



# **Neosys Technonology**

## **FIA INTUIT Self Learning & Machine Vision System**

Neosys Technology Inc.

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[www.neosys-tech.com](http://www.neosys-tech.com)

## General overview

For the manufacturing industry, the inspection process for finished products is an essential part of the manufacturing process. This process guarantees product qualities that may otherwise overload the after-sales service and operation cost of the factory in the long run.

## Problem-solving

Traditionally, the inspection process relies much on a person's perception and it often results in unnecessary excess manpower, reduced efficiency, lack of precision, consistent quantitative and qualitative issues that will eventually occur. But in the old days, inspection machinery requires complicated procedures, customization fees and not up to standard precision measurements which caused many factories to fall back to utilizing manual labor. Or factories implement a semi-solution that will aid inspection personnel in some ways to help retain inspection consistency.

## Problem solved – FIA INTUIT self-learning & machine vision system

The FIA INTUIT self-learning and machine vision system utilizes image filtering technology and software for inference analytics to analyze and differentiate the good versus flawed. Users can also set their desired yield rate for the inspection process.

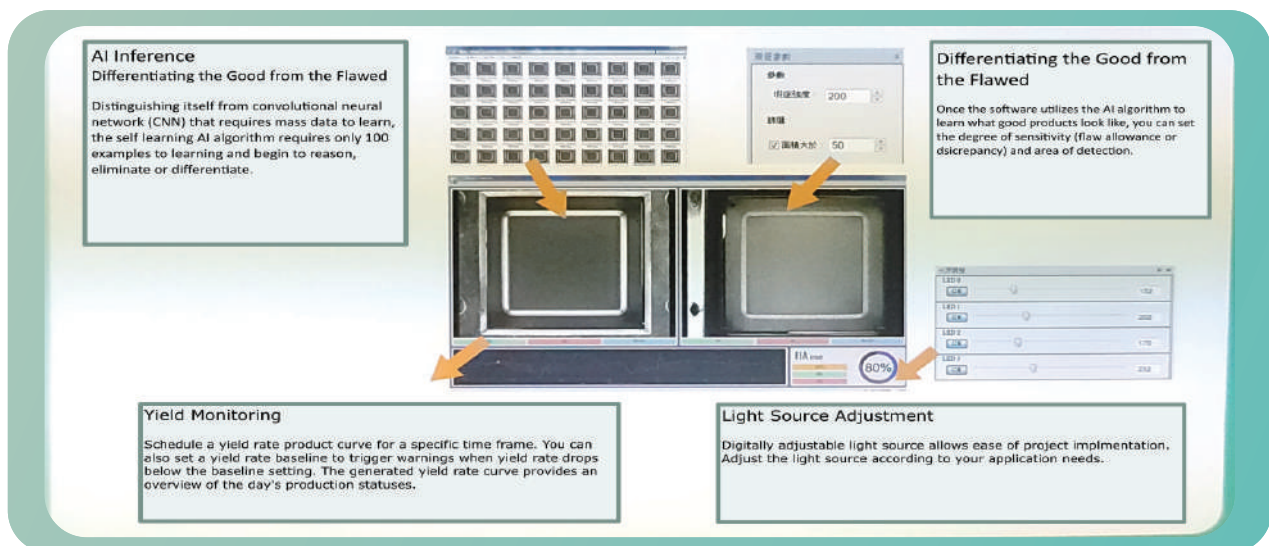
### The system features the following characteristics

- FIA offers optical system recommendation and setup for optimum detection
- Requires only 30 reference samples for learning and achieve up to 99% detection accuracy
- Highly compatible/ integrable inspection method with products produced in mass volume
- Easy to operate and does not require highly trained technicians
- Good products versus flawed judgments are made based on scientific machine learning.
- Inspections are rapid (at least 1800 units per minute) and standards can be adjusted
- Precise and reliable inspection yield rate
- Rapid analysis, processing up 100 photos just under 2 seconds

For the system to achieve such image inspection processing power, FIA constructed their solution using the following hardware:

- Neousys Technology’s rugged embedded systems that can support up to a maximum of 16 GigaE/ PoE cameras
- COTS GigE cameras
- Neousys Nuvis series has a built-in lighting controller or Neousys offers LTN-450, an industrial-grade lighting controller designed specifically for machine vision purposes
- Neousys rugged embedded systems either come standard with or can be expanded with a MezIO module to add on digital input/ output and RS-232/ 422/ 485 ports

