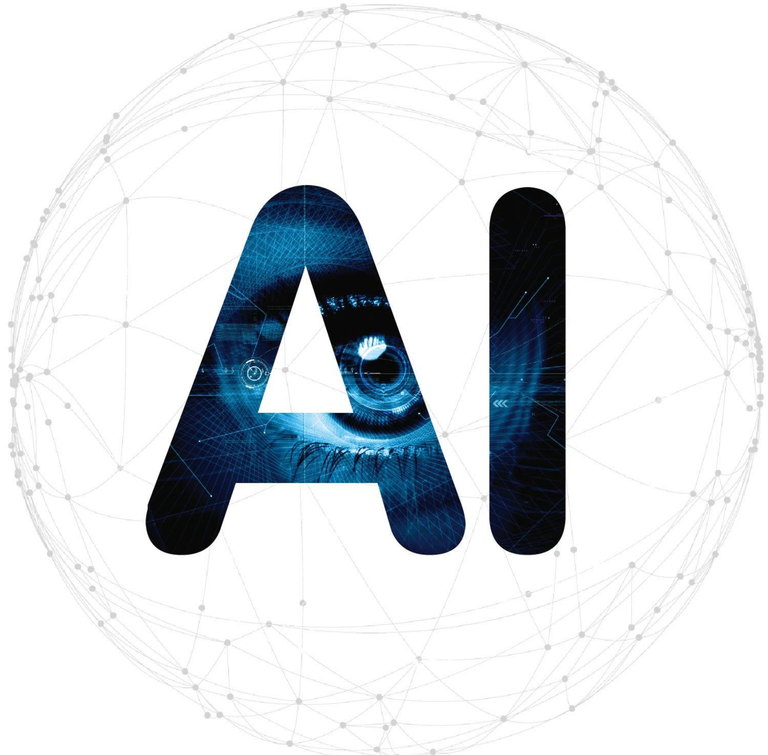
科亿科技 KEYETECH | 让AI落地

遇见AI，外观缺陷检测定制解决方案

Customized Solution for Appearance Defect Detection



AI视觉检测设备

AI Visual Inspection Equipment

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*因公司产品技术不断革新，本画册所列示的产品若涉及外观或性能等升级的，以实际升级后的产品性能为准。

Due to continuous innovation of our product technologies and in case of any upgrading of appearance or performance if the products listed in the catalogue, the actual upgraded product performances shall prevail.

2023年6月

公司简介
Company Profile

安徽省科亿信息科技有限公司（以下简称：科亿科技）成立于2011年，是一家专注于将 AI 技术应用于工业领域的国家级高新技术企业，为各细分行业提供视觉成像、算法算力及自动控制的AI系统解决方案。

科亿科技依托于中国科学技术大学模式识别重点实验室，拥有一支高水平博士研发团队，涵盖光、机、电、算、软全技术链，通过在包装容器、3C、新能源、医药、纺织、食品等领域的项目实践，打造了KVS-AI软硬件平台，让AI技术切实转换成真正的生产力。

合作伙伴 Partners **1000+**

知识产权 Intellectual property rights **30+**

科研团队 Scientific research teams **40+**

Anhui Key Information Technology Co., Ltd. (hereinafter referred to as Key Technology) was established in 2011. It is a national high-tech enterprise focusing on applying AI technology to the industrial field. Provide visual imaging, algorithm computing power and automatic control AI system solutions for various sub-industries.

Key Technology relies on the Key Laboratory of Pattern Recognition of the University of Science and Technology of China, and has a high-level doctoral R&D team covering the entire technology chain of optics, mechanics, electricity, computing and software. Through the project practice in the fields of packaging containers, 3C, medicine, textile, food, etc., the KVS-AI software and hardware platform has been created, so that AI technology can be transformed into real productivity.

