# SynPower - Co-Create to make better!

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# Outline

I. Company Profile

II. Operational Overview

III. Outlook and Strategy

# ➢SynPower – Intelligent Manufacturing Integration Services

I. Company Profile

Main Operating Locations

◆ Taiwan Operating Location: Taoyuan District

Mainland Operating Locations: Kunshan, Dongguan, Huai'an, Qinhuangdao

Overseas Operating Locations: Bangkok, Thailand; Chennai, India

Close to Demand, Localized Service


- ◆ Established : May, 2002
- ◆ Capital Amount : NT$ 364 million
- ◆ Number of Employees: Approximately 300
- ◆ Committed to automation equipment and machine vision application business in industries such as circuit boards and semiconductors.

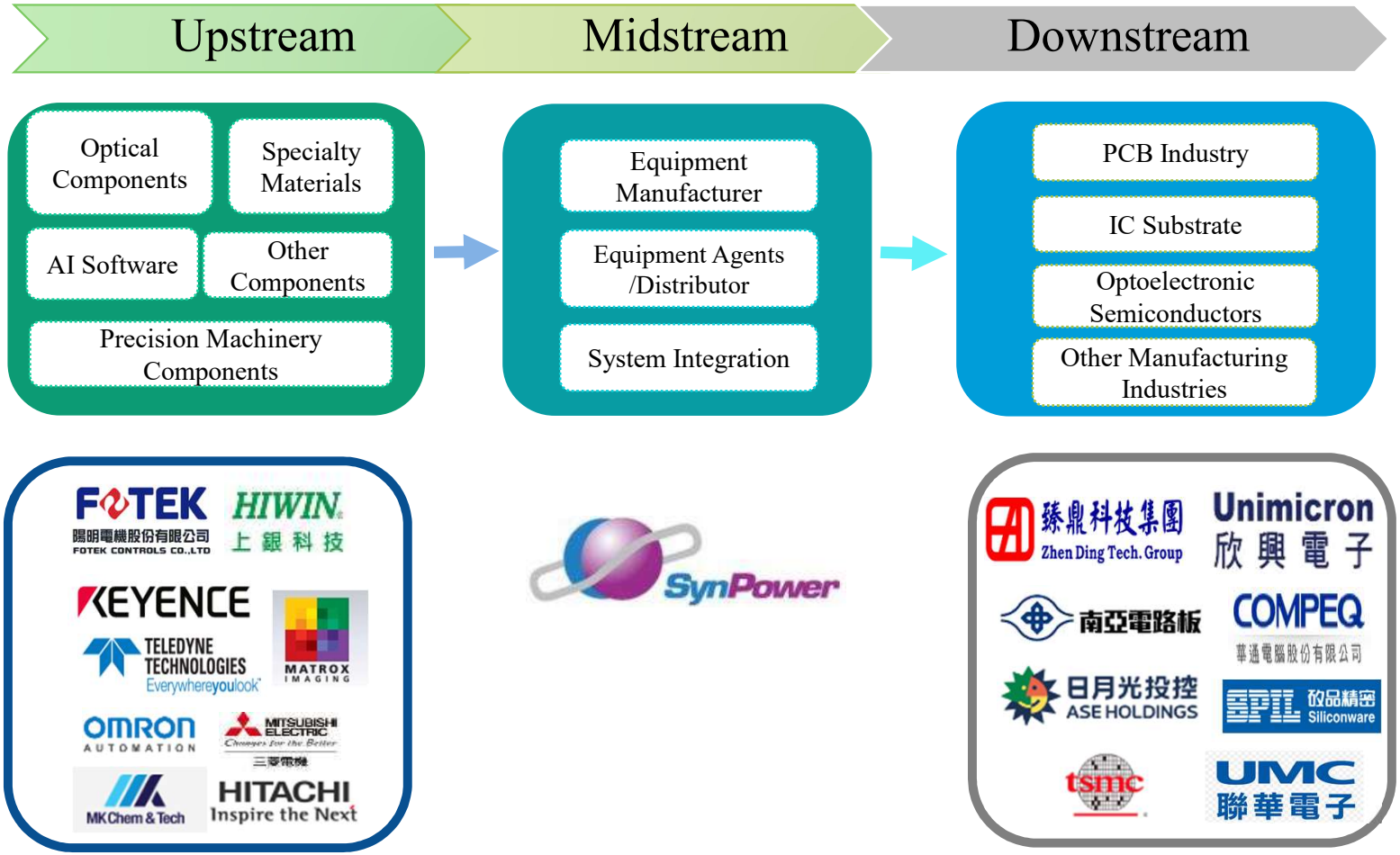
➢ Subsidiaries :

