

FITECH

industrial solutions

Visual inspection that is intelligent, operatorless, and cost-efficient

MARKET CHALLENGE

Quality threatened by high automation costs

To avoid defects in a final product, quality assurance should be incorporated on many stages of the production process. However, visual inspection, especially 3D solution, is not only expensive but also requires well-trained staff to prepare a

product-specific program for efficient inspection. Yet the test output still needs to be verified by a human operator, increasing time of the verification process. That could be a reason why visual inspection is not as widely used as it should be.

OUR SOLUTION

Don't fix errors – simply avoid them

The cost of fixing errors increases as a project matures or production process advances. Thus, the optimal scenario is to correct an error as soon as it occurs, and before it gets time and cost-consuming to fix. To make the scenario feasible, we implemented Artificial Intelligence algorithms to build our Smart Optical Inspection solution to:

- Automate visual inspection for SMD and THT components on PCB
- Report problems with missing or mis-rotated components, allowing them to be fixed before a next production phase
- Provide a cost-efficient solution for every production line and assembly process

Don't program your machines - let them learn instead

In any production, the machine (re)programming process is costly and requires assistance of a SW engineer. Eliminating that phase can be highly beneficial not only for cost optimization but also for time-saving matters. We make it possible with our Smart Optical Inspection, which is:

- AI-based solution working operatorless
- Self-learning system, reducing costs of human force engagement
- Self-programming machine fitting mass production as well as high-mix/low-volume production profile

BENEFITS

More efficient production process

Better product quality

Optimized operational costs

MARKET ADVANTAGE

No programming needed

Millions of PCBA pictures of various products are used by neural networks as a learning dataset. Such trained networks can detect errors with no programming for new product under test. Learning is made based on CAD data or a golden sample.

Continuous improvement

Relearning neural networks based on new products increases their accuracy, which is then propagated to all machines. That implicates constant technology improvements in the visual inspection process.

Self-decision machine

AI algorithms inspect the PCBA components and compare them to the reference documentation and samples. If any missing or mis-rotated component is found, an alert is generated allowing quick and easy fixing of the error detected.

Fast and cost-efficient

SOI is designed to detect errors contributing to most problems with PCB assembly like missing or mis-rotated components. Tests are performed fast and efficiently utilizing our in-house developed algorithms. The mechanical construction is simple to make the solution cost-effective.

Various business models

Various business models are planned for SOI. From the classic purchase of the machine to subscription-based models, where machine cost is minimal, testing per PCBA is small and the customer is charged per each tested product.

Market-proven solution

Over 30 machines have been successfully working on a production floor of our partners. They already proved their efficiency in optical inspection detecting on average 1.4% erroneous PCBAs out of 5,500 items inspected on a daily basis.

Our robots deep learning process



KEY FACTS

- AI-based self-optimizing algorithms
- Global knowledge database shared in the Cloud
- Test cycle time <3 sec.
- Self-reprogramming phase < 5h
- Dimension 78x92x270 cm
- Over-the-air update