企业荣誉 Corporate honors **10+**

国家高新技术企业
National high-tech enterprise

科技型中小企业
Technology-based SMEs

2020 年安徽省首台套重大技术装备
The first set of major technical equipment in Anhui Province in 2020

2020 年安徽省战略性新兴产业基地-智能语音基地
Anhui Strategic Emerging Industry Base in 2020-Intelligent Voice Base

合肥市人工智能重点企业
Key Enterprises of Artificial Intelligence in Hefei

合肥市高成长种子企业
Hefei High Growth Seed Enterprise

合肥市大数据企业
Hefei Big Data Enterprise

2021年度合肥高新区瞪羚培育企业
2021 Hefei High-tech Zone Gazelle Cultivation Enterprise

华为技术 ISV 伙伴
Huawei Technology ISV Partner

AI Visual Inspection Equipment
AI视觉检测设备

科亿科技AI图像视觉检测定制解决方案

Key Tech AI image visual inspection customized solutions

灌装类饮品检测（瓶体、空盖、合盖、液位、杂质、标签）
Filling beverage detection (bottle body, empty cover, closed cover, liquid level, impurities, labels)

瓶盖检测　Bottle cap inspection

瓶体检测　Bottle inspection

瓶胚检测　PET preform inspection

杯装检测　Cup inspection

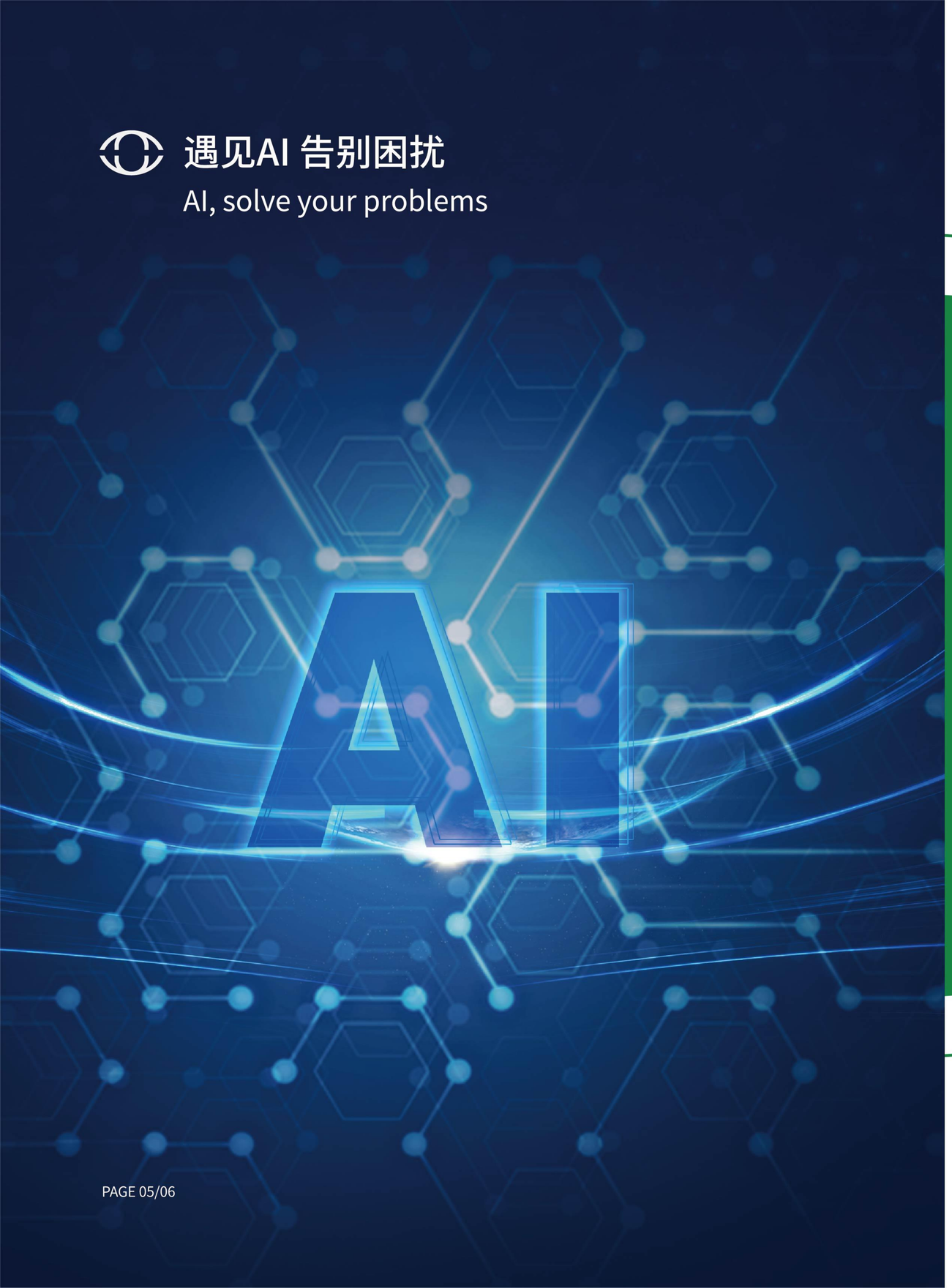
医药包装检测　Pharmaceutical packaging inspection

