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|---------------|--|------|-------------|-------|---|
| Case | Application: Delta Industrial Automation Products for Fan Module (C-clip) Inspection | | | | |
| Issued by | Solution Center | Date | April, 2014 | Pages | 4 |
| Applicable to | Delta Machine Vision DMV Series | | | | |
| Key words | Fan inspection, DMV | | | | |

【Application】

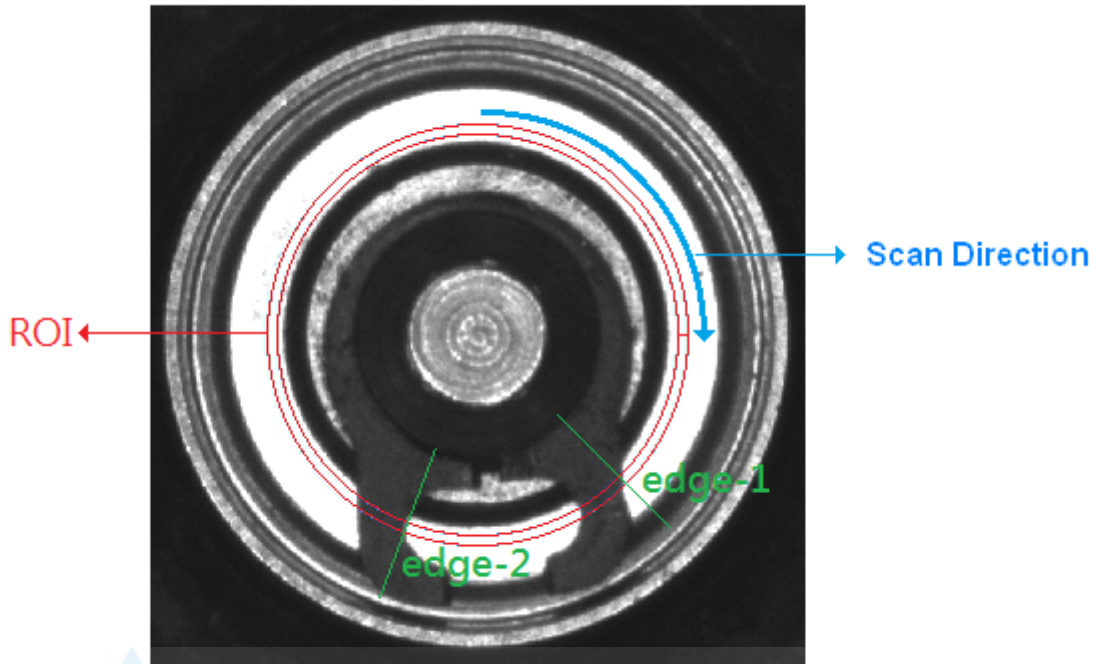
A fan module is assembled using a C-clip to fix its fins and bearings. A fast assembly line can often make mistakes such as improper installation or missing the C-clip. The traditional inspection method that uses the human eye to inspect the product is time consuming, inefficient, and often results in errors. The Delta Machine Vision System DMV Series provides an auto inspection solution for production line that inspects fan modules more efficiently, saves labor, and ensures the best product quality for customers.



【Inspection Method】

Delta's DMV Series uses a width measurement function with ROI to inspect the two round circle edges and calculate the angle deviation to identify if the C-clip is properly installed. If the deviation lies within a set range, the C-clip is properly installed; if no edges are detected, the C-clip is missing.

