

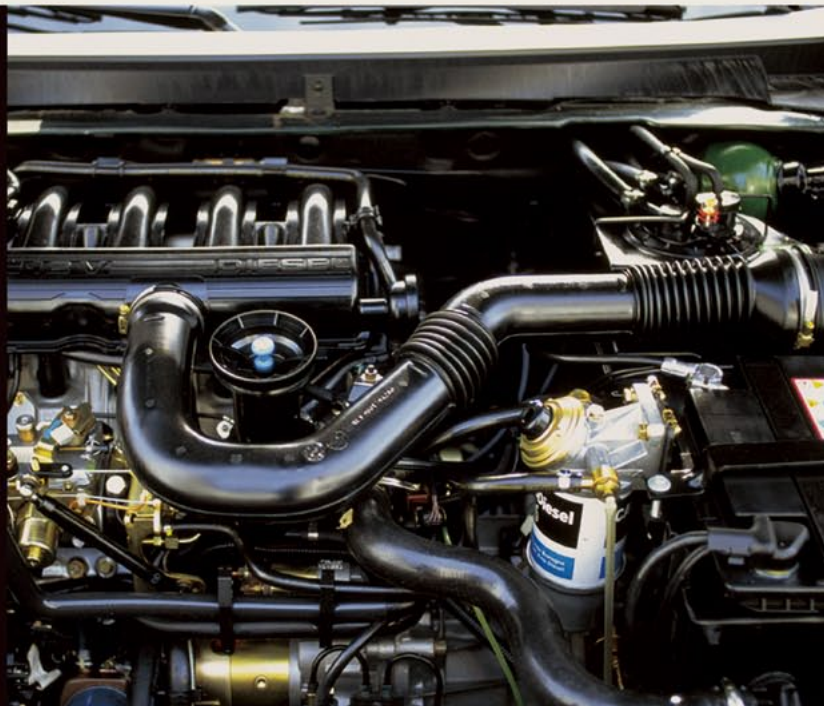


KEYENCE

**AUTOMOTIVE
MANUFACTURERS**

Industry Survey Results:

PRIMARY JUSTIFICATION FOR USING MACHINE VISION



Feedback from KEYENCE

“What is your goal for installing machine vision systems?”