喷码检测（缺失、模糊、未喷码）　Code detection (missing, fuzzy, uncoded)

其他行业检测：纺织、工业互联网、薄膜、纸质包装等
Other industry testing: textile, industrial Internet, film, paper packaging

遇见AI 告别困扰

AI, solve your problems



PAGE 05/06

KEYETECH

AI深度学习，精准定位差异

AI deep learning, accurate positioning of differences

基于深度学习的AI算法，突破传统检测技术难点，采集产品缺陷样本，自主学习训练，多维度辨识样品间的细小差异。通过采集少量样本训练完善算法网络模型，使其具有“类脑”智能，达到所见即所得的效果。

The AI algorithm based on deep learning breaks through the difficulties of traditional detection technology, collects product defect samples, self-learning and training, and multi-dimensionally identifies small differences between samples. By collecting a small number of samples to train and improve the algorithm network model, it has "brain-like" intelligence and achieves the effect of what you see is what you get.

智能“芯”，洞悉真相

Intelligence GPU, discover the truth

定制化LED光源、工业相机，搭载智“芯”处理平台，还原产品真实本色，产品缺陷一目了然。融合光、机、电、算、软，架构出集成度更高、运算更快、处理能力更强的AI平台。

Customized LED light source, industrial camera, equipped with intelligent "core" processing platform, restore the true nature of the product, and product defects are clear at a glance. Integrate optical, mechanical, electrical, computing, and software to build an AI platform with higher integration, faster computing, and stronger processing capabilities.

赋能行业，智慧升级

Empower the industries, intelligence upgrade

特有的数据增强功能，少量样本模拟海量数据，构建自有AI数据库，适应客户产品升级需求，赋能企业数字化转型升级，提质增效。

The unique data enhancement function, a small number of samples simulates massive data, builds its own AI database, adapts to customer product upgrade needs, empowers enterprises to digitally transform and upgrade, and improves quality and efficiency.

智能管家 一键“智”管

Smart housekeeper

用户管理 User management

故障预测 Failure prediction

状态监控 Status monitoring

数据分析 Data analysis

设备管理 Device management

发现问题产线 Find the problem line

数据采集 Data collection

数据共享 Data sharing

生产统计 Production Statistics

运程调试 Debugging

权限管理 Authority management

针对性的维护设备 Targeted maintenance equipment

利用科亿科技中控管理平台，实现企业内部各产线互联互通，各工位生产动态实时采集和状态的实时监管，及时发现企业各生产线问题，并及时对设备进行维护和实施解决方案。

Use the central control management platform of Keyi Technology to realize the interconnection of various production lines within the enterprise, real-time collection of production dynamics at each station and real-time monitoring of status, timely discovery of problems in each production line of the enterprise, and timely maintenance of equipment and implementation of solutions.

AI Visual Inspection Equipment

AI视觉检测设备

灌装前段
缺陷检测

灌装中段
缺陷检测

灌装后段
缺陷检测

灌装线缺陷检测解决方案
Filling Line Defect Detection Solutions

灌装线缺陷检测由理料系统、视觉系统、软件系统、中央控制系统、执行系统组成。检测物通过理料系统，对其进行整理，确保检测物朝向一致，分布均匀，进入视觉系统，对检测物进行360°全方位拍摄图像，并将图像数据传到软件系统，将检测物进行识别分类，向执行系统下达剔除、分类指令。

Filling line defect detection consists of material handling system, vision system, software system, central control system and execution system. The detected objects are sorted through the material sorting system to ensure that the detected objects are oriented in the same direction and evenly distributed, and then enter the vision system to take 360° images of the detected objects, and transmit the image data to the software system to identify the detected objects. Sorting, issuing rejection and sorting instructions to the execution system.

