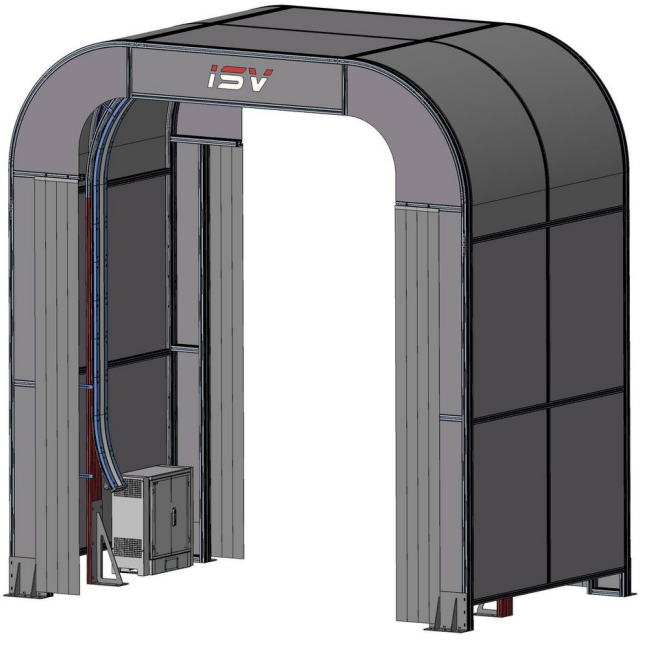
ISV EHR®
VISION TECHNOLOGIES

SpecularVision

High Detection Rate 3D Defect Data Closed-Loop Rework

Paint Defect Inspection Solution



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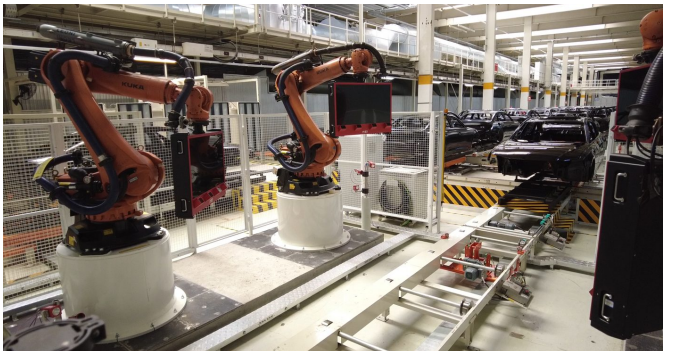
Paint Defect Inspection Solution

OEM: Paint Shop; Finish Line; Final Inspection





ISV SpecularVision replaces manual visual inspection of painted car bodies. LED sensors project sinusoidal structured light onto the surface; cameras capture the reflected patterns, and phase-measuring deflectometry determines position, size and type of each defect in real time. Results are shown on displays along the finish line, stored in a defect database and can be passed directly to automated sanding and polishing. SpecularVision has been applied to more than 20 car models and has inspected over 3 million bodies.

Solution Advantages

01 Tunnel or Robotic Inspection

The tunnel inspects the moving body in continuous flow; the robotic 3D system offers the highest position and classification accuracy.

02 3D Defect Data

The robotic system outputs defect position, normal direction and 3D point cloud to support automated sanding and polishing.

03 Defect Display on the Line

HD monitors show skid ID, model, color, defect location, rating and polishing status, customized to each worker's area.

04 Data Analysis

ISV AccuAnalyzer generates defect reports, trend charts and heatmaps and raises alerts on configurable quality thresholds.

System Variants and Specifications

	Tunnel Inspection System	Robotic Inspection System
Minimum defect size	0.2 mm	0.15 mm
Detection rate	≥ 97 %	≥ 98 %
False positive rate	≤ 5 %	≤ 3 %
Sensors	Main and tailgate scanner, 15 high-speed cameras, LED lighting	Robot-guided 3D sensors with 4 cameras each
Cycle time / speed	40 s; conveyor 200 mm/s recommended (max. 400 mm/s)	Depends on body size and robot layout
Defect location accuracy	5 mm	High, incl. 3D point cloud
Edge detection	—	Defects more than 3 mm from edges and ridges

Defect Types Detectable

- Dirt / inclusion
- Fiber
- Crater
- Paint drop / sagging
- Scratch
- Dent / bump
- Pinhole / boiling
- Orange peel
- Mottle

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