1 Prevent defective products

- Decrease customer complaints and prevent product recalls

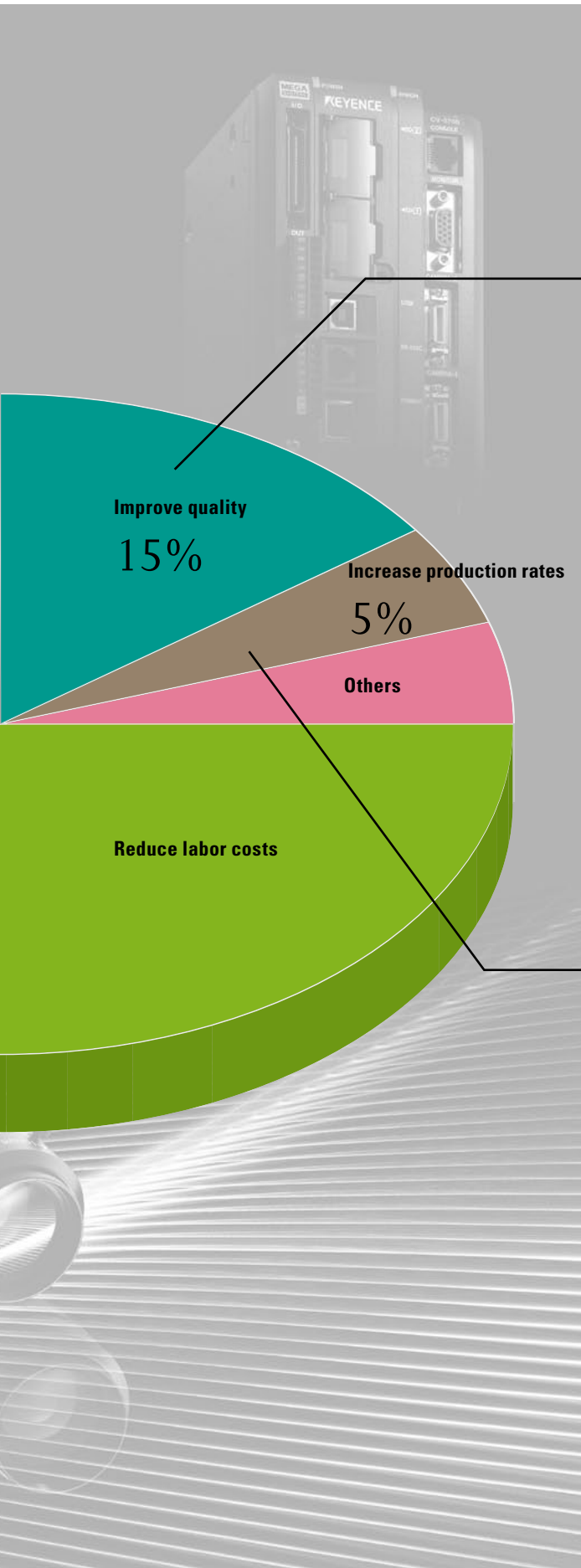


Prevent defective products
40%

2 Reduce labor costs

- Significant reduction of labor costs due to process automation and the decreased need for manual inspection

Machine Vision Customers



3 Improve quality

- Sales Growth through improved product quality

4 Increase production rates

- Improve yield due to the increased rate of inspection

1

PREVENT
DEFECTIVE
PRODUCTS

Eliminate shipment of defective products and increase customer satisfaction

APPLICATION Identifying incorrect seat belt buckles

Product Detail

Camera Display



OK (left)

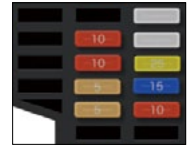


NG (right)



APPLICATION Detecting incorrectly assembled fuse boxes

Camera Display



OK



Wrong parts

NG



APPLICATION Formed-In-Place Gasket (FIGP) coating inspection

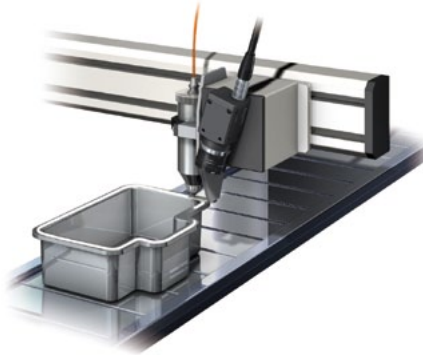
Camera Display



OK



NG (coating break)

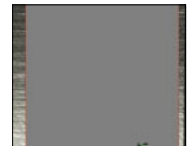


APPLICATION Detection of flaws/dents on steel sheets

Camera Display



Original image



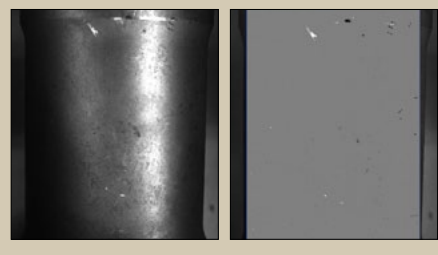
Real-time Shade Correction filter



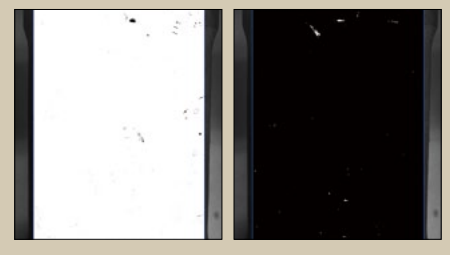
KEY FEATURE Real-time shade correction

Real-time shade correction isolates defects, even when the background has shadow-like gradations. This filter enables inspections not possible before by cancelling shadows that even lighting techniques could not remove.

