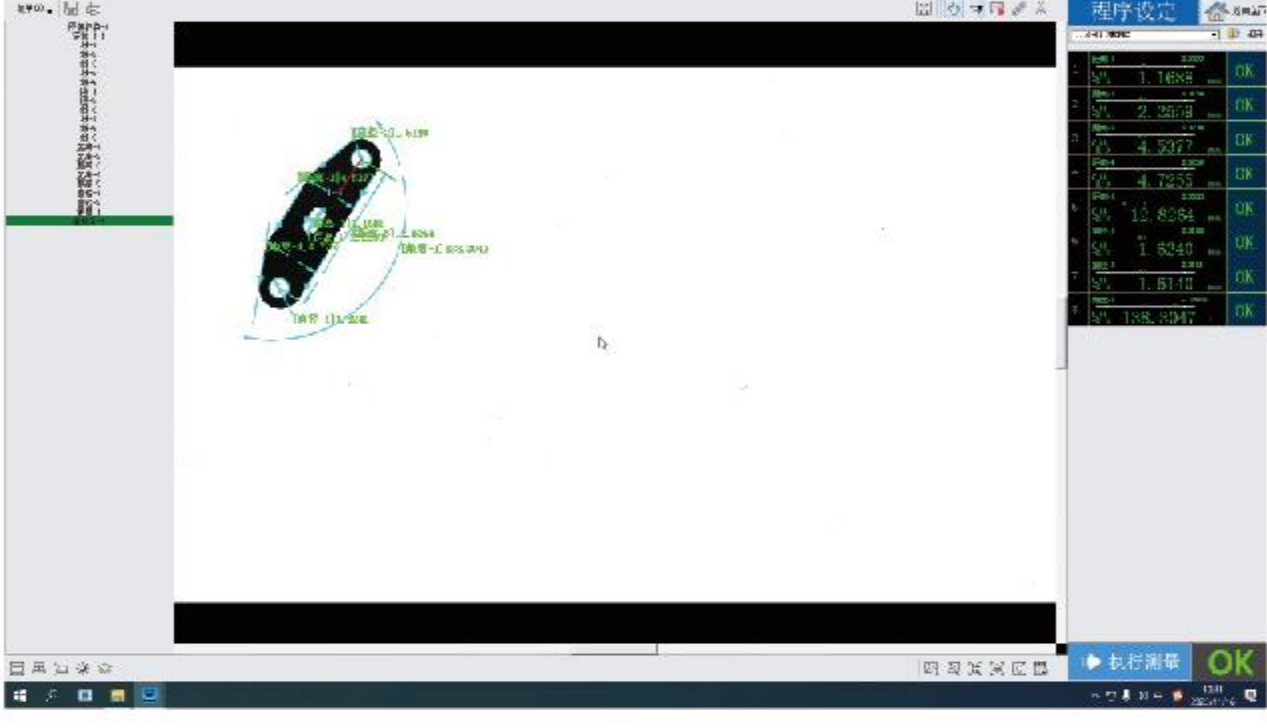
高精度模式拼接成像-塑料盖
High-Accuracy Mode Image Stitching-Plastic Covers



