

New CCM Machine for 2024! AOI + AI High-tech Full-range Inspection Solutions

Dec. 15, 2023, a grand product launch gathered hundreds of suppliers at Ching Chan Optical Technology (CCM) for a tour of new machines, the manufacturing line and its quality control. The tour's spotlight and eye-catcher, New AOI Fastener Sorting Machine, combines with the latest AI technology to open new frontiers for smart inspection, featuring the following 6 ultra-functions.

- **High Resolution Color Camera:** For nylon washer appearance defect, sealant, and NYLOK check.
- One-stop 360-degree thread damage inspection.
- **Eddy-Current System:** For 360-degree head crack inspection. Enabling inspection 2 to 3 times faster than original rotary index inspection platform, and simultaneous inspection of appearance, size, material, hardness, heat treatment.
- **Auto Focus:** Auto recording lens focus and light source parameters. Only one configuration required for setup of each workpiece to avoid mistake by different operators and lower technical requirements for operators.
- **Smart Monitoring System:** The sensors provide monitoring data. Error codes sort out anomalies and the machine's monitor displays troubleshooting videos to help clients and after-service team with simple maintenance.
- **AOI (Auto Optical Inspection) + AI:** AOI conventionally uses visual comparison for size measurement. The new machine adds neural network and logical reasoning based AI to enhance random surface defect recognition capability, encompassing defects in complex color background, tiny chromatic aberration, disorientated inspection areas, irregular thread shapes, blurred/distorted/deformed text, scratches at random locations. Increasing successful detection rate and accuracy.

The tour also discloses Processing Monitor which embedded the new pressure sensor with self-developed hardware and software. It works with clients to make machines smarter, assisting in pressure monitoring and anomaly analysis for forming, threading and heading machines to reduce front-end defects, manage manufacturing from the get-go and upgrade intelligently.

After the launch event, Fastener World interviewed VP Jacky Hou for a back story of the new machine. He stated that CCM prioritizes R&D on inspection quality and integrates 4 technologies into 1 machine which are optics (image capture & recognition), mechanical transmission, electric control (PLC), and software (AOI + AI). This R&D philosophy and unique characteristic of CCM aim to make machines run faster, measure more accurately (via laser & telecentric lens), inspect more item types, and get smarter (via AI, SPC data & auto focus).



The AOI in particular has the advantages of high speed and accuracy, non-destructive inspection, diverse defect inspection capability, consistent inspection results, traceability, accurate feedback on product and manufacturing process optimization. CCM has 20+ years of experience in customizing software and machines for Tesla and many other clients, even recently crossing boundaries to supply bio-tech (via Tablet/Capsule Inspection Machine), food, EV, electronics, energy, aerospace industries. The newly-added AI can re-adjust models with environmental changes and new data to improve inspection intelligence, adaptability and complement with AOI. "Incorporating AI into sorting machines is a global trend, but our ace card is that we master optical image capture better than our counterparts. Plus, we know how to work AOI with AI on different workpiece properties to achieve higher efficiency and customization and provide AOI +AI solutions!" said Jacky. He said to display the new machines at shows in the U.S., Europe, Japan, Thailand, Taiwan, India, etc., and promote them in overseas installation trainings and roadshows.

CCM has made many milestones. CCM optical sorting machines were awarded Taiwan SMEs Innovation Award. The Tablet/Capsule Inspection Machine was awarded Excellence Prize in a smart products competition and adopted by a public pharmaceutical company. CCM founded an education foundation for underprivileged families, donated Tesla patrol cars to the police and made charitable donations. Ending the interview, Jacky was confident that the product launch will scale up in 2024 to include upstream suppliers and cross-industry guests besides fastener industry guests: "We've breached 5,000 machines sold globally, not including self-assembled machines sold in China. We'll break new grounds for CCM sales going forward!" ■

Site tour

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