灌装线检测流程

Filling line inspection process

1、空瓶检测 Empty bottle detection

· 瓶口、瓶颈、瓶身、瓶底破损及裂纹，缺陷面积
Bottle mouth, neck, bottle body, bottle bottom damage and cracks, defect area
· 瓶口内外径尺寸和椭圆度，直径差
The inner and outer diameter of the bottle mouth and the ovality, the diameter difference
· 高低瓶，高度差等
High and low bottles, height difference, etc.

2、瓶盖及瓶盖内件检测
Bottle caps and bottle cap internals inspection

· 瓶盖内件有无、变形和破损
The presence, deformation and damage of the inner parts of the bottle cap

3、液位及封盖检测 Liquid level and cap detection

· 可设置标准液位，检测出偏差
Standard liquid level can be set to detect deviation
· 未盖瓶盖、瓶盖歪斜
No cap, crooked cap
· 划痕、脏污、厚薄、孔洞等
Scratches, dirt, thickness, holes, etc.

4、杂质检测 Impurity detection

· 蚊、蝇等生物及其躯干
Small creatures such as mosquitoes and flies
·毛发、有色丝状物沉淀
Precipitation of hair, colored filaments
·悬浮物、黑色、白色、有色杂质等
Suspended solids, black, white, colored impurities, etc.

5、瓶体贴标喷码检测 Bottle labeling and coding detection

· 防伪标有无 With or without anti-counterfeiting labels
· 喷码有无 With or without coding
· 皱标，标签长宽变化 Wrinkled label, label length and width change
· 歪标，标签两侧高差等 Crooked label, height difference on both sides of label, etc.

6、空盒外观及贴标检测
Empty box appearance and labeling inspection

· 礼盒表面破损、变形、划痕，长度
The surface of the gift box is damaged, deformed, scratched, and the length
· 空盒贴防伪标等
Empty boxes with anti-counterfeiting labels, etc.

7、装盒后外观及礼盒喷码检测
Appearance and gift box coding inspection

· 礼盒外观检测
Gift box appearance inspection
· 礼盒激光喷码（日期,生产批次），包含喷码有无、变形、歪斜等
Gift box laser coding (date, production batch), including the presence or absence of coding, deformation, skew, etc.

8、装箱后外观及纸箱贴标喷码检测
Appearance and carton labeling and coding detection after packing

· 标识 Logo
· 纸箱外观变形、封口胶歪斜、飞翅、短缺
The appearance of the carton is deformed, the sealing glue is skewed, and the shortage
· 纸箱贴标 Carton labeling
· 纸箱油墨喷码等 Carton ink jet coding, etc.

全自动瓶盖检测机
Automatic Closure Inspection Machine >>

检测缺陷 Sample:

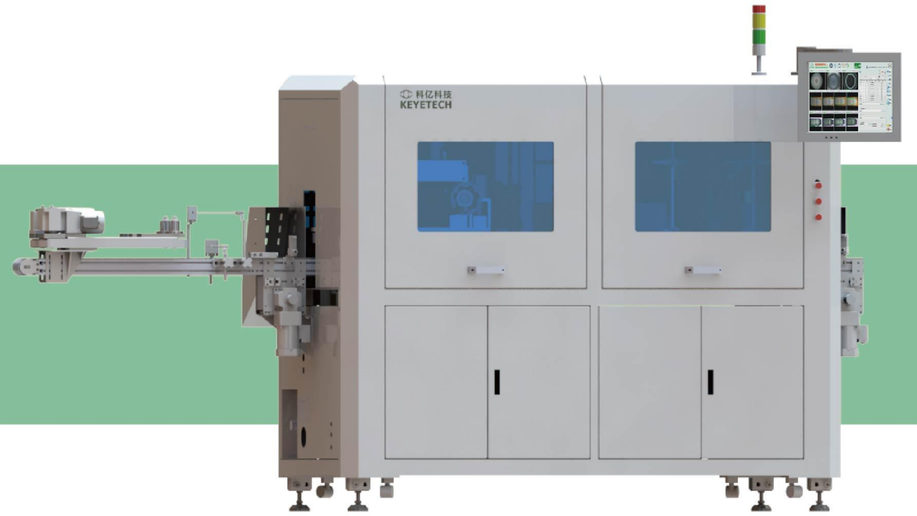
瓶盖毛刺 Bottle cap burr | 瓶盖花瓣破损 Damaged | 瓶盖凹面黑点 Black spot | 瓶盖模号 Die number | 凹面缺口 Concave notch | 毛刺批锋 Burr | 混型 Hybrid