SynTop : Various horizontal wet process equipment

Chipboard Technology : PCB surface treatment OEM

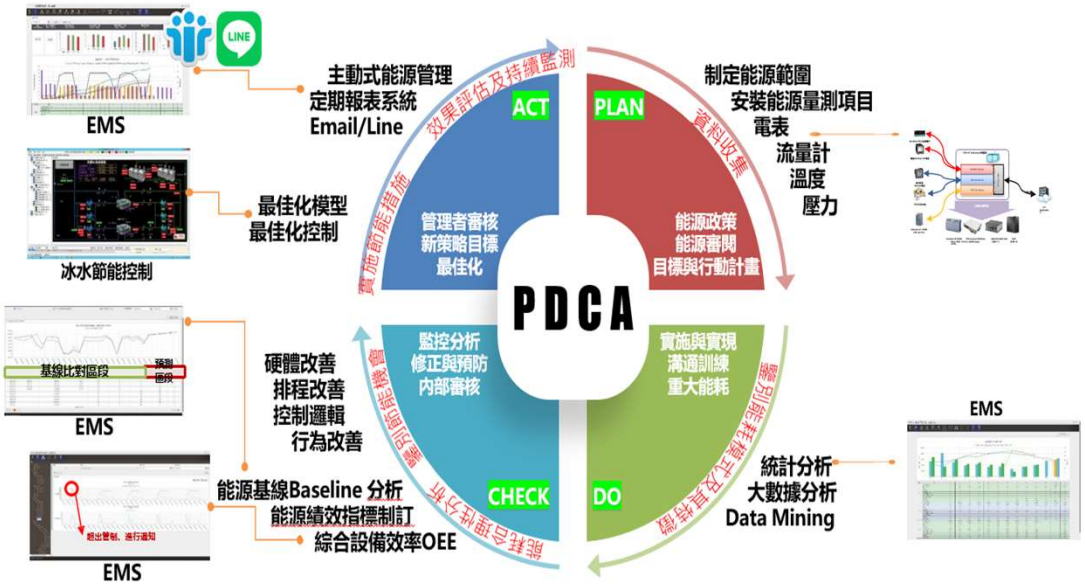


# ➢Industry Status and the Relationship Between Upstream, Midstream, and Downstream



# ➢Operational Headquarters


- ◆ Expected to be operational in August 2025
- ◆ Area (including B1F): 3,600 ping
- ◆ Providing control waste reduction or energy-saving solution demonstrations (illustrations)



# ➢Corporate Social Responsibility

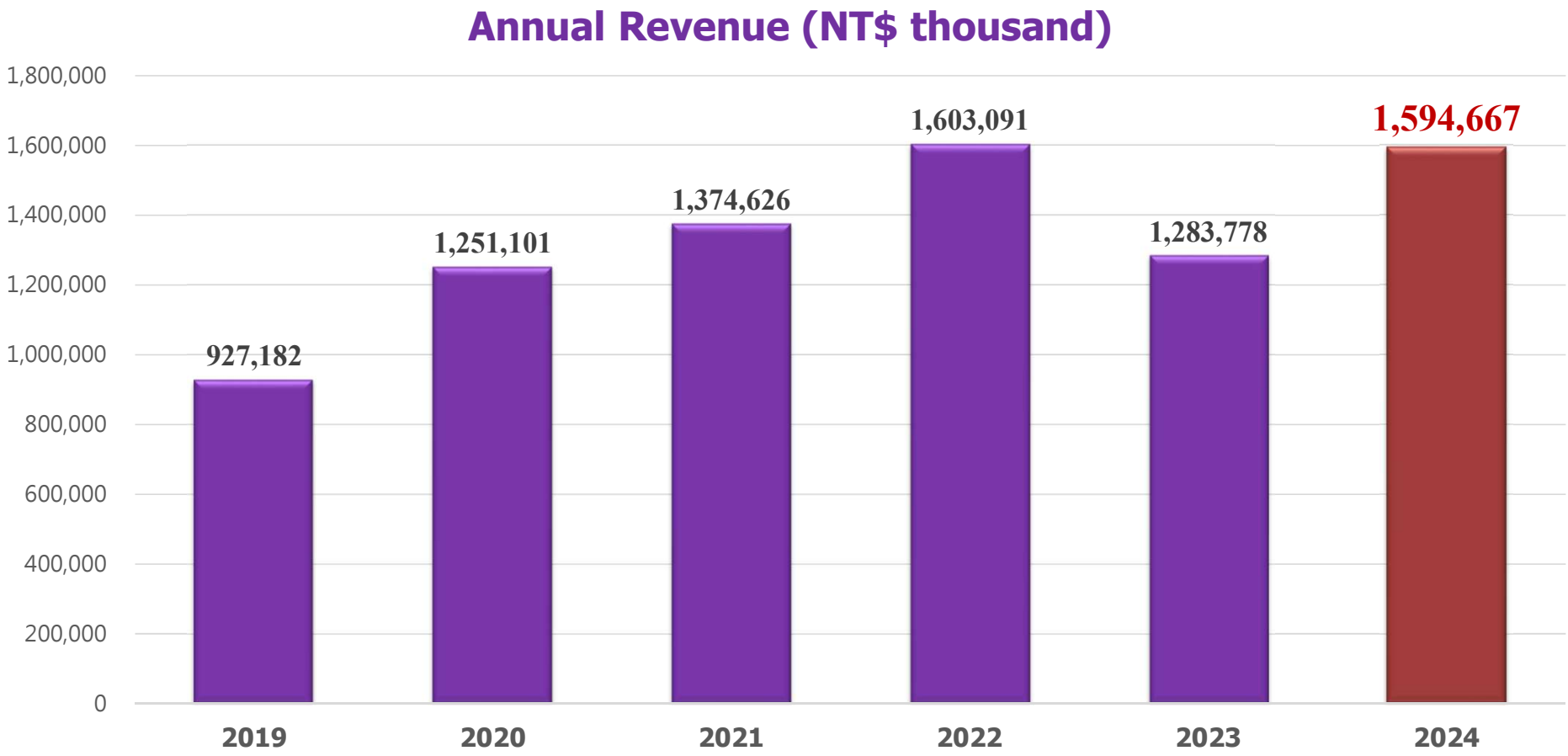
2024/03
Ruth Society For Disability Services Bade Spring


