

Customer Success Story

Asahi Kosei

Business Description:
Precision Die Casting Manufacturing /
Precision Molds / Precision Machining / Assembly

Scan to see the
case study video



Background

Asahi Kosei wanted to automate visual inspections to address a growing shortage of inspectors, and to reduce defects. Prior attempts at using AI had faced challenges such as unclear reasoning for defect detection decisions, and an inability to match the human performance. Asahi Kosei therefore decided to try HACARUS Check, which excels in surface inspection for diecasting.

Result

HACARUS Check helped reduce the need for inspectors by 66%, in addition human errors were eliminated and the quality inspection process became uniform across all stations. Asahi Kosei are now considering introducing HACARUS Check in additional projects.

Next Steps

In the future, Asahi Kosei would like to further its smart factory efforts and achieve fully automated production, using robots for delivery and transportations in addition to for quality inspections.

HACARUS works closely with technology partners to meet the challenges of our customers to provide the optimal solution for each use case

Technology Partners

Aval Data
Visco Technologies
NTN

Epson Direct
Omron Sentech
CCS

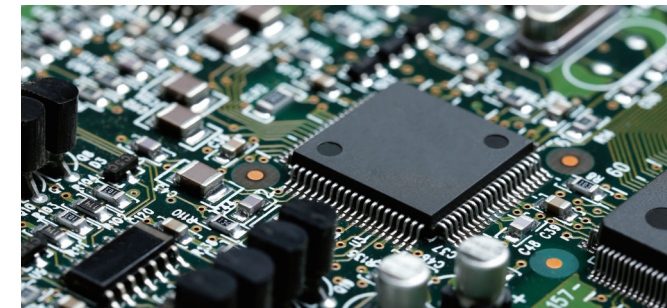
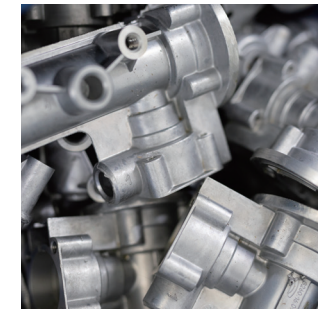
Denso Wave
FANUC
YUTAKA ELECTRONICS INDUSTRY
and others

Detailed information about HACARUS Check lineup, including specifications can be found here.



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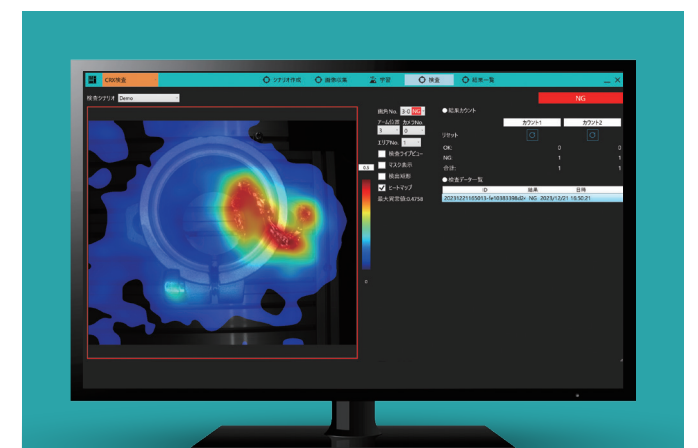
AI
Powered
Visual
Inspections

HACARUS
CHECK Series



For
Metal
Non-ferrous metal parts
Casting
Aluminum die-casting
Press processing
Plating

For
Electronic circuit board
Electronic components
Rubber
Plastic



Automation of visual inspection
for complex inspection targets
enabled by AI & Robotics

Combining Robots, Cameras, and Lighting for Ideal Image Capture

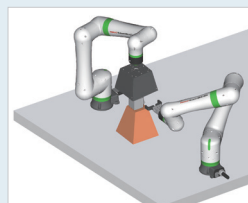
By combining robots, cameras and light 360 degree image capture of complex three-dimensional workpieces is made possible. The flexible setup allows for multiple robots and cameras to be installed to shorten inspection cycles as required, and selecting cameras and lighting tailored to specific inspection targets allows for proposing various combinations, each tailored to the specific use case.