Detection of holes and flaws



Detection of dents



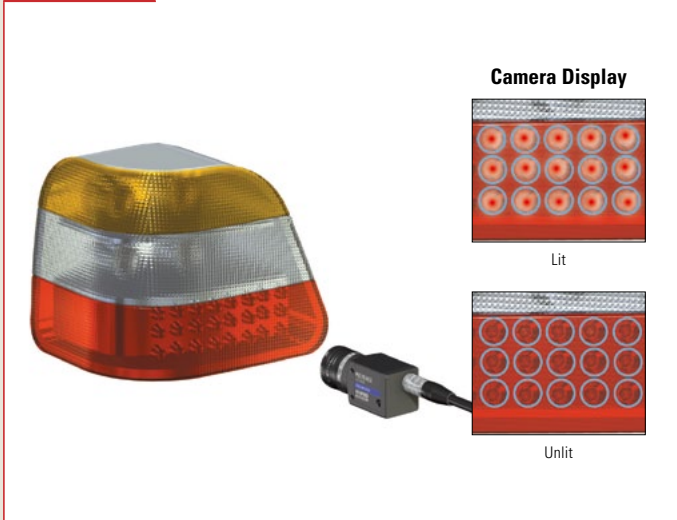
Isolates holes, flaws (left) or dents (right) according to inspection requirements. KEYENCE's latest algorithms meet strict quality requirements and allow for flexibility in programming.

2

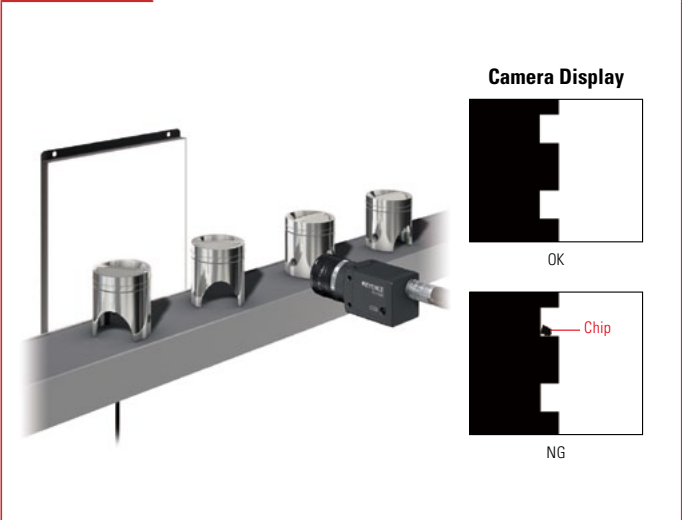
REDUCE
LABOR COSTS

Reduce labor costs by inspecting with machine vision

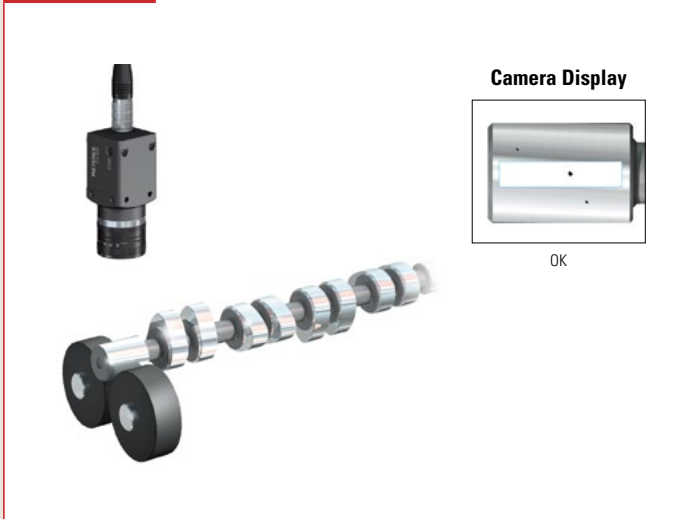
APPLICATION Illumination inspection of tail light LEDs



