High Precision Plane Material Inspection System

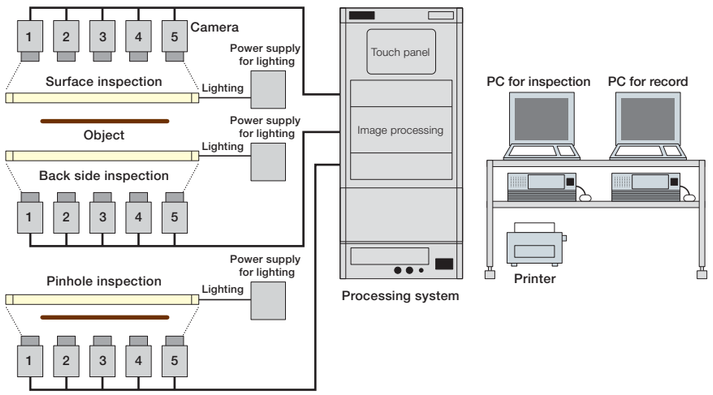
PIE-550

Plane Inspection Equipment

■Specifications

Camera	CCD line sensor camera (40MHz) Selectable between 2048, 5150 and 7450 pixels
Lighting	Selectable among high frequency fluorescence light, halogen lamp, metal halide lamp and etc.
Image processing	10 kinds of algorithm to detect defects
Operation System	Exclusive PC (OS: WindowsXP) LCD display Printer
Mounting	For cameras and lighting

■System Configuration



1	**Optical part**	Camera
		Lighting
		Power supply for lighting
2	**Processing System**	Image processing
		Power distribution box
		System control
		Touch panel
3	**PC**	PC for inspection
		PC for record
		LCD display
		Printer
		Table for PC

Design and specifications are subject to change without notice.

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Ikegami

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PIE-550 *Plane Inspection Equipment*

With the fast technology progress, manufacturing companies require more effective productivity and quality management. Ikegami PIE-550, Plane Inspection Equipment, can supply a suitable solution for the requirement in WEB inspection with Ikegami experience and knowledge of the image processing technology which have been accumulated in broadcast, security and factory automation fields.

Inspection object

Metal, films, resin, glasses and paper

Inspection items

Dusts, scratches, dirt and uneven

Light source

High frequency fluorescence light, halogen lamp and metal halide lamp can be selected. Ikegami offers the most suitable lighting condition.

Detection

Algorithm

Ikegami has developed 10 kinds of algorithm to detect defects.

- Tiny size defects detection (Cumulative differential)
- Small size defects detection (Differential)
- Medium size defects detection (4 points average)
- Large size defects detection (Multi points slice)
- Line-form defects detection (Density matrix)

✶Each algorithm can be applied with light or darkness. Parallel simultaneous processing is possible.

Defect judgment

Defects Classification

The detection method can be set by the matrix of the following conditions.

- Detection algorithm
- Light/Dark spot
- Length
- Width
- Area

Major/Minor defect judgment

Conditions can be set by the combination (AND/OR) of algorithm and size.

Algorithm :

- Tiny size defects detection (Light/Dark)
- Small size defects detection (Light/Dark)
- Medium size defects detection (Light/Dark)
- Large size defects detection (Light/Dark)
- Line-form defects detection (Light/Dark)