2024/04 and 2024/11
Autism Foundation Flash Mob Concert

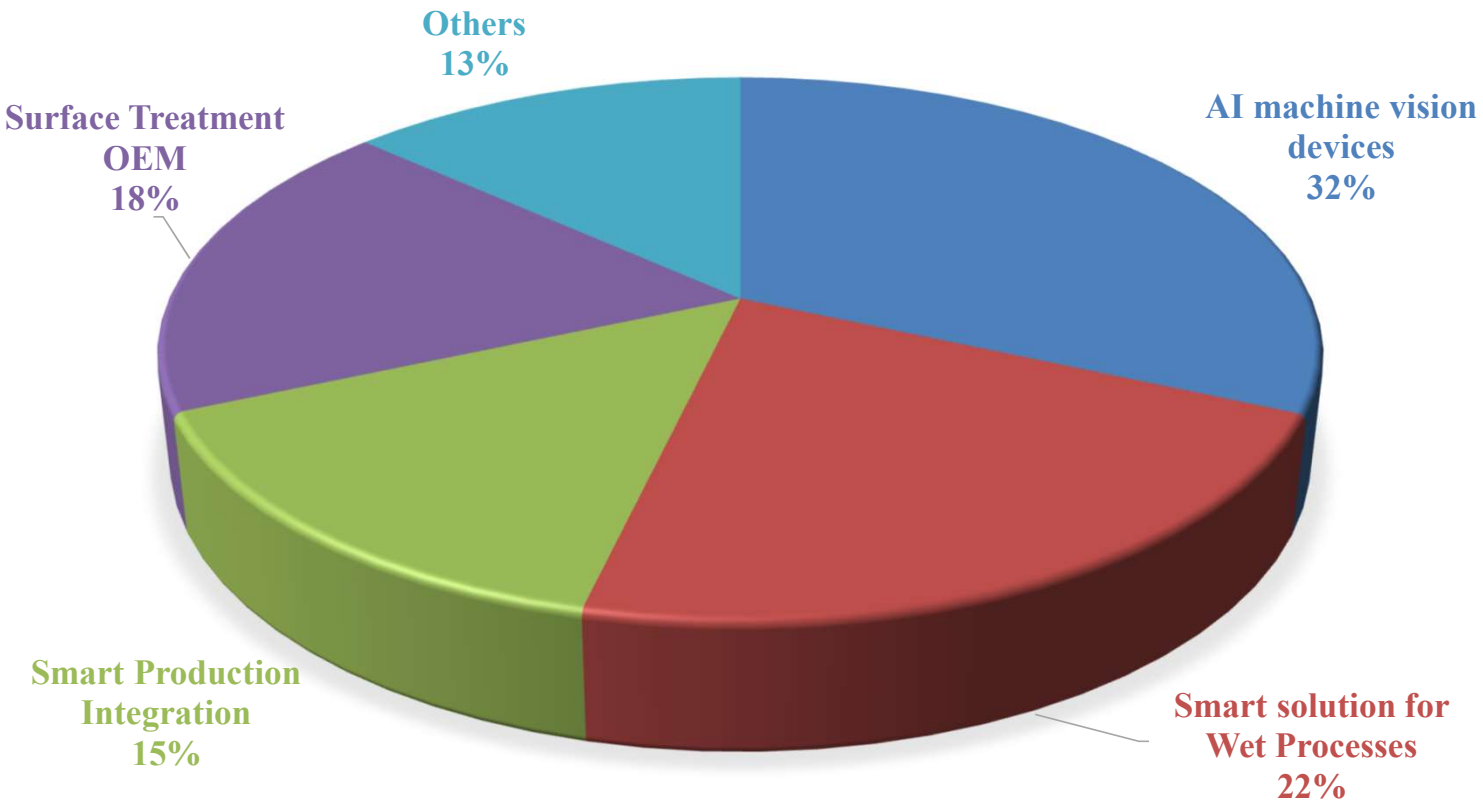

2024/11
Fundraising Dinner: Accompanying Ruth Society for Thirty Years

# ➢ Sales Performance - Performance Report





# ➢ Sales Performance - Performance Report



# ➢Dividend Policy

Adhering to a stable dividend policy, the dividend distribution over the past 5 years is as follows:

Unit：NT$

| Year | | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|
| Dividend Policy | Cash | 1.2 | 0.6 | 1.2 | 2 | 1.2 |
| | Stock | - | 1.2 | - | - | - |
| Total | | 1.2 | 1.8 | 1.2 | 2 | 1.2 |

The company is in a growth stage, and in order to meet the needs for capital expenditure, business expansion, and financial planning for sustainable development, our dividend distribution policy focuses on a balance between cash dividends and stock dividends. The cash dividend payout ratio will not be less than 10% of the total dividend distribution based on the current year's earnings. This will be determined by factors such as the company's current and future investment environment, capital requirements, economic conditions, and industry changes. The policy also takes into account shareholders' interests, balances dividends, and supports the company's long-term financial planning. Each year, the board of directors will propose an earnings distribution plan, which will be subject to approval by the shareholders' meeting.

# ➢Product Concentric Circle Planning

**AVRIOT-**
Value-added Integration Services for Smart Manufacturing Operating Systems

**Semiconductor**

**PCB** ⟷ **Substrate**

| | |
|---|---|
| *Cross-disciplinary* | ➢Semiconductor Measurement and Cleaning Equipment<br>➢Carbon Footprint Integrated Smart Manufacturing<br>➢Energy-saving and Storage Equipment |
| *Expand* | ➢Integration of Substrate Products<br>➢Integration of Semiconductor AVRIOT Applications<br>➢Vertical Production of Wet Process Equipment<br>➢Localization of Foreign Products |
| *Core* | ➢AI Machine Vision Applications<br>➢Intelligent Wet Process Solutions<br>➢Integration of Production Automation |

# ➢Advanced Packaging Equipment Alliance

III. Outlook and Strategy