APPLICATION Inspecting for metal chips



APPLICATION Camshaft inspections



APPLICATION Checking for part seating in hot-forging dies



KEY FEATURE Powerful troubleshooting tools

Statistical processing

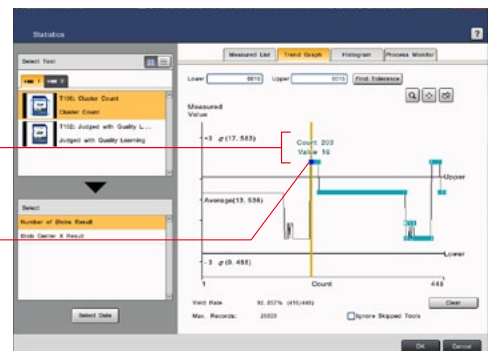
The Statistical processing function stores up to 20000 points of measurement data in the internal memory of the unit. The maximum, minimum, average, standard deviation, NG count, and yield rate, can all be easily verified without having to connect to an external PC. Trend graphs and histograms can be displayed and on-the-fly changes to limits can be set directly on the graph based on the result data from up to 1024 previously captured images.

VERTICAL CURSOR

Displays the measured values and the total count for the selected cursor position.

IMAGE SAVE MARK

marked data has its image data saved. It is possible to check images by clicking.



3

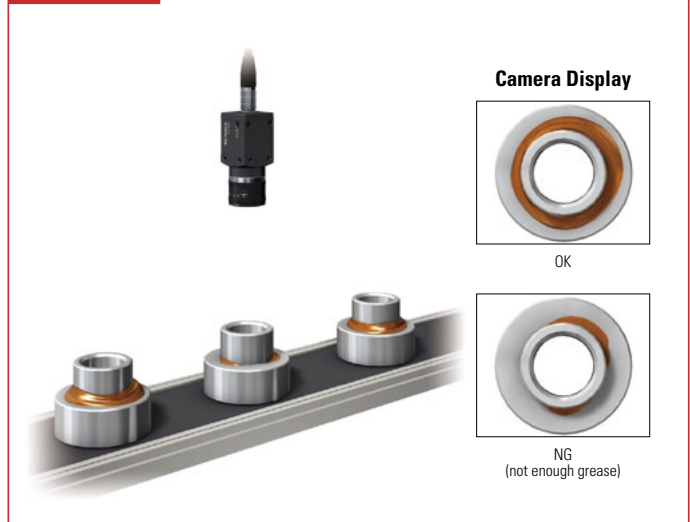
IMPROVE
QUALITY

Strengthen the company brand through improved quality

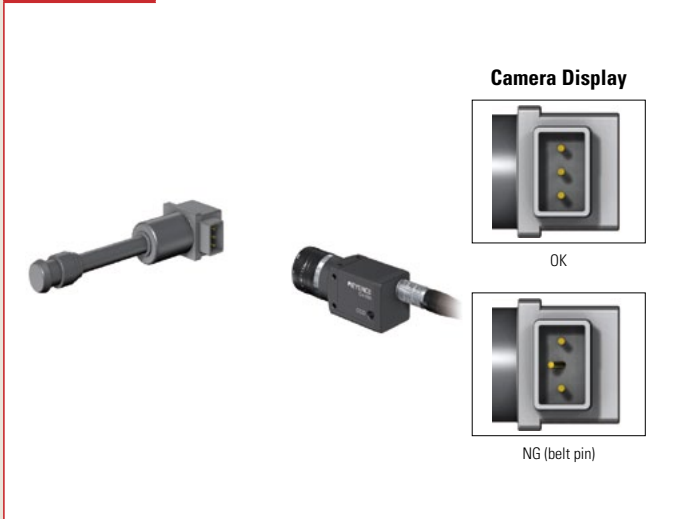
APPLICATION Complete inspection of a dashboard panel