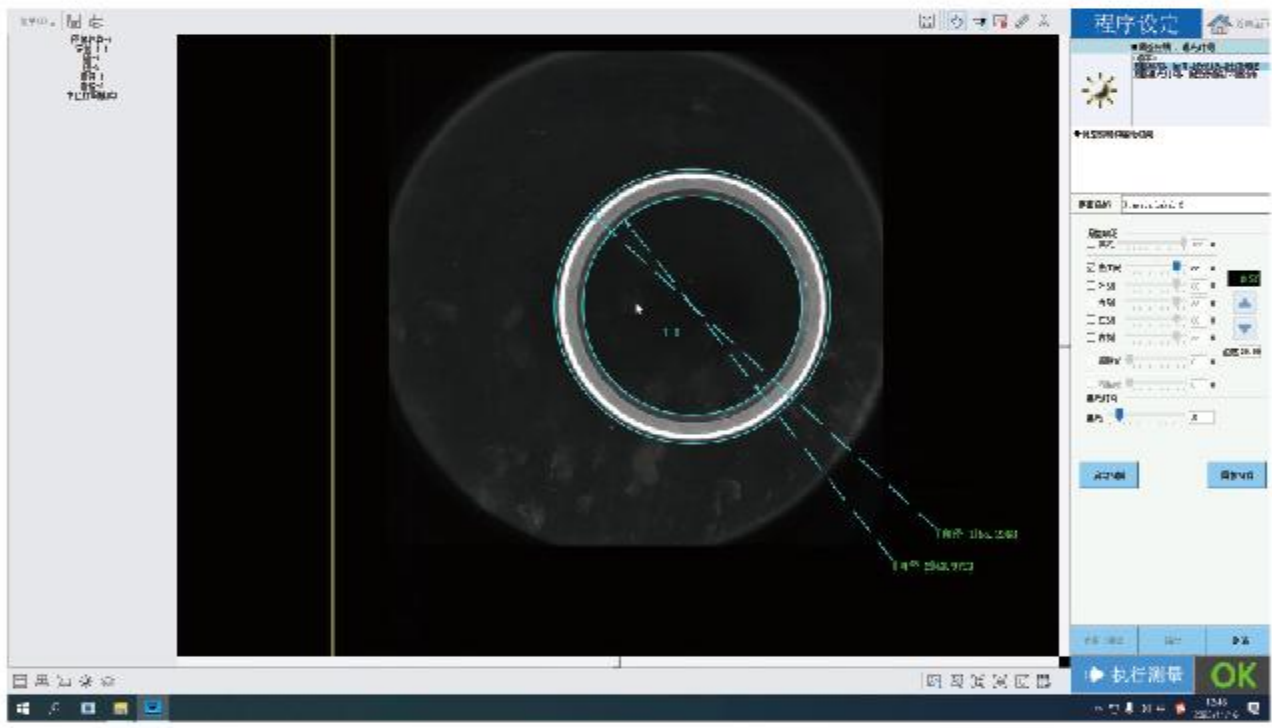
单视野成像-塑料配件
Single-FOV Imaging-Plastic Covers