**Signed a Letter of Intent (LOI) with TSS Holdings Co., Ltd. (including eight companies such as Gudeng ,SAA, etc.), as well as ten strategic partners including APT and aemc, to jointly establish TSS II Semiconductor Holdings Co., Ltd.**

**The main focus is on advanced packaging and semiconductor specialty materials industries, establishing cross-industry alliances and resource-sharing business relationships.**

# ➢Product Planning and Strategy

- **Reducing Detection Errors with AI**
- **Application of AI Detection Logic in Various Industries**

**Continuous Promotion of High-end Mobile Module Appearance Inspection Equipment**

- ➢ Flexible PCB Module Six-side Inspection Machine
- ➢ Double-sided Tray Inspection Machine
- ➢ Arm-type Module PCS Inspection Machine
- ➢ SW Side Glue Overflow Inspection Machine
- ➢ In-line Glue Overflow and Front Glue Overflow Inspection Machine
- ➢ Automotive Module Appearance Inspection Machine

**The establishment of the Subsidiary in Thailand has been completed, and orders for optical inspection measurement and wet processing equipment have been obtained**

- ➢ Drilling and Hole Position Related Inspection and Measurement Equipment
- ➢ Pre- and Post-Wet Process Treatment and Ultrasonic Cleaning Equipment
- ➢ AI Image Screening Applications, Electrical Testing High-Voltage Equipment, and Text Printing Equipment
- ➢ Local Sales of Spare Parts, Consumables, Processed Components, and Rectification Systems

# ➢Main Products and Services


**Machine Vision Applications**

- Localization and Customization of Japanese Optical Inspection Equipment
- Automating Keyence High -Precision Measurement Equipment
- Automated Inspection Equipment for Semiconductor Back-end Packaging
- Integration of Semiconductor Non-visible Light Technology
- 12-Inch Wafer Inspection and Measurement Equipment


**Intelligent Automation and Energy Saving**

- AI Vision and Behavior Detection
- Waste Reduction or Energy Saving Proposal

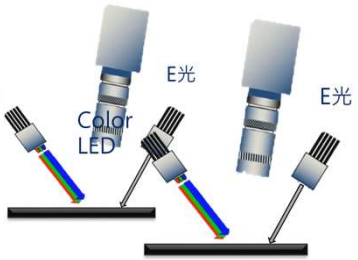
**Smart solution for Wet Processes**

- The Substrate Thin Nickel-Palladium-Gold (Ni-Pd-Au) Processing Line
- The collaboration with ITRI on the glass substrate project and the development of specialty materials is an exciting venture.
- Specialized Cleaning Equipment for Semiconductor Wafers and Packaging