侧面缺口 Side notch | 侧面黑点 Side black spot | 侧面飞边 Side flash | 组合不良 Bad combination | 拉环断裂 Broken ring

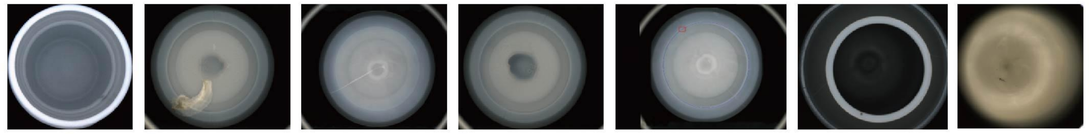
技术参数 Technical parameters:

检测标准 Inspect	黑点、色差、杂质、螺纹、压环、断环、缺口、批锋、毛刺、变形、尺寸、垫片、内塞、模号等 Black spot, color difference, impurity, thread, pressing ring, broken ring, notch, batch edge, burr, flash, deformation, dimension, gasket, inner plug, die number, etc.		
检测区域 Detection area	瓶盖凹面、顶面、侧面 Bottle cap concave,top,side		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	2500个/分钟 2500pcs/min	功率 Power	5000-7000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸（包含理盖机） Size	3700*1300*1785mm	重量 Weight	350kg

全自动瓶体检测机
Automatic Bottle Inspection Machine >>



检测缺陷 Sample:



瓶子内壁黑点 Black spot | 瓶底异物 Foreign body | 瓶底拉丝 Brushed | 瓶底厚薄不均 Uneven thickness | 瓶底合模线粗 Unsuitable bottom parting line | 瓶口黑点 Black spots on bottle | 内壁黑点 Inner wall black spot

瓶口飞边 Flash | 瓶身黑点 Bottle black spot | 瓶身油污 Oil on the bottle | 瓶身缺口 Notches | 瓶身孔洞 Hole | 瓶身厚薄不均 Bottle uneven thickness | 瓶身变形 Deformation

技术参数 Technical parameters:

检测标准 Inspect	黑点、色差、杂质、螺纹、吊环、缺口、余料、飞边、气泡、孔洞、厚薄不均、变形、尺寸、喷码、商标、模号等 Black, spots, color difference, impurities, threads, rings, notches, leftovers,flash, bubbles, holes, uneven thickness, deformation, size, inkjet, trademark, die number, etc		
检测区域 Detection area	瓶口、瓶口内壁、瓶底、瓶身 Bottle mouth,bottle bottom,bottle body		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	300个/分钟 300pcs/min	功率 Power	5000-7000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸 Size	3550*1030*1800mm	重量 Weight	350kg

全自动标签检测机
Automatic Label Inspection Machine >>

检测缺陷 Sample:

标签缺失 Missing

瓶身褶皱 Wrinkling

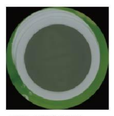
瓶身黑点 Black spot

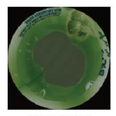
瓶身脏污 Dirty

标签破损 Broken label

二维码破损
Broken QR code

条形码错误（混标）
Wrong barcode


瓶口标签缺失
Missing bottle label


瓶口标签多
Extra labels

技术参数 Technical parameters:

检测标准 Inspect	套标、贴标、模内贴标 Trapping label, labeling, in-mold labeling		
检测区域 Detection area	瓶身各种标签 Various labels on the bottle		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	300个/分钟 300pcs/min	功率 Power	3000-5000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸（包含理盖机） Size	4550*1030*1800mm	重量 Weight	350kg

全自动瓶胚检测机
Automatic Preform Inspection Machine >>

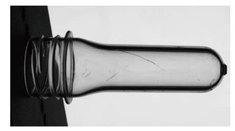
检测缺陷 Sample:

