

CarPaintVision

Fully Automatic 100 % Optical Inspection
in the Paintshop

State-of-the-art
Inspection Technology

ISRA
VISION
perceptron

TOUCH &
INSPECT
Beyond INDUSTRIE 4.0

CarPaintVision – 3D Machine Vision

Fully Automatic 100 % Optical Inspection of Paint Surfaces in Difficult Environments

Given the increased number of vehicle models and reduced production times, the quality requirements for the final paint job on car bodies regarding topological defects can no longer be objectively and reliably examined by the human eye in a manual inspection.

Difficult conditions in the production environment can also be a factor and result in a negative impact on the paint quality. Even tiniest paintwork defects such as inclusions, scratches, dents etc. can lead to profound dissatisfaction at your customer level and will inevitably result in complaints and additional costs.

CarPaintVision – with PAINTSCAN-Sensor

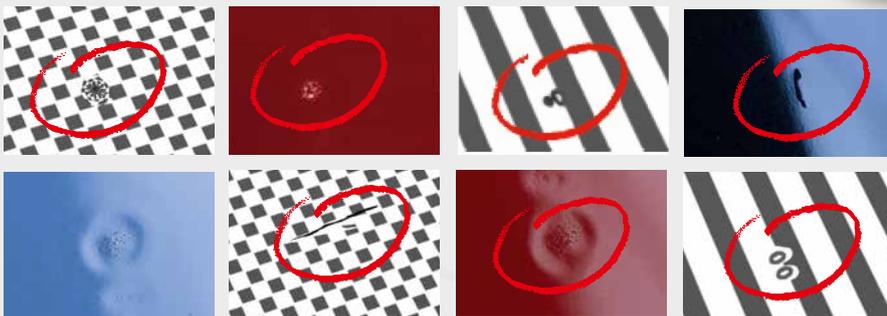
ISRA's innovative technology enables the **PAINTSCAN** sensor to conduct reliable in-process detection of virtually all paint defects with an accuracy to within a few hundredths of a millimeter. Four robots equipped with **PAINTSCAN** sensors scan car bodies within 45-50 seconds and reliably discover virtually all paint defects. **CarPaintVision** can be integrated in all painting processes to ensure reliable inspections.

CarPaintVision – with Hybrid Technology

The **PAINTSCAN** sensor is equipped with leading-edge embedded technology and precision optics to ensure the precise detection of any kind of paint defects. The fully-automated system detects even the tiniest of errors on the paint surface. The state-of-the-art hybrid technology combines various measurement methods with high-speed omni-directional and multi-channel LED scanners for the detection of almost all paint defects. The result is a detection rate that is significantly higher than 95%. For maximum defect detection, all points on the entire paint surface are inspected and analyzed several times using oversampling. Using this method, CarPaintVision together with the **PAINTSCAN** sensor ensures on-the-fly defect detection and classification at high speeds – all as a result of leading-edge 3D machine vision and LED technologies.