# ➢Localization and Customization of Japanese Optical Inspection Equipment

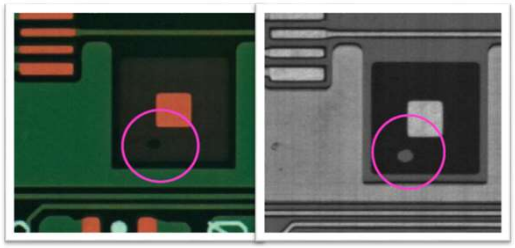


**SynPower has designed more flexible defect specification equipment to enhance quality inspection and measurement processes.**

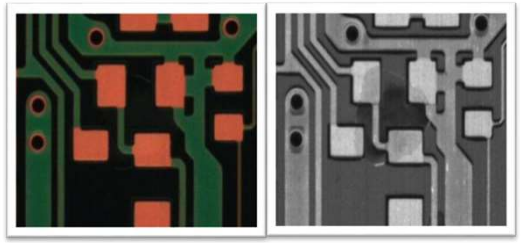



Exclusive high-resolution, high-speed line scan cameras and programmable LED lighting capture technology can simultaneously capture images under various optical conditions in a single system.

◆ ***Preventing foreign objects under the solder mask***



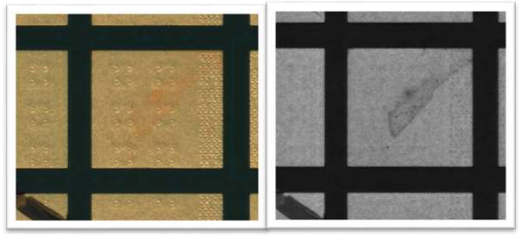
◆ ***Transparent Residual Glue***

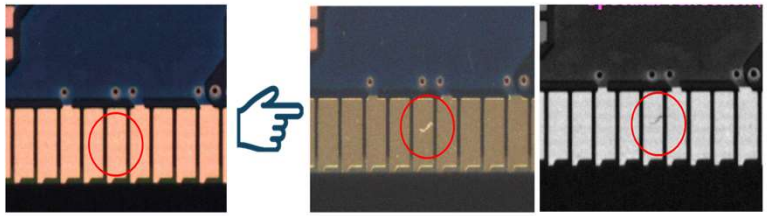


**By utilizing various reflection angles, this advanced optical technology makes it possible to detect defects that are normally imperceptible to the human eye. The exclusive optical vision system ensures that even the most subtle imperfections become clearly visible, allowing for a thorough inspection process.**

Japan's most advanced optical inspection system can achieve multi-angle imaging with a single camera in one scan. This technology replicates human visual inspection by changing the object's angle to detect various defects.