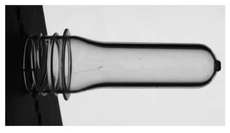
胚口缺料
Material shortage

胚口黑点、异物
Body speck

胚身气泡
Bubble

胚身黑点
Black spot


瓶身划痕
Scratch


瓶口裂纹 Crack

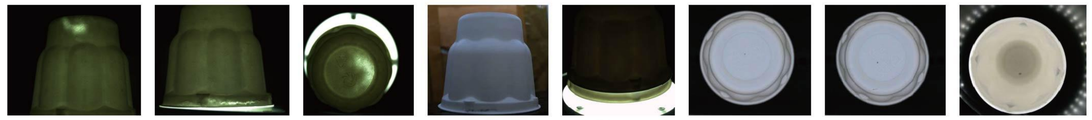
瓶身流纹 Flow mark

技术参数 Technical parameters:

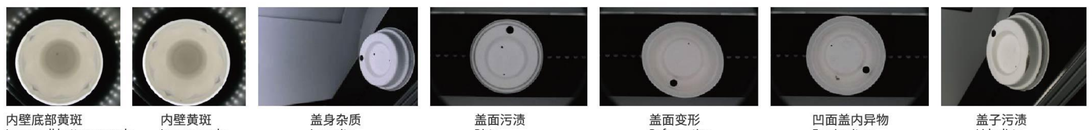
检测标准 Inspect	黑点、杂质、缺口、飞边、裂纹、划痕、流纹、孔洞、气泡、变形等 Specks, color, foreign item,screw thread, hole, crack, scratch, burr, flash, deformation,etc.		
检测区域 Detection area	胚口、支撑环、胚身、胚底瑕疵 embryo mouth, support ring, embryo body, Bottom defect		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	300个/分钟 300pcs/min	功率 Power	3000-6000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸 Size	1955*720*1877mm	重量 Weight	260kg

全自动纸塑产品检测机
Automatic Paper Plastic Products Detector >>

检测缺陷 Sample:



侧面顶部厚薄不均 Top uneven thickness
侧面厚薄不均 Side uneven thickness
顶部透光 Top light transmission
侧面脏污 Dirty sides
叠杯 Cup stacking
顶部黄斑 Top macula
顶部黑点 Top black spots
内壁底部黑点 Inner wall black spot



内壁底部黄斑 Inner wall bottom macula
内壁黄斑 Inner macula
盖身杂质 Impurity
盖面污渍 Dirty
盖面变形 Deformation
凹面盖内异物 Foreign item
盖子污渍 Lids dirty

技术参数 Technical parameters:

检测标准 Inspect	黑点、杂质、缺口、飞边、裂纹、孔洞、变形等 Specks, impurity, notches, burr, crack, hole, deformation, etc.		
检测区域 Detection area	杯口、杯内壁、杯外壁、杯外底、纸塑盖凹面、纸塑盖四周、纸塑盖顶面 Cup mouth, inner wall of cup, outer wall of cup, outer bottom of cup, concave surface of paper plastic cover, all around of paper plastic cover, top surface of paper plastic cover		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	300个/分钟 300pcs/min	功率 Power	3000-6000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸（包含理盖机） Size	2058*1710*1567mm	重量 Weight	350kg

全自动模内贴检测机
Full Automatic Die Sticking Detection Machine >>

检测缺陷 Sample:

杯壁黑点 Black spots on the cup wall
杯壁异物 Foreign item on the cup wall
杯底孔洞 Holes in the bottom of the cup
边缘缺口 Edge notch
标签黑点 Label black spot
标签破损 Damaged labels
标签气泡 Bubble
标签贴反 Reverse label
标签歪斜 Skewed labels
冲标 Label misplaced
漏贴标 Label missing

技术参数 Technical parameters:

检测标准 Inspect	贴标不良（冲标、歪标、斜标、错位、气泡、褶皱）、黑点、杂质、缺口、飞边、孔洞、变形等 Poor labeling (punching, crooked, oblique, dislocation, bubbles, wrinkles) black spots, impurities, gaps, flash, holes, deformation, etc.		
检测区域 Detection area	杯身各部标签、杯口、杯内壁、杯外底 Labels on the cup body, cup mouth, cup inner wall, cup outer bottom		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	300个/分钟 300pcs/min	功率 Power	3000-6000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸 Size	1277*670*1634mm	重量 Weight	260kg