HACARUS CHECK for FANUC CRX Series

Quick setup for inspections, with no need for specialized knowledge, ideal for small quantities and supports many types of products

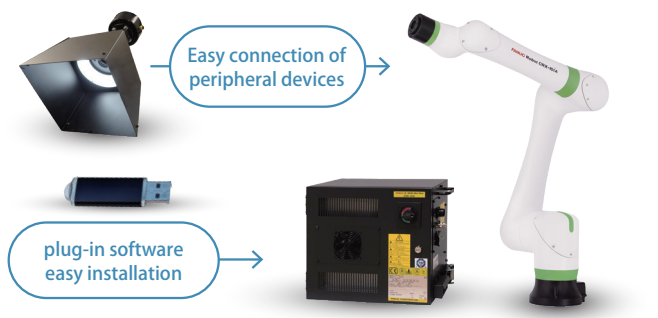
The FANUC CRX robot, equipped with cameras and lighting selected by HACARUS, captures images of the inspection target. With FANUC's dedicated tablet TP (Teaching Pendant), it's easy to plan robot movements, enabling quick inspection startup and in-house adaptation as task change.



CFCD-1000 Model

The CFCD-1000 setup allows for complete automation, by utilizing two robots, one for inspection and the other one for movement of the inspection target.

Scan to See HACARUS Check for FANUC CRX in Action



Capable of handling small-batch, multi-variety production.

No restrictions on workpiece size or weight

No additional development requests or costs

- HACARUS selects the cameras and lighting. Depending on the work and inspection requirements, additional hardware such as a robotic hand may be necessary.
- The software is ready to use after installation from a USB drive and can be easily programmed with FANUC's dedicated TP (Teaching Pendant) tablet.

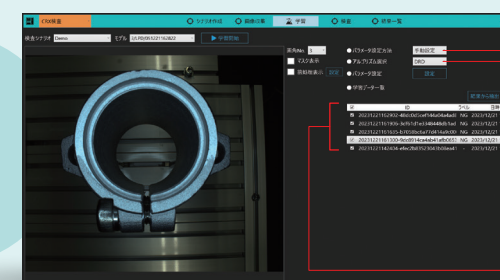
HACARUS can also offer imaging systems other than those in the above lineup, contact sales@hacarus.com to learn more.

Anomaly Detection Powered by HACARUS's AI Core

HACARUS' AI Core creates highly accurate AI models for anomaly detection, created from a small quantity of images of non-defect items. As no defect items are needed for model creation, it is especially useful in manufacturing environments where collecting defective samples is difficult. HACARUS Check is designed for quick and easy iterative training of models as work condition changes over time, such as molds used in die casting, ensuring continuous monitoring for defects.

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Inspection
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AI Model Training

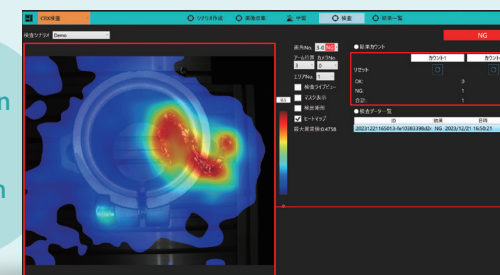


Parameter settings can be configured automatically or manually

Bundled algorithms include:
DRD: Best for metal parts with textured patterns
LPD: Best for electronics and PCBs
PSD: Best for diverse objects not falling into the above categories

Select images for training, and start the AI model creation process

Inspection & Defect Detection

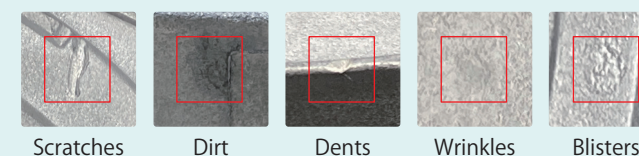


Inspection Result

Overview of defects detected (NG) and passed (OK), counted and displayed

Anomalies detected are clearly displayed, aided by a heatmap feature ※Bounding boxes can also be displayed

Able to Detect a Wide Range of Defects



Scratches

Dirt

Dents

Wrinkles

Blisters

AI Model Performance Example

Training Data
40 Images

Training Time
Less than **6** Min

Overdetection
Less than **5** %

Comparison with Other Methods

	Inspection Standardization	Fast Inspections	Model Training with Good Data	Training Data Needed	Training Time	GPU	Iterative Training
Manual visual inspections	×	△	—	—	—	—	—
Rule-based visual inspection software	○	○	×	—	—	△	×
Deep Learning based visual inspections	○	○	△	Large	Hours	Required	×
HACARUS	○	○	○	Small	Minutes	Unesessary	○

※Iterative training refers to a simple process for retraining models, such as when the inspection target or production environment change.