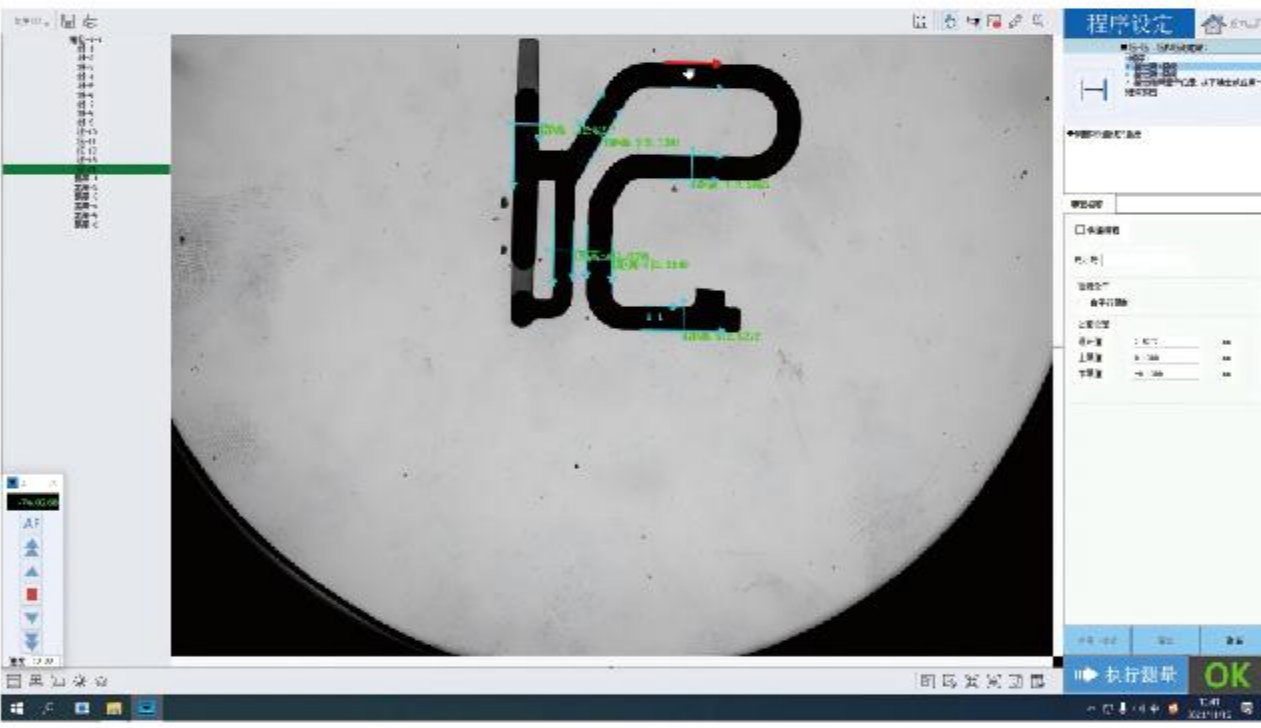
高精度模式拼接成像-3C电子配件
High-Accuracy Mode Image Stitching-3C Electronic Components



单视野成像-金属配件
Single-FOV Imaging-Metal Components



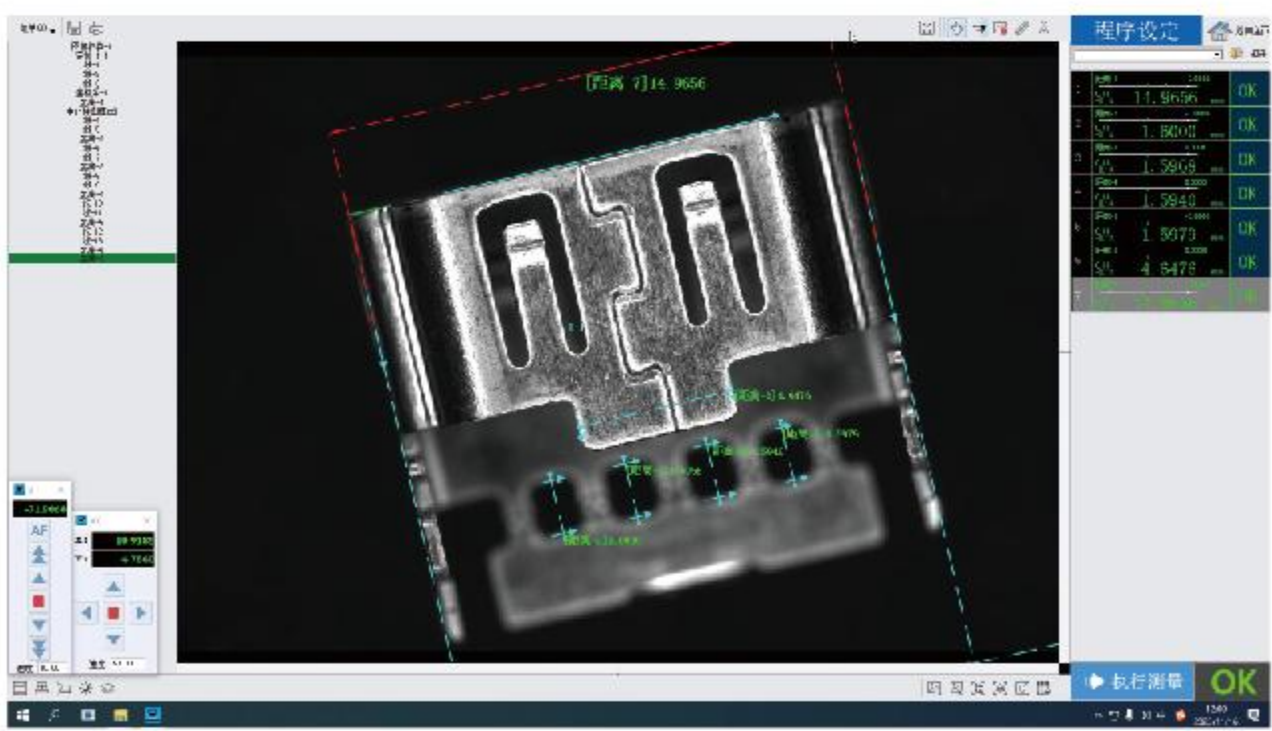
单视野成像-塑料圆环
Single-FOV Imaging-Plastic Rings