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【Inspection Result】

The scan below shows the inspection result. It shows an angle deviation rate of 65.14 degrees which lies within the qualified deviation range. The DMV system then displays an OK message to show this fan piece is a qualified product.

| NAME | RESULT | NAME | RESULT |
|----------|--------|------|--------|
| C00[00]V | 65.14 | | |
| --- | --- | --- | --- |
| --- | --- | --- | --- |
| --- | --- | --- | --- |

X : 0000
Y : 0000

062%

OK

Program No. : 0000

Total Count : 000007303

NG Count : 000007194

NG Rate : 098 %

Program Time : 000000323 ms

Camera 1
Original Display

SD Connect

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The scan below shows an angle deviation rate of 81.88 degrees, which is greater than the qualified deviation range. The DMV system then displays a NG message to indicate this piece is unqualified.



| NAME | RESULT | NAME | RESULT |
|----------|--------|------|--------|
| COO[00]V | 81.88 | --- | --- |
| --- | --- | --- | --- |
| --- | --- | --- | --- |
| --- | --- | --- | --- |

X : 00000
Y : 00000

0.62%

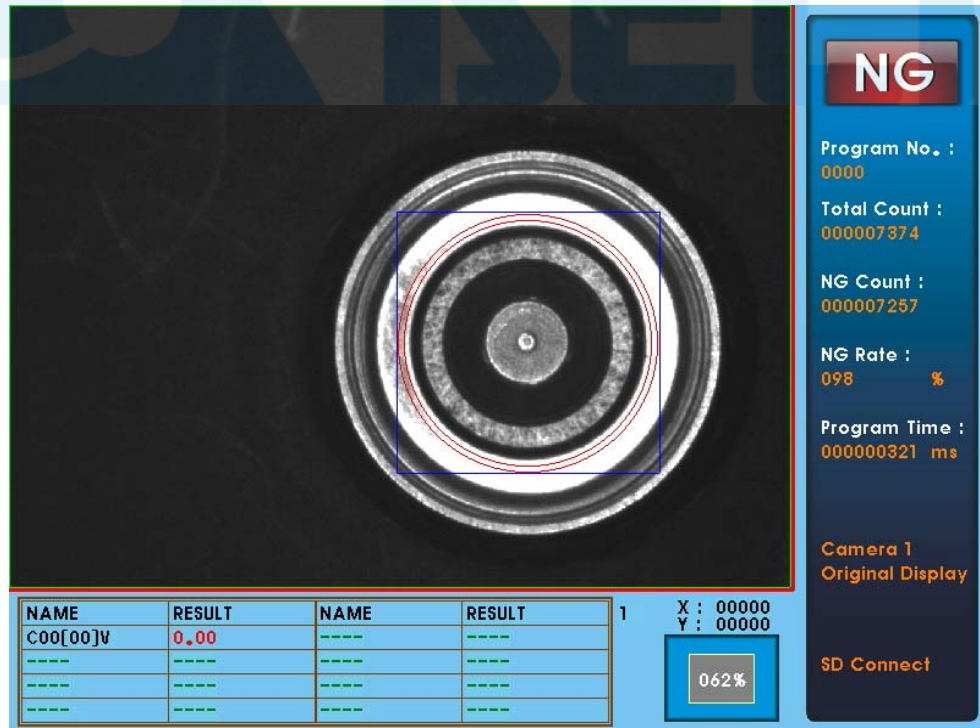
NG

Program No. : 0000
Total Count : 000007337
NG Count : 000007222
NG Rate : 098 %
Program Time : 000000320 ms

Camera 1 Original Display

SD Connect

The scan below fails to detect any edges, which indicates the C-clip is missing, thus the DMV system displays an NG message.



| NAME | RESULT | NAME | RESULT |
|----------|--------|------|--------|
| COO[00]V | 0.00 | --- | --- |
| --- | --- | --- | --- |
| --- | --- | --- | --- |
| --- | --- | --- | --- |

X : 00000
Y : 00000

0.62%

NG

Program No. : 0000
Total Count : 000007374
NG Count : 000007257
NG Rate : 098 %
Program Time : 000000321 ms

Camera 1 Original Display

SD Connect

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【 Conclusion 】

The Delta Machine Vision System DMV Series is suitable for a wide range of inspection applications, including assembly line, product quality, object direction, counting, distance calculation and more. It is highly compatible with Delta's PLCs, HMIs, AC motor drives and AC servo drives to form an integrated and complete solution providing optimum application flexibility for customers.

For more information on the DMV Series, please visit our website at:

http://www.delta.com.tw/product/em/control/mvs/control_mvs_main.asp