◆ ***Gold Surface Oxidation***

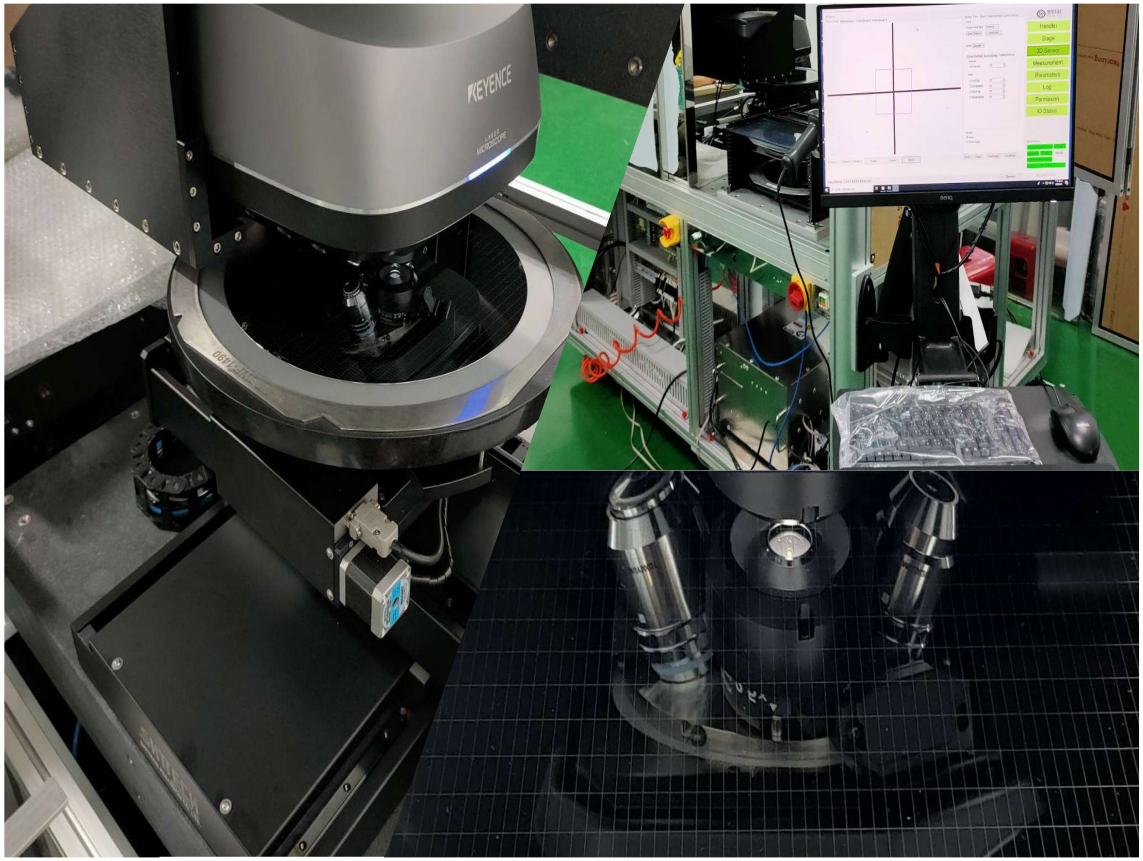




超低色差的缺陷　　LED-彩色圖像　　E光-黑白圖像

# ➢Automating Keyence High -Precision Measurement Equipment






- ✓ Integration of Manual Measuring Instruments VK, VR, VHX Series into Intelligent Automation
- ✓ The VK series introduces a pioneering three-in-one measurement functionality: Laser Confocal、White Light Interference、Zoom Variation
- ✓ These features provide a comprehensive automated solution with an automated loading and unloading system.
- ✓ Dramatically reducing manual measurement time from 25 minutes to 5 minutes.
- ✓ This integration also increases the repeatability and accuracy of data, significantly enhancing the feasibility of full inspection.
- ✓ The software offers user-friendly editing and automated data upload capabilities.

- ◆ Automatic Positioning, Alignment, and Guidance Functions
- ◆ Automatic Feature Point Search & Recognition Function
- ◆ Automatic ID Recognition Function (CST & M-Ring ID)
- ◆ Customizable Measurement Functions
- ◆ Automatic Data Analysis & Visualization Function
- ◆ Automated Data, Image Output & Upload Function (SECs II GEM)
- ◆ Software Licensing Key

# ➢Automated Inspection Equipment for Semiconductor Back-end Packaging

**Picker Machine**

- One of the incoming material inspection procedures at a packaging and testing factory.
- The production number is laser-marked on the front side of the wafer, and a macroscopic inspection of the appearance is conducted.
- If the wafer only has the production number on the back side, the inspection equipment will **automatically** recognize the characters (OCR) and then re-mark the production number on the front side of the wafer using a laser.

**Labeling Machine**

- Used in the stage where the wafer is already mounted on the metal frame.
- Before cutting the wafer, perform the following steps in sequence:
  a. Measure the total thickness of the wafer and the bottom adhesive film.
  b. Attach a barcode label between the wafer and the metal frame.
  c. Conduct a macroscopic inspection of the appearance.

**Laminating Machine**

- Used to bond the wafer and metal frame together.
- Automatic film application function.
- Inspect film quality to ensure there are no wrinkles, bubbles, or contaminants.

**➢Company Future Development Directions**

- **Continue investing resources in the packaging and testing industry**
- **Develop corresponding equipment to meet customers' automation needs**
- **Expand from single inspection equipment to integrated automation solutions**

# ➢Integration of Semiconductor Non-visible Light Technology

**Technical Advantages and Application Scenarios**

**Short-Term Goals (1-2 years)**

## Infrared（IR）

- **Application:** Detection of internal defects in wafers, such as cracks, voids, and interlayer particles.
- **Scenarios**: Wafer bonding, MEMS manufacturing.

## Ultraviolet light（UV）

- **Advantages**: Detects minute defects smaller than 30 nanometers.
- **Scenarios:** Detection of photoresist defects and specific contaminants in advanced processes.

**Long-Term Outlook (3-5 years**

## X-ray

- **Application:** Detection of internal voids, cracks, and wafer bumps.
- **Scenarios:** Quality control of multilayer structures and wafer-level packaging.

## Terahertz（THz）

- **Advantages:** Non-destructive testing, measurement of coating thickness.
- **Scenarios:** Detection of cracks, voids, and impurities, as well as potential applications in future layer thickness measurement.