Typical Paint Defects



Detection of paint defects at a rate significantly above 95 %

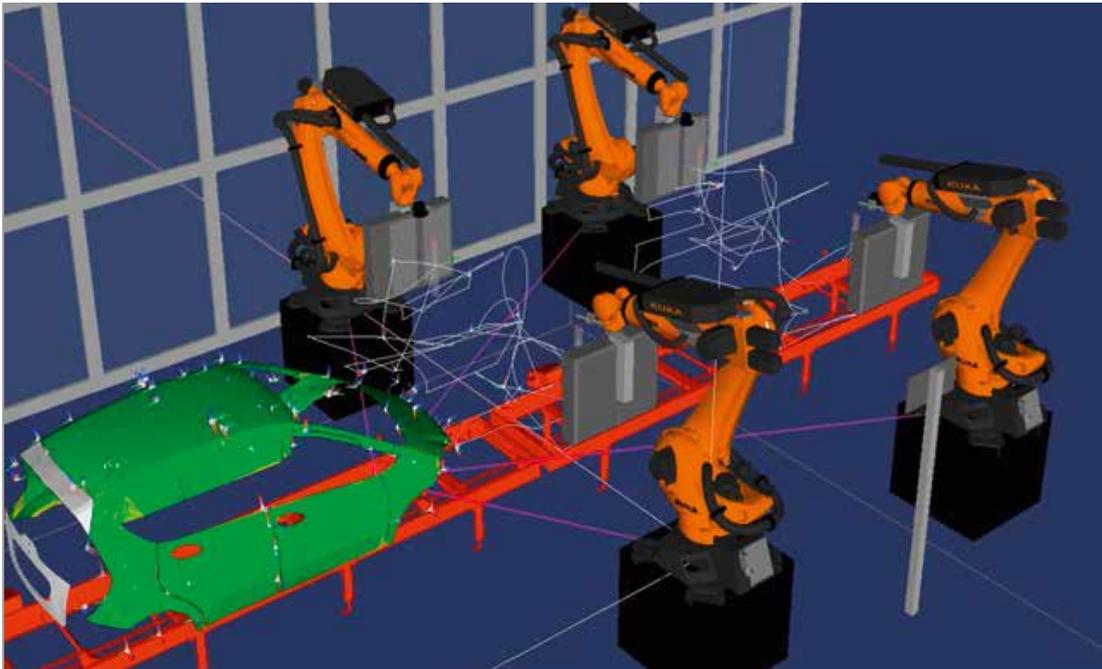
for Fully Automatic Paint Inspections

CarPaintVision – Fully Automatic Robot Path Planning

CarPaintVision offers fully-integrated robot communication protocols for all major brands in the robotics industry. Additionally, the system supports all common industrial communication interfaces.

The CarPaintVision system utilizes integrated robot path planning based on the CAD models of the work piece to be inspected.

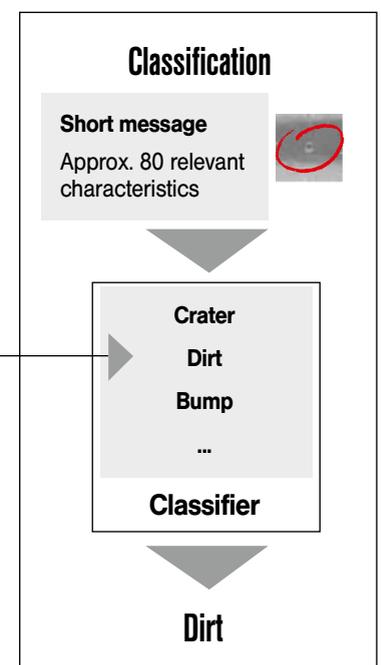
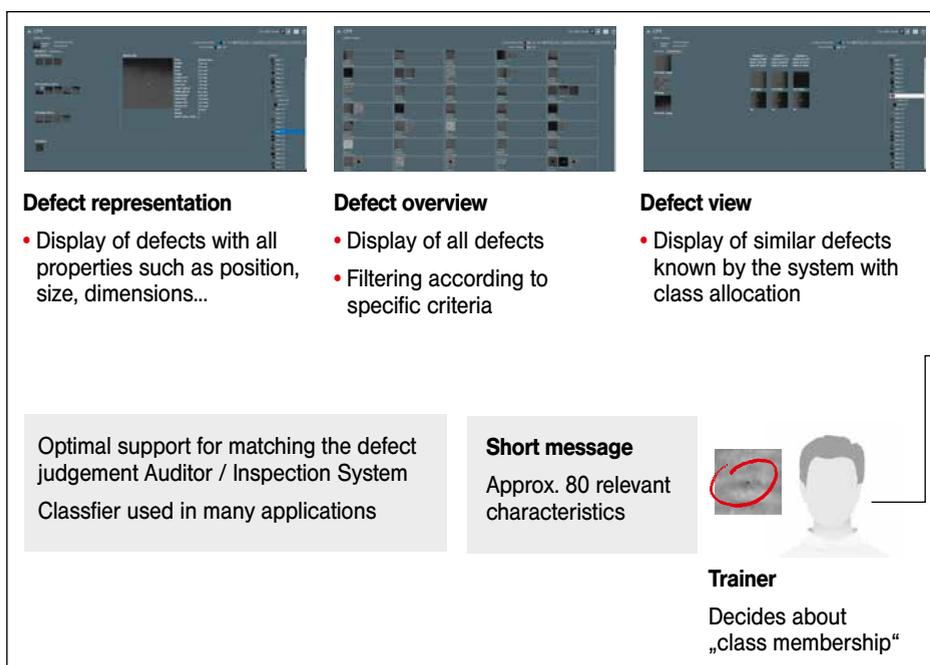
Using the PAINTSCAN sensor, the robot movements for surface scanning are then calculated fully automatically. The simple and fast set up also supports the integration of new vehicle types.