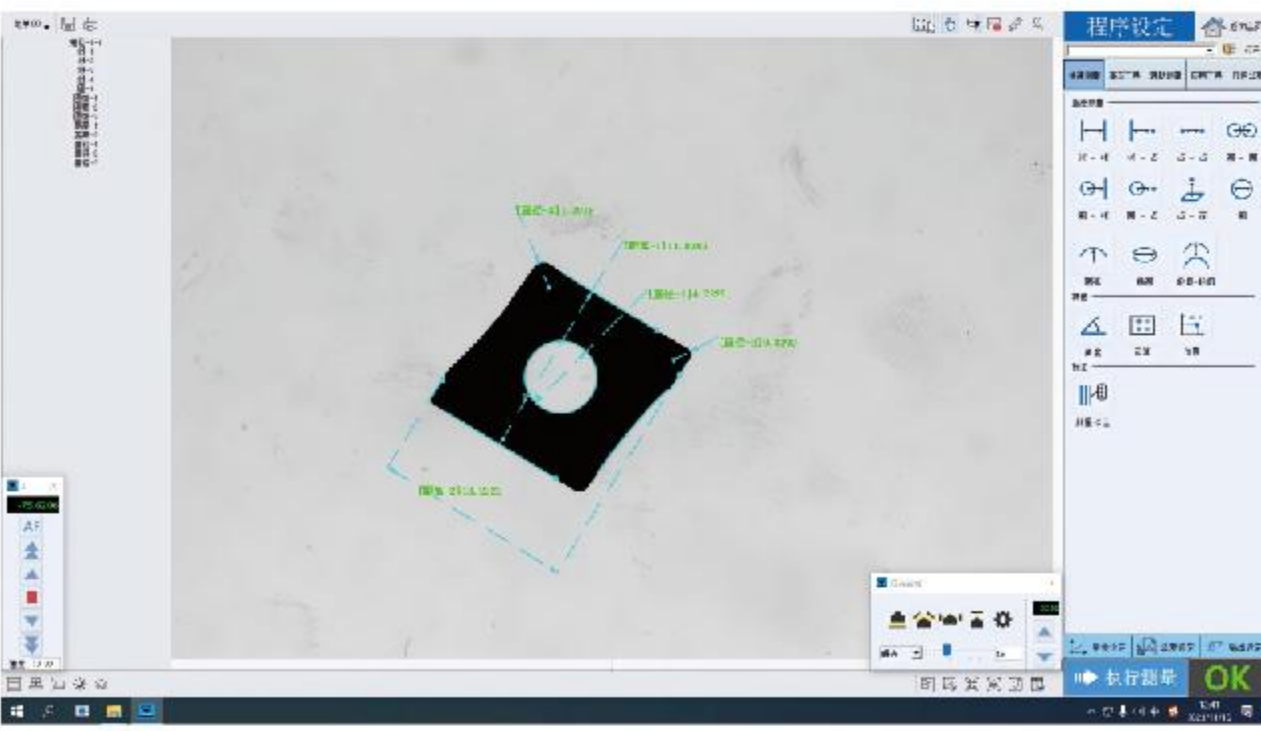
单视野成像-柔性板
Single-shot Imaging-Flexible Circuits