# ➢12-Inch Wafer Inspection and Measurement Equipment

## Compact M/C design

### Certified with SEMI S2 and F47 Standards

- Meets Semiconductor Process Equipment Safety Standards
- Complies with Standard Voltage Requirements

### Positive Inspection Optical System

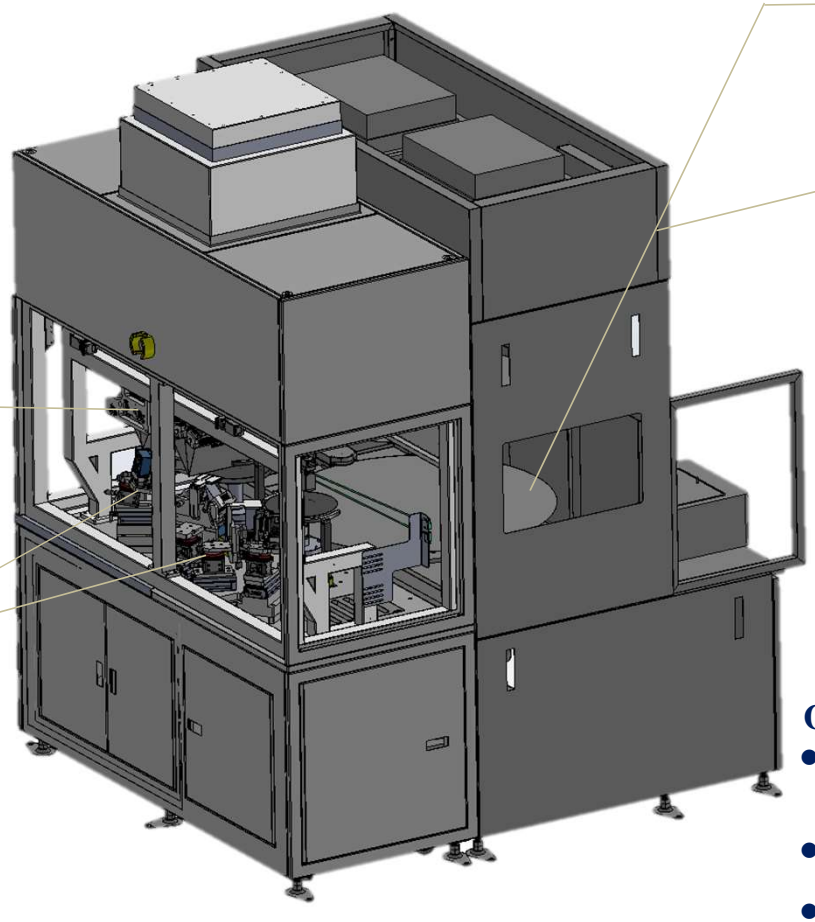
Surface Defect Types:

- White powder
- Incomplete grinding
- Incomplete plate cleaning

### Side and back inspection optical systems

- Chipped edge defects on the side of the wafer

### Industry4.0 SECS Communication Standard



### The dual-arm pick-and-place system

- The dual-arm pick-and-place system, combined with dual platforms for picking and placing, can achieve a total cycle time of 15.2 seconds for two pieces.

### High-precision enclosed slide rail assemblies

- Enclosed Operation
- Prevents oil stains and dust contamination
- Cleanroom grade cable chain
- High-precision, high-speed linear motor

### AI and AOI Traditional Algorithms in Parallel

- AI algorithm technology primarily focuses on minor scratches.
- Die to Die finds defects with slight differences.
- Wafer to Wafer alternative solution without Die Map data.
- Feature algorithms are suitable for high contrast with the background, reducing false positives and false negatives.

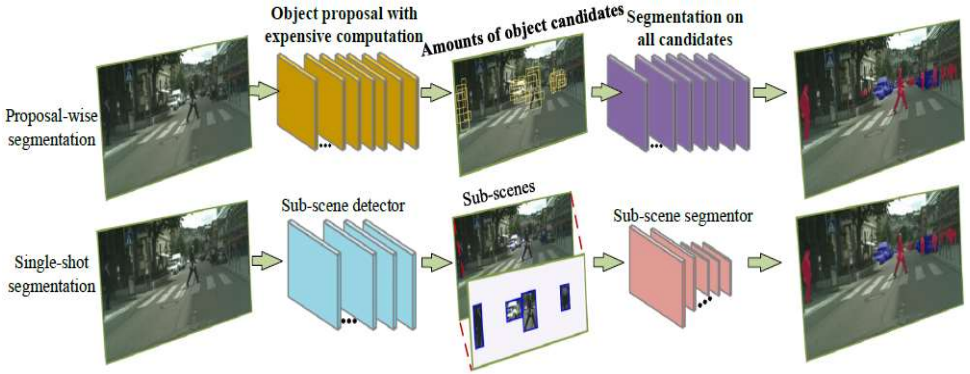
### Optical System Design

- Front Optics: Bright-field multi-wavelength light source + dark-field light source
- Back Optics: Multi-wavelength light source
- Side Optics: Multi-angle light source

