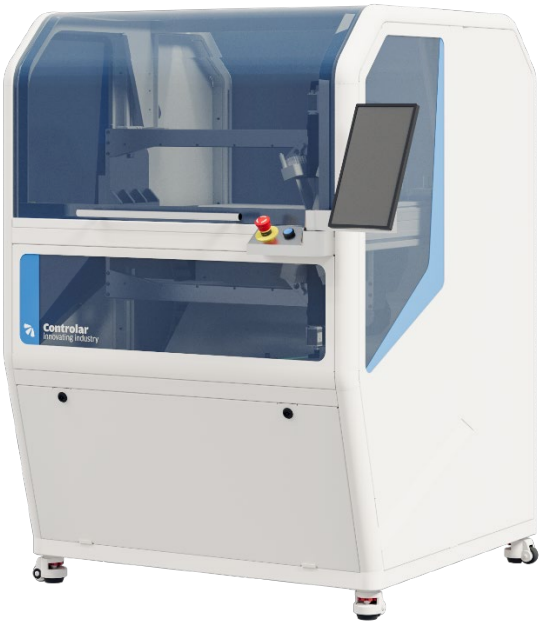
Controlar Showcases PicAI – The AI-Driven Probe Inspection Control System at Productronica 2025



At Productronica 2025, Controlar will present **PicAI – AI-driven Probe Inspection Control**, the world's first fully automated system for validating test fixtures by analyzing probe marks on PCB test points.

This **patent-pending system** eliminates manual fixture verification by combining **dual-sided vision inspection** with **adaptive Artificial Intelligence (AI)**, providing an unprecedented level of accuracy, repeatability, and speed in test fixture validation.

AI-Powered Precision for Fixture Validation

During ICT, FCT, or other PCB testing processes, test probes leave small puncture marks on the Test Points (TPs) of each board. PicAI inspects these probe marks to measure deviations from the TP center with an accuracy of approximately **7 µm per pixel**, identifying even the slightest misalignment, contact failure, or mechanical defect in the fixture setup.

By capturing both sides of the PCB in a **single, synchronized scan**, PicAI provides a complete visual analysis of the test area. The system's AI-driven software then processes the collected data to automatically verify probe conformity and generate detailed reports, offering **statistical insights, trend monitoring, and full traceability**.

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Advanced Dual-Sided Optical System

PicAI integrates a **dual-sided vision module** equipped with high-resolution linear cameras and synchronized lighting, enabling precise and simultaneous inspection of the top and bottom sides of the PCB.

Its **adaptive computer vision** automatically adjusts inspection parameters based on PCB characteristics, such as color, size, or material, ensuring reliable results while minimizing false detections. This adaptability makes PicAI suitable for virtually any PCB type used in modern electronics manufacturing.

Compact, Industrial-Grade Design

Developed as a **compact, all-in-one unit**, PicAI is built from **industrial-grade materials** to withstand continuous operation in demanding production environments. The system includes:

- Integrated **dual-sided optical module** with synchronized lighting
- **AI-driven software** for automated analysis, traceability, and reporting
- **User-friendly PC-based interface** for easy setup and monitoring

Its hardware and software integration enables **fast, repeatable inspections** with zero operator variation, supporting both **production-floor quality control** and **R&D-level testing**.

Main Applications

PicAI's versatility allows it to serve multiple stages of the electronics manufacturing lifecycle:

- **Production:** Acts as a critical quality gate to ensure fixture alignment with PCBs, detecting early defects before they cause rework or production downtime.
- **R&D and Design:** Provides detailed fixture performance data, supporting faster PCB development and reducing validation time.
- **Quality Assurance:** Offers objective, repeatable inspection data and trend-based reports to help maintain process stability and compliance.

Ultimately, PicAI replaces subjective visual checks with **quantifiable, AI-assisted analysis**, ensuring consistent quality standards across every production batch.

See It Live at Productronica 2025

Visitors can discover **PicAI** in action at **Controlar's stand A1.335/9**, where live demonstrations will highlight its AI-driven inspection capabilities and high-precision dual-camera architecture.

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About Controlar

Founded in 1995, ***Controlar Innovating Industry*** *is a Portuguese company specializing in* ***Industrial Automation and Test Systems****, primarily serving the automotive sector.*

With over 400 employees and operations across Portugal, Spain, Mexico, Malaysia, India, Germany, the USA, France, Poland and Morocco, Controlar designs, develops, and integrates advanced solutions for the validation and verification of electronic components and systems, as well as for production line automation and quality control.