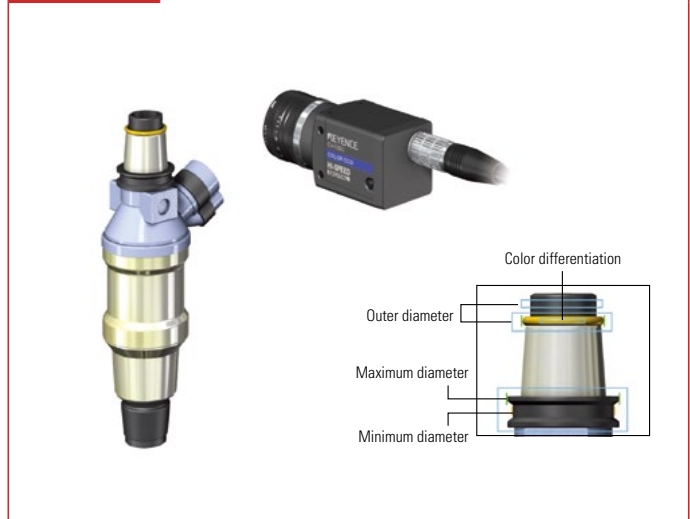
APPLICATION Inspecting for grease applied to parts



APPLICATION Detecting bent terminals in ignition coils



APPLICATION Verifying the proper injector assembly



KEY FEATURE 21 megapixel camera resolution

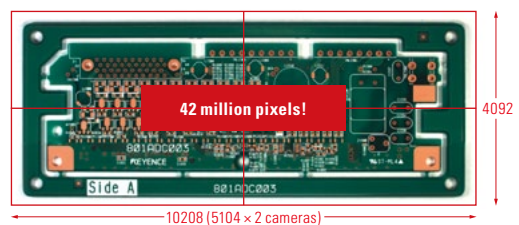
Same resolution over a wider field-of-view

A 21 megapixel image, with a resolution of 5104 x 4092, can be captured at 9 FPS (110 ms) allowing detection of minute defects within a very large field-of-view.



Two-camera connection for processing 42 megapixels at once

Connecting two 21 megapixel cameras allows processing of up to 42 million pixels. The two cameras can capture and transfer images simultaneously.