**The brightness of the wavelength light source can be adjusted according to the wafer and inspection defects to achieve optimal detection results.**

# ➢AI Vision and Behavior Detection

**Scenario-based AI Algorithm** → **All-in-One AI Edge CCD** → **Monitoring Scenarios**

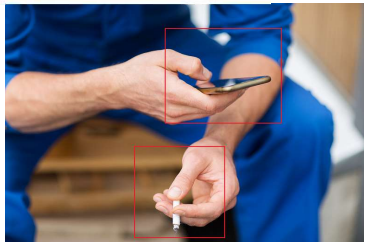





**Mistake-Proofing Actions:** By recording and statistically analyzing cycle times, identify production bottlenecks to optimize manufacturing efficiency.

**Operation Analysis:** By identifying and assessing the standardization of operational actions, further strengthening employee training can improve production quality.

**Operational Safety:** Identify the behavior processes of operators, such as working at heights and performing cross-level operations.

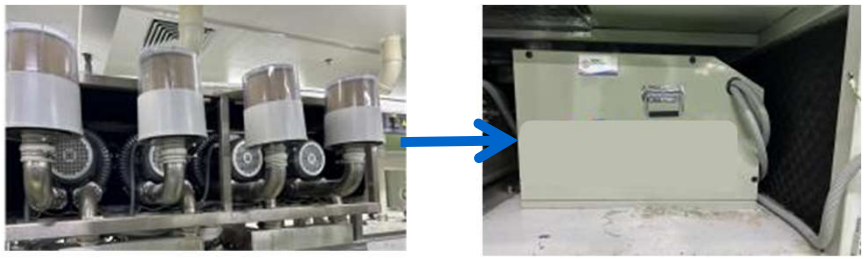


**Violation Behavior Monitoring:** Identification of smoking actions in the workplace, recognition of phone use, and detection of employee absenteeism.


**Optical Re-Inspection:** Alerts operators when they do not visually monitor the screen within a set time, maintaining high-quality inspection standards.

# ➢Waste Reduction or Energy Saving Proposal

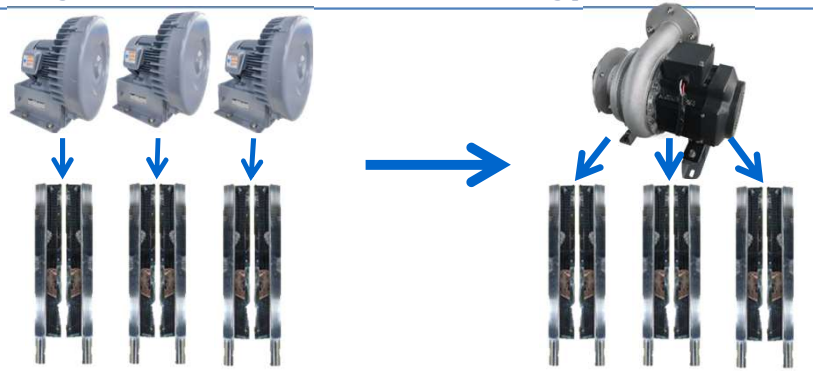

- **Permanent Magnet Low Power Consumption:** Reduces electricity consumption by approximately **40%**.
- **Room Temperature Airflow:** Reduces water marks on products.
- **Indirect Reduction of Chilled Water Consumption:** Further saves energy.
- **Low Heat Generation:** Maintains low-frequency central temperature control.



## Success case study

### The vertical imaging line of a large substrate manufacturer

| Original Configuration: Ring Blower3.7kw*3 | Modification Plan: Energy-Saving Fan7.5kw*1 |
|---|---|



**Straight Wind Knife*3(Wind Pressure Requirements：11.7kpa)**

Voltage：440V
Inverter Frequency：None
Current：5.1+5.3+5.6=16A

Voltage：440V
Inverter Frequency：680 Hz
Current：8.87A

eco Energy-Saving Benefits：(16-8.87)/16 = 44.6%

Benefits Will Vary Based on Production Line and Requirements

# ➢The Substrate Thin Nickel-Palladium-Gold (Ni-Pd-Au) Processing Line


***Chipboard Technology***

- Specialized Surface Treatment Processes
- To meet the demands of AI, high-frequency transmission, and electric vehicles, we are professionally committed to high-value substrate manufacturing services
- Thin nickel processes solve the issues of fine wire spacing and high-frequency RF signal loss
- Representing Korean surface treatment chemicals, which have special technical applications that significantly improve production yield
- Thin nickel process production line for high-frequency applications has completed large-scale sample testing and certification, and will start taking orders in 2025

Thank you for your guidance.