全自动印刷检测机
Automatic Printing Inspection Machine

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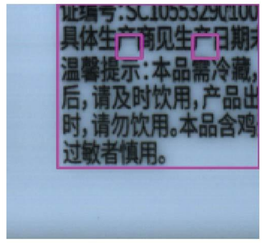
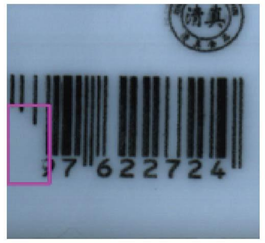
检测缺陷 Sample:



字符缺失
Missing characters



条码缺失
Missing barcodes

印刷重影
Printing ghosting

油墨飞溅
Ink splash

技术参数 Technical parameters:

检测标准 Inspect	字符缺失、印刷重影、套色不准、油墨飞溅 Missing characters ,printing ghosting,color difference,ink splash		
检测区域 Detection area	文字印刷区域 Text printing area		
检测材质 Sample material	PET、PP、PS等 PET,PP,PS,etc.		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	60-70个/分钟 60-70 pcs/min	功率 Power	5000-7000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸(包含理盖机) Size	2020*1085*1555mm	重量 Weight	260kg

全自动玻璃瓶检测机
Automatic Glass Bottle Inspection Machine

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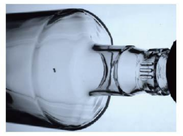
检测缺陷 Sample:



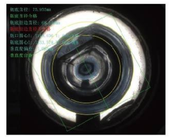
瓶身黑点
Bottle black spot

夹料
Extra injection plastic

瓶底裂纹
Bottle bottom crack

凹陷
Dent

裂纹
Cracks



瓶底尺寸
Bottle bottom size

结石
Stone

气泡
Air bubbles

脏污
Dirty

技术参数 Technical parameters:

检测标准 Inspect	裂纹、油污、气泡、结石、粘料、玻璃搭丝、双合缝线、初模夹印、黑点、铁锈、闷头印、褶皱等 Cracks, oil stains, air bubbles, stones, sticky materials, glass wires, double stitches, initial mold clamping, black spots, rust, dull prints, wrinkles, etc.		
检测区域 Detection area	瓶口、瓶底、瓶身、瓶内壁 Bottle mouth,bottom,bottle body, inner/outer wall		
适用行业 Application	白酒、医药(西林瓶、安瓿瓶等)、化妆品等 Wine,pharmaceutical(vials,glass bottle),cosmetic packaging		
电压电流 Voltage and current	适配客户国家标准 Adapt to national standard		
压缩空气 Compressed air	0.5Mpa-0.8Mpa		
检测速度 Speed	60个/分钟，以西林瓶检测为例 60 pcs/min (vials)	功率 Power	5000-7000w
检测精度 Precision	0.1mm	准确率 Accuracy	99.9%
设备尺寸(包含理盖机) Size	3297*2291*2073.5mm	重量 Weight	350kg

现场应用
Field Application

售后服务
After-sale Service

快速响应
Quick Response

7x24小时服务，快速响应，处理客户需求

7x24 hours service, quick response to deal with customer needs

远程支持
Remote Support

远程解决问题，高效便捷处理各种突发情况

Solve problems remotely and handle various emergencies efficiently and conveniently

跟踪服务
Tracking Service

设备出厂后，持续沟通跟进，及时反馈设备运行状态

After the equipment leaves the factory, continue to communicate and follow up, and timely feedback the operating status of the equipment

合作伙伴
Partners

KEYETECH

厨邦 海天 恒顺 李錦記 LEE KUM KEE 千禾 东古

鲁花 益海嘉里 中粮 COFCO 光明 Garden 君乐宝 JUNLEBAO

Coca-Cola 蒙牛 农夫山泉 NONGFU SPRING 新希望集团 NEW HOPE GROUP 伊利 怡寶

雀巢 Nestlé Unilever 联合利华 P&G 古井 郎 泸州老窖 LUZHOULAOJIAO

五粮液 好医生药业集团 GOODDOCTOR PHARMACEUTICAL GROUP 马应龙药业 瑞阳制药 REYOUNG 双鹤药业 幸福制药

国药集团 SINOPHARM 太极集团 云南白药 YUNNAN BAIYAO 华海药业 HUAHAI PHARMACEUTICAL TASLY HOLDING GROUP 天士力控股集团

期待您的加入.....