The software interface allows users to adjust detection settings such as the light source, degree of detection sensitivity and baseline yield rate



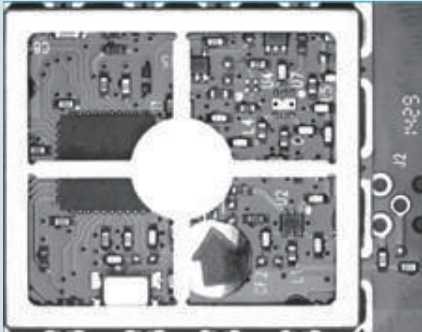
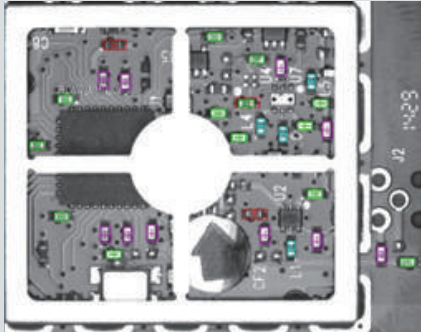
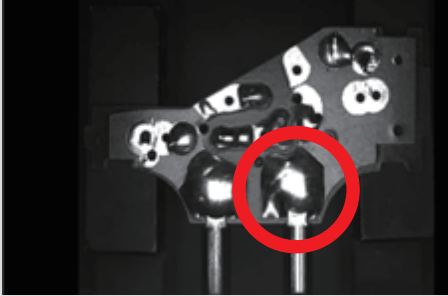
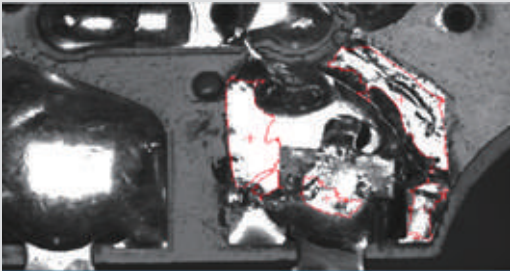


## Benefits

Taking advantage of AI learning algorithm that requires only minimum data to kick off inference reasoning and differentiate the good vs flawed, the FIA INTUIT self-learning and machine vision system offers implementers the following immediate or long-term benefits:

- Decide and set your desired yield rate
- Does not require further customization to produce customized products
- Standardized and precise qualitative inspection, minimizing customer acceptance check discrepancies
- High processing power with COTS graphics card to reduce the cost of ownership

- Dramatically reducing quality-check time frame and labor costs
- Requires minimum GOOD samples to learn (fast learning) and start reasoning (swift deployment)
- Real-time monitoring and yield rate warning
- Intuitive operation using drag and drop to begin task/ project processing
- Supports up to eight production lines
- Multi-lingual user interface support

**FIA self-learning and machine vision system picks up flaws that may otherwise be overlooked by the naked eye.**

Inspection type	Original Photo	Analyzed Photo
SMD inspection		
Vehicle solder inspection		
Vehicle accessory defect inspection		

## Neosys Rugged DNA



### Fanless operation

Fanless operation and efficient heat dissipation



### True wide temperature operation capable

Neosys systems hold its grounds extremely well under harsh conditions, specifically under high-temperature operation (up to 70°C).



### Processing power

Neosys Nuvo-6000 supports 6<sup>th</sup> Gen while Nuvo-7000/ 8000 GPU-aided series systems support 8<sup>th</sup>/ 9<sup>th</sup> Gen Intel® Core™ i CPUs



### GPU-aided AI inference capability

Nuvo-6000/ 7000/ 8000 GPU-aided series systems support NVIDIA® graphics cards up to RTX 30 series.

Nuvo-7164GC/ 7166GC support NVIDIA® Tesla® P4/ T4 inference accelerator.



### Lighting Controller

Neosys LTN-450 is a constant-current LED lighting controller that provides up to four LED control channels capable of delivering up to 2A current continuously with a total of 180W power budget



### MeziO Module

Capable of implementing various I/O functions, the MeziO module is a Neosys patented expansion technology to meet various industrial connection needs.



### Shock and vibration proof

The system is designed to withstand operating shock and vibration conditions with patented damping brackets.



### Wireless communication module and various I/O ports

Via expansion sockets, Neosys systems can install WiFi, 4G/ 5G cellular modules or both in the system. They offer wireless communication with other nearby devices, central computer or cloud systems. In addition, systems are equipped with USB3.1 Gen1, LAN, COM, etc.



### NOTE

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