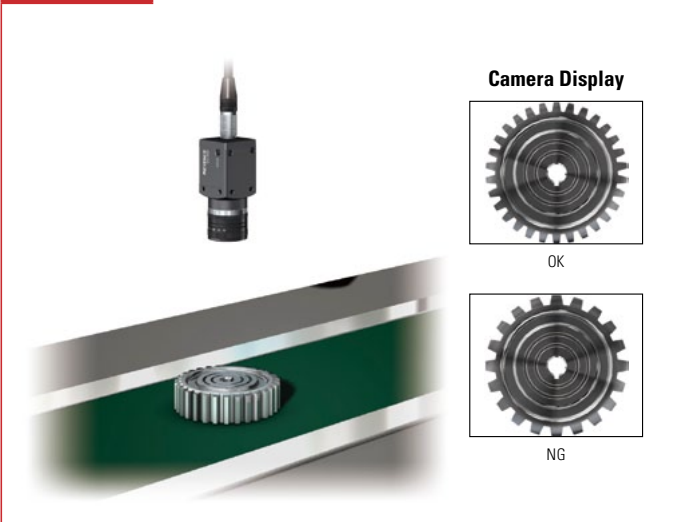
4 INCREASE PRODUCTION RATES

Improve yield by eliminating false detections and reducing the scrap rate

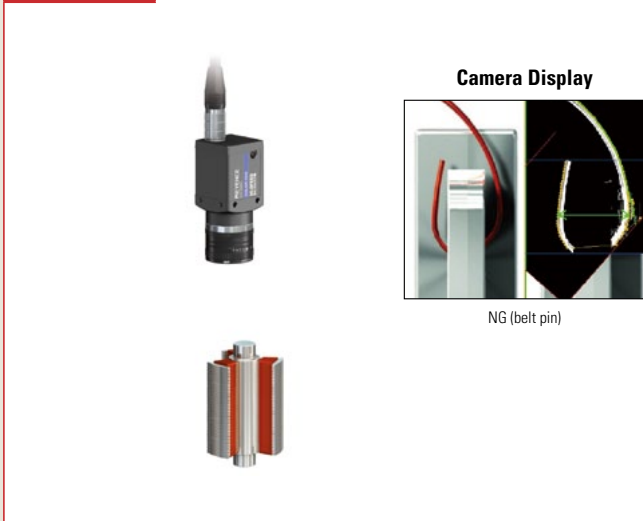
APPLICATION Detecting bead position



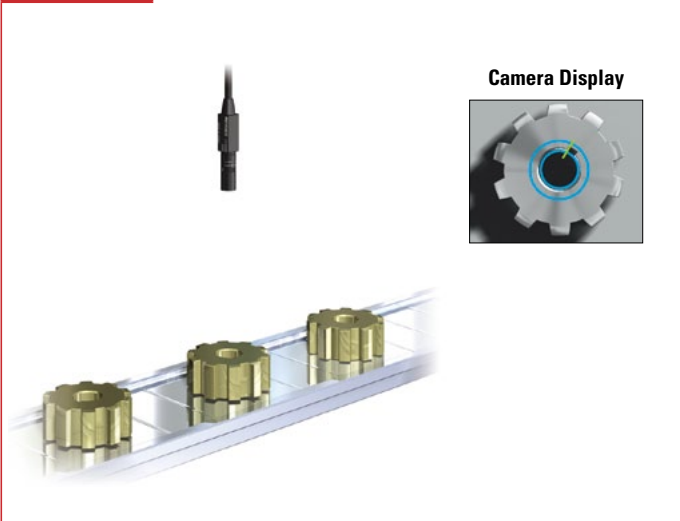
APPLICATION Detecting incorrect gears



APPLICATION Motor wire inspection (including soldering defects)



APPLICATION Detecting gear notch angles



KEY FEATURE AUTO-TEACH INSPECTION TOOL COLOR

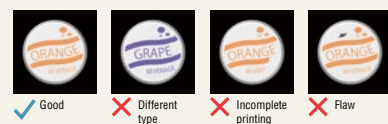
An inspection tool that learns what a good part is.

Inexperienced programmers often lack an understanding of vision algorithms or may be uncertain which to choose. By simply teaching a sample of known good parts, the Auto-Teach Tool uses statistics to automatically set the ideal tolerances for rejecting bad parts, even parts with defects unexpected at the time of setup.



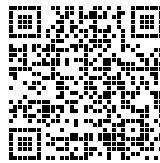
NEW ALGORITHM!

Parts that are different from the learned good parts are detected as bad!



Defects not expected at the time of setting can also be detected.

Scan for More Information



<http://www.keyence.com/machinevision>

KEYENCE

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SAFETY INFORMATION

Please read the instruction manual carefully in order to safely operate any KEYENCE product.

CONTACT YOUR NEAREST OFFICE FOR RELEASE STATUS

KEYENCE CORPORATION OF AMERICA

500 Park Boulevard, Suite 200, Itasca, IL 60143, U.S.A. **PHONE:** +1-201-930-0100 **FAX:** +1-855-539-0123

KEYENCE CANADA INC.

E-mail: keyencecanada@keyence.com

KEYENCE MEXICO S.A. DE C.V.

E-mail: keyencemexico@keyence.com

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