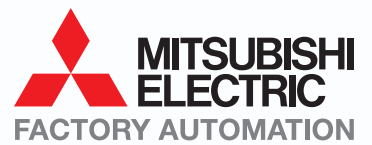


Partner Product

EBG 217-EN



# Machine Vision+

## Vision guided robotics

### Automated Adhesive Bead Inspection

Increased productivity and reduced waste



**e-Factory**  
Partner Product

IMPROVED QUALITY 

Advanced inspection tools

INTELLIGENT DESIGN 

Immediate rework of production failures

IMPROVED COMMUNICATION 

Direct integration into existing factory management systems for traceability

# Improving your sight within production



iQ platform MES interface IT module

## Quality driven

The automotive industry has some of the most stringent levels of quality control – especially around critical components.

Understanding this, PPT Vision, Inc. sought to create a quality inspection system to monitor the quality of glue beads used to join complex structural door components.

## A common vision

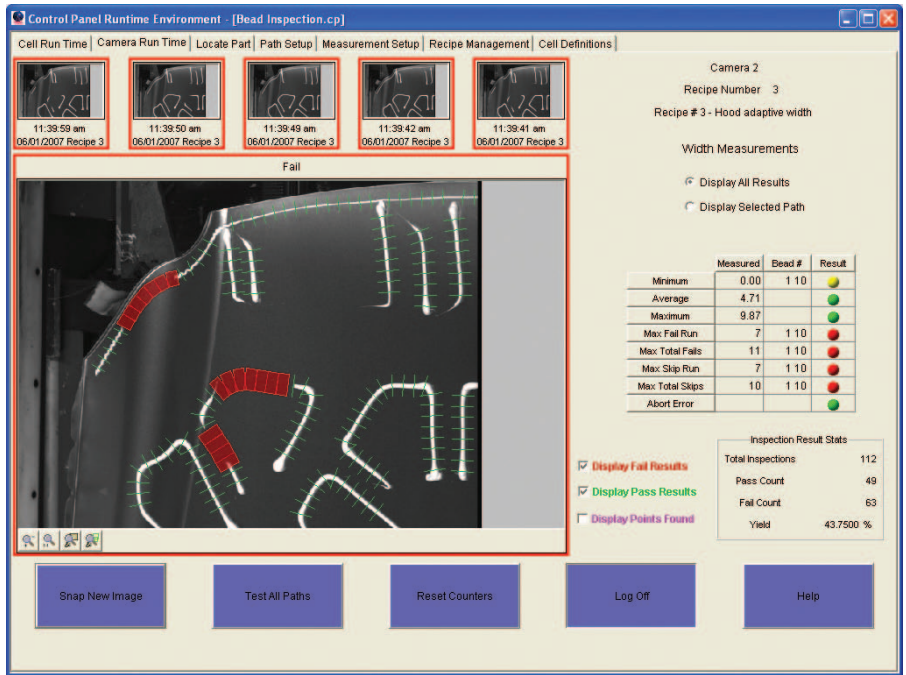
Conventionally with in a manufacturing process, some element of quality inspection is incorporated into the process either manually or automatically by machine vision. Although machine vision is not a new technology, it is often used as an independent, standalone solution. The integration with automation controllers on the shop floor has, up to now, been quite limited. With the onset of new smart camera technologies, vision companies like PPT Vision have been consolidating their machine vision systems within the camera body, enabling an easier interface to the automation control layer.

Mitsubishi Electric and PPT Vision, Inc. have been working together as e-f@ctory partners to make that integration as easy and efficient as possible. The vision system automatically checks different aspects of the applied glue such as application integrity, missing beads, over gluing. However, monitoring is only half the solution.

## Unique solution

Mitsubishi Electric and PPT Vision, Inc. have been working to take the adhesive bead inspection system further. By integrating Mitsubishi Electric's "RV" robot series, the solution was extended to detect the glue application error and for immediate rework action to be made. Interfacing these products provides a "Vision Guided Robot" (VGR solution) specifically designed for applications such as gluing and profile placement.

This packaged solution empowers the robot to know exactly where missing or faulty glue beads are and to rework them on the fly. This is achieved by live positional data communicated between the vision system and the Robot controller via Ethernet without having any other additional positional sensors and programming included into the system.



