

Release:	No. 709, 19.06.2018
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On-the-fly or stop-and-go: Car Paint Vision system detects and classifies defects in the paint shop to optimize quality and efficiency

Fully automatic 100% paint inspection for perfect vehicle surfaces

An innovative sensor for the inspection of painted car bodies is revolutionizing quality control in the paint shop. The robot-based system inspects the entire relevant surface in a single production cycle while also saving the time needed for movement. Because the system automatically classifies detected defects, the generated inspection data provides additional support in analyzing causes and optimizing production.

Impeccable paintwork is one of the most important quality characteristics in a new car – after all car enthusiasts are not the only ones who take a dim view of paint defects. Today, constantly reliable inspection by humans is becoming increasingly more unrealistic in light of ever shorter production times. In order to guarantee perfect paintwork and prevent additional costs associated with reworking or customer complaints, while meeting the short cycle times required in automotive manufacturing, ISRA VISION offers inspection on the fly or during “stop & go” production with the Car Paint Vision system (CPV).

Identify defects, achieve short cycle times

The CPV system bundles ISRA’s expertise in the fields of robotics and surface inspection in one flexible application. As a stationary or robot-mounted system, CPV detects all topographical and non-topographical paint defects – such as inclusions, craters, bubbles, scratches, bumps,

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and dents – with precision down to the micrometer range, and documents and classifies them. For the robot-mounted solution, four robots without linear axes are sufficient to scan the entire vehicle surface. The complete inspection of an entire vehicle often takes less than 50 seconds at top speed. Moreover, individually adaptable error reports allow immediate analysis of the identified defects. Furthermore, the intuitive operator software supports users in commissioning the system quickly by guiding them through setup step by step.

3D display of defect positions and automatic color marking

The heart of the CPV solution is the deflectometry sensor PAINTSCAN, which achieves short cycle times in both line tracking (on the fly) and the stop & go process. Equipped with embedded technology, PAINTSCAN does not need any external evaluation hardware. The high-resolution USB 3.0 camera technology is directly connected to embedded high-performance computing units, thereby enabling short scanning times. Its omni-directional, multi-channel LED lighting inspects with a detection rate significantly above 95%. Furthermore, thanks to redundant images (oversampling), specific tolerances can be defined for various parts of the car body in order to achieve precisely the desired quality. PAINTSCAN calculates the corresponding robot paths for the inspection using a CAD model, which considerably simplifies the setup of new vehicle models. Based on the digital model, defect coordinates can be displayed immediately and used for the color marking of defects with robots.

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Fast return on investment and easy to retrofit

The Car Paint Vision system with PAINTSCAN enables the full inspection of paintwork quality in the shortest inspection times, and in all painting processes – no matter the industry. The ISRA solution raises the efficiency of the entire painting processes in a cost-effective and measurable way. Precise marking of the defect locations simplifies reworking, while users also benefit from the comprehensive inspection results when optimizing their production processes. Thanks to its simple installation method, the solution is easy to retrofit in existing systems. Moreover, CPV is perfectly suited for use with all leading robot types and is compatible with all common communication interfaces. The solution's high automation potential also means a fast return on investment.

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Images



709_1.jpg

PAINTSCAN's slim enclosure is home to state-of-the-art processors, high-resolution cameras and special LED matrix lighting.



709_2.jpg

As a stationary or robot-mounted system, CPV detects all topographical and non-topographical paint defects – such as inclusions, craters, bubbles, scratches, bumps and dents – with precision all the way to the low micrometer range.

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