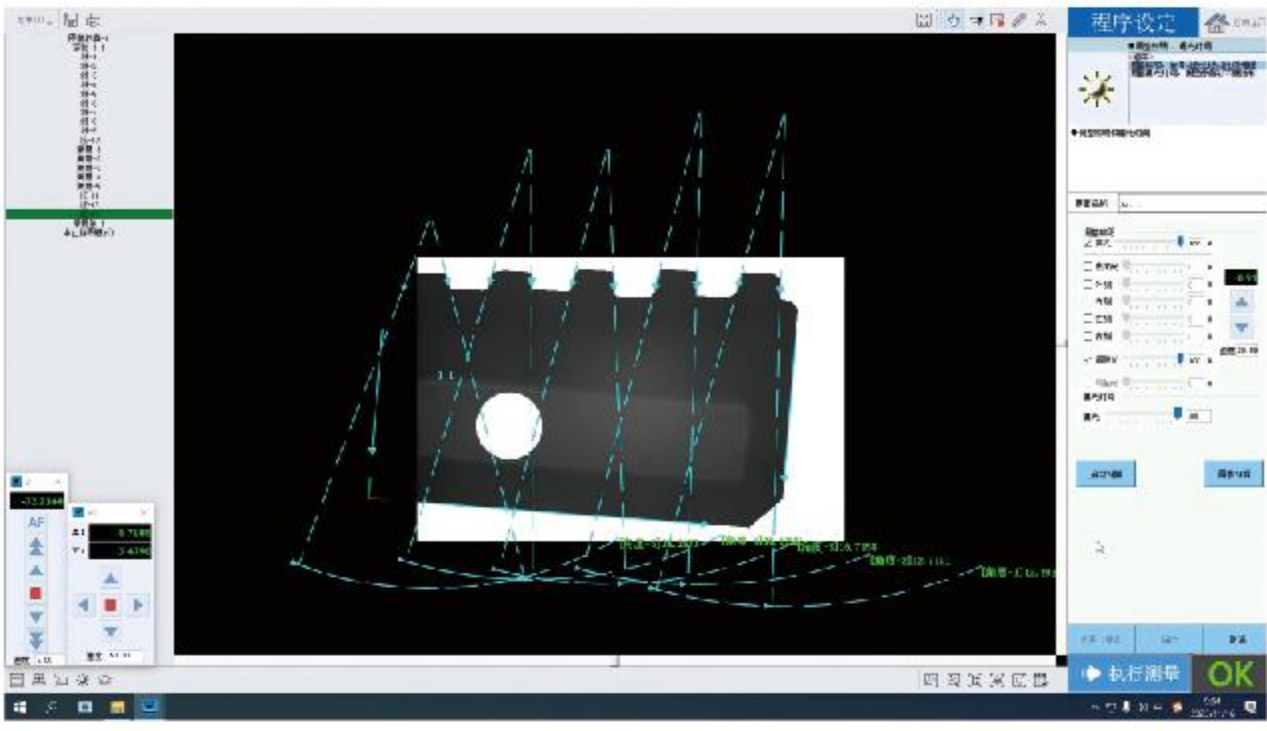
广视野模式拼接成像-PCB面板
Wide-FOV Mode Image Stitching-PCB Panels



高精度模式拼接成像-塑料配件
High-Accuracy Mode Image Stitching-Plastic Covers



单视野成像-硬质合金刀具
Single-FOV Imaging-Carbide Cutting Tools



高精度模式拼接成像-硬质合金刀具
High-Accuracy Mode Image Stitching-Carbide Cutting Tools

合作客户(部分)

Partner(part)



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