Size : Big, Medium, Small, None

Size judgment

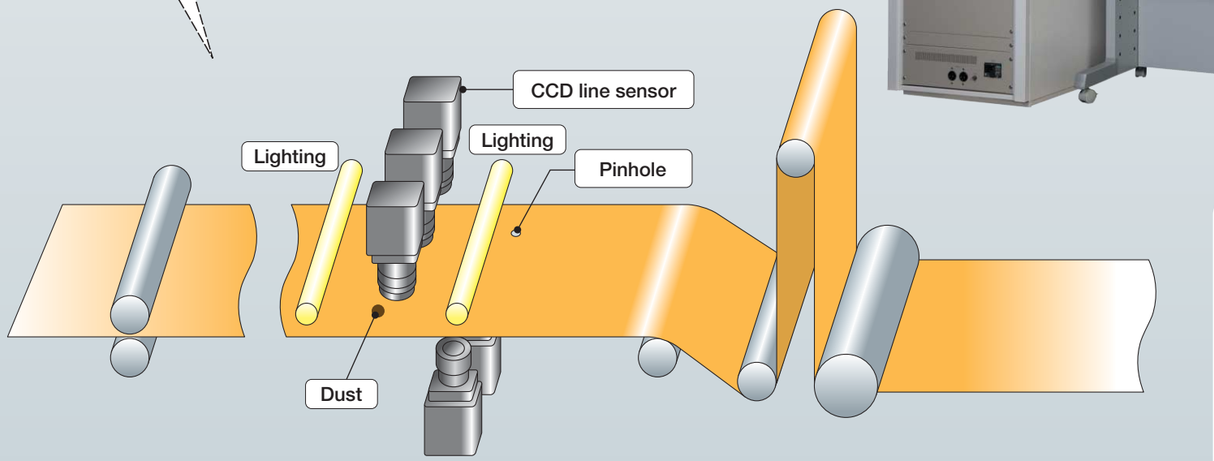
Conditions can be set by the combination (AND/OR) of length, width and area.

- Length (mm)
- Width (mm)
- Area (mm^2)

Conditions of display and record can be set by Major/Minor defect and size judgment.

Flexible system configuration

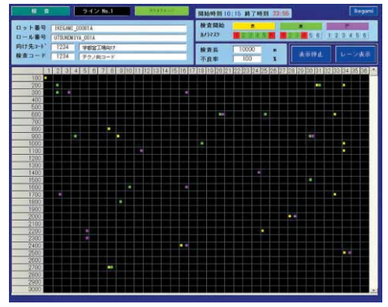
Ikegami can offer the best suitable system configuration, according to conditions such as inspection objects, necessary resolution and line speed.



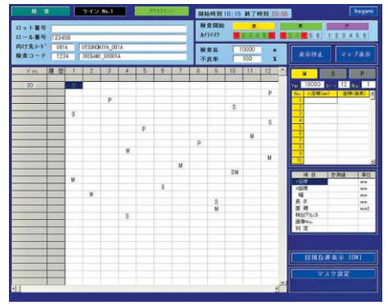
Data display

The detected defects are displayed in real-time. The detailed information of the defects can be seen in the LANE display and the defect distribution can be observed in the MAP display.

Switchable to LANE display even under the inspection procedure.



Switchable to MAP display even under the inspection procedure.



Details information

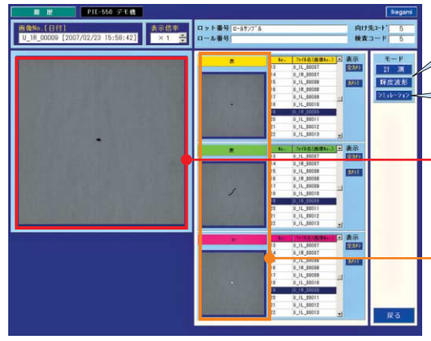
1. X-axis
2. Y-axis
3. Width
4. Length
5. Area
6. Algorithm
7. Image No.
8. Judgment

Defect classification can be displayed with the combination of Width, Length, Area and Algorithm.

Image recording

Defect images can be reviewed, referring to the file number. JPEG2000 is employed for the compression and record, and the recorded images can be seen with the high image quality. And the effective compression technology achieves the small size of data and the speed up of data transfer rate.

Defect images can be displayed and recorded in real-time (512x512 pixels).
Each side of images can be displayed in parallel.



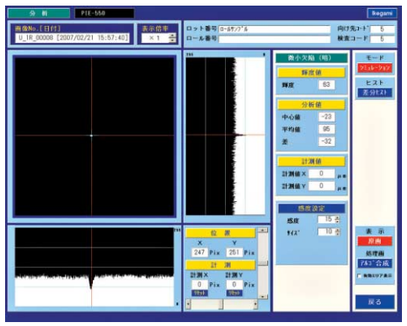
Switch to Measurement/Waveform display

Switch to Simulation function

Main image display
Surface, Back side and Pinhole defect images are displayed in parallel.

Each stage image display
Switchable even under the inspection procedure.

Simulation function



The system equips the simulation function which can see the analysis of defect part and suitable sensitivity value based on the recorded images.