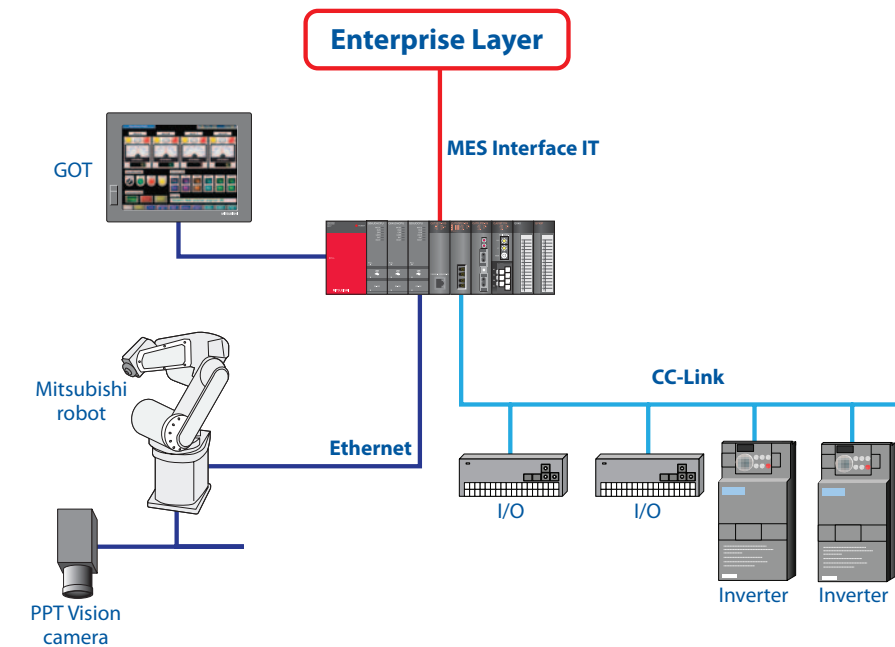
Glue bead details

The potential of reducing waste and reducing rework time/costs is substantial. The solution can be used with other applications outside of the automotive industry, in fact anywhere where a consistent quality of glue application is required.

## Completing the loop

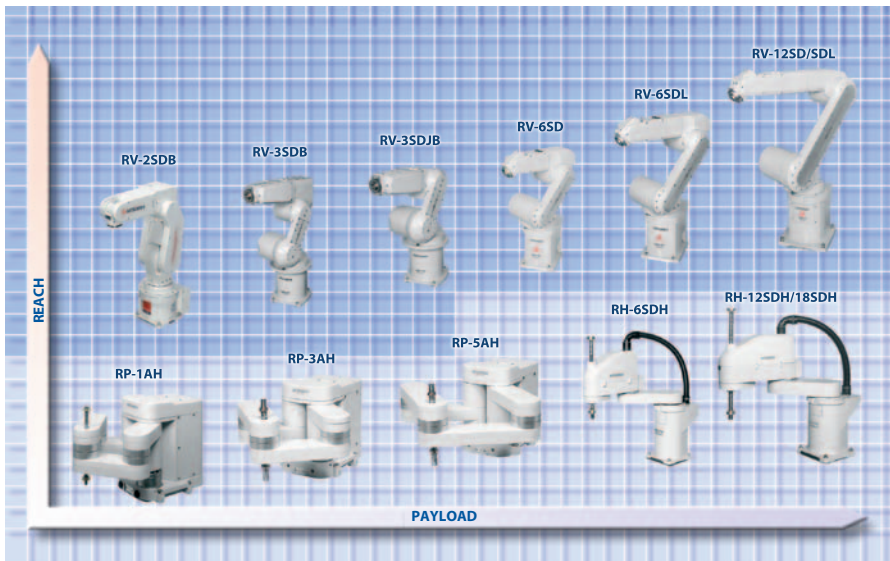
In addition to fault position detection, vital information such as the amount of parts that have passed or failed inspection, production batch numbers, production instances can all be directly sent to the control system for further data manipulation. By integrating Mitsubishi Electric's iQ Platform especially using the MES Interface IT module, this vital data can be directly transported to enterprise level software systems for further integration into production reports for the production and factory management.

This fully integrated vision and rework system makes it easy and efficient to maintain quality and production quantity.



# Specifications ///

## Mitsubishi Electric Hardware Specifications



Type	Reach	Repeatability	Interface (Included)
Vertical	500–1380 mm	0.02–0.05 mm	Ethernet, Additional axis control, Encoder I/P, USB...
SCARA	350–1000 mm	0.02–0.05 mm	
Parallel Link	350–1000 mm	0.005–0.01 mm	RS232, (Ethernet, Additional axis as option)

## PPT Vision Hardware Specifications

	A-Series Intelligent Cameras	IMPACT™ T-Series Intelligent Cameras
Processor Speed (Million Instructions per Second)	1334 MIPS	1600 MIPS
Memory	512 MB RAM; 512 MB Flash	
Image Sensor	On-board CMOS, 752x480 pixels, up to 69 fps	On-board CCD, 640x480: 60 fps, 1024x768: 16 fps, 1600x1200: 12 fps
I/O	Camera Trigger Input (1x), Dual-Purpose Event/Polled Inputs (2x), General Purpose Outputs (4x), Strobe Output (1x), Optional I/O expansion module available	
Communications	Ethernet – 10/100 Mbps Base-T, Serial – Up to 115K Baud Rate, LAN/WAN	
Size	139.7x68x24 mm	137x63x45 mm (Inline), 127x76x66 mm (Right Angle)

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