

Case	Delta SCARA Robot and Machine Vision System for Tapping Screw Thread Inspections				
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Applicable to	Robotic arms, Machine Vision System DMV Series				
Key words	Robotic arms, SCARA, DMV, Screws				

Delta Industrial Automation provides an efficient solution for tapping screw thread inspections by adopting the SCARA Robot and Machine Vision System DMV Series for excellent precision and speed.

[Application Introduction]

Machinery work pieces need tapped screw threads for assembling different parts, which is why the process of checking tapped screw threads is very important. Currently, automated manufacturing is replacing traditional visual inspection with machine vision systems for tapping screw thread inspections.

If screw holes are spread across the curved surface of work pieces, the inspection of the tapped screw threads would be difficult to accomplish. However, the use of integrating Delta's Machine Vision System DMV Series and placing charge-coupled devices (CCD) on the SCARA robot can successfully locate and complete all tapping inspections of screw threads.

With high speed and high repeatability the SCARA robot combines with the DMV Series for inspections that not only improves manufacturing flexibility, but also rapidly executes inspection.

[Inspection Method]

A secure CCD in a tilt angle and lens on the SCARA robot for Delta's machine vision system performs tapping screw thread inspections. The lighting is added for carefully inspecting screw threads and avoiding external influence. This process is shown in the picture below.

By using the DMV Series 'count' function to calculate the number of tapped screw threads, the machine vision system can store inspection results in a robot controller's data register via the RS-232 communication network for programmable logic controllers (PLC) with no other communication commands required.

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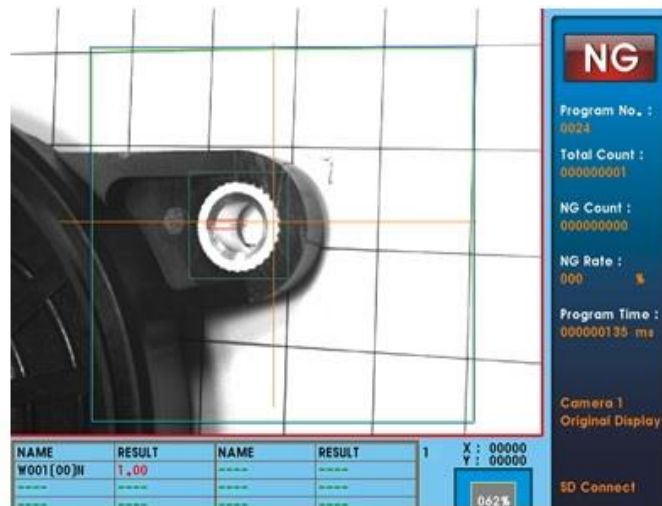
[Inspection Result]

The count function of the DMV Series for inspection of tapping screw threads is set with a total count of at least 5 screw threads. The picture below indicates the count result of 7 screw threads and confirms tapping is complete.



The picture below shows the DMV detecting a cutting-edge of the screw thread lower than the standard set value and confirms if the tapping is unsuccessful.

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[Conclusion]

The use of Delta's DMV Series and SCARA robot for tapping screw thread inspection can prevent producing defective products due to human error, and also increase work efficiency.

Delta's machine vision system can be widely applied in production line inspections and assist in the positioning of robotic arms to enhance productivity and provide better quality. In addition, the Delta SCARA robot supports Ethernet, RS232, RS485 communication networks and can integrate with various controllers including machine vision systems, PLCs, and human machine interfaces to provide customers with total automation solutions.

For more information on Delta's industrial automation products, please visit our website at:

<http://www.deltaww.com/Products/CategoryListT1.aspx?CID=06&hl=en-US>