CarPaintVision – Defect Detection with Auto-Teach Function

Learning algorithms ensure and improve quality control. The quality of the paint surface is evaluated objectively and consistently at audit level, ensuring that defect sources are identified quickly and the on-going process is improved.

The advanced In-Line classification system serves to identify and classify every type of defect with the PAINTSCAN sensor – a basic requirement for efficient process optimization.



CarPaintVision – Industrie 4.0

CarPaintVision – Process Optimization through Process Analysis

CarPaintVision offers real-time data processing with defect detection rates well above 95%. The user-friendly software creates detailed and customer-specific defect reports that enable you to quickly analyze and evaluate defects. The paint defects can be displayed in the CAD model on screen for reworking purposes or used in the fully automatic control of marking robots.



CarPaintVision – EPROMI Visualize, Organize, Optimize

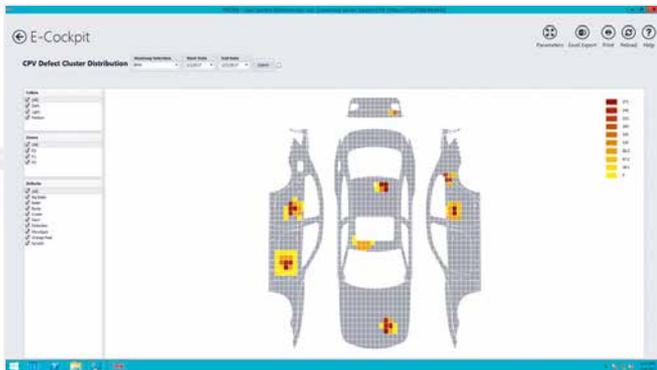
EPROMI Software (Enterprise PROduction Management Intelligence) Software aggregates information, analyses, and visualizes data in a structured and easy understandable way.

The collected data is the basis for visualizing optimization potential and enables decision makers in production, factory line, and corporate management to seize hidden potential. Desired information is linked quickly and is easily available for analysis. EPROMI visualizes the requested information according to requirements and enables a sustainable optimization and digitalization of production in all production lines equipped with the inspection systems. EPROMI unleashes the versatile potential that is hidden in production data.

This way the output of production lines is significantly increased, resulting in a stronger market position, higher customer satisfaction and more efficient use of resources. EPROMI offers all quality and production data at one sight with application specific E-COCKPITS for data visualization and analysis. The development of new optimization opportunities and informative causal analysis for reoccurring error types enables an even more efficient allocation of resources and resulting ultimately in increasing revenue.

EPROMI stands for Industrie 4.0 and offers OPC-UA and WLAN on-board .

EPROMI – Heatmap

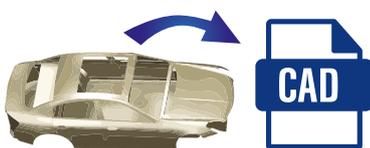


EPROMI – Production time frame 1 week

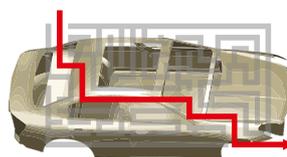


CarPaintVision – the System for Perfect Paint Surfaces

3D Data Upload Transfer



Automated Path Planning



Inspection with PAINTSCAN



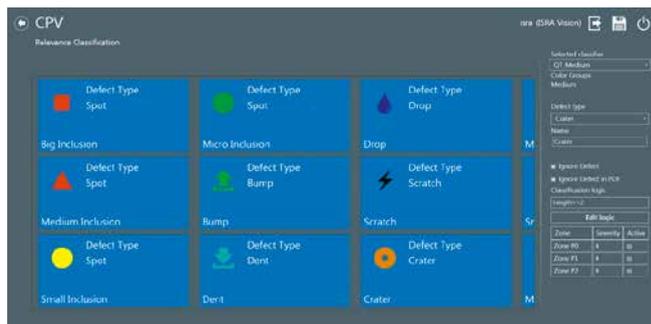
in the Paint Shop



Industrie 4.0 – usable as Desktop application, web supported and via Tablet & Mobile devices

CarPaintVision – Graphic User Interface

The **CarPaintVision** GUI allows the user to customize specifications and icons. The application oriented concept supports the definition of classification parameters. The display is able to show the defect's locations on the body. The improved user interface features an easy-to-understand structure and is optimized for touch operation to enhance usability. A clear workflow for fast setup increases the usability significantly.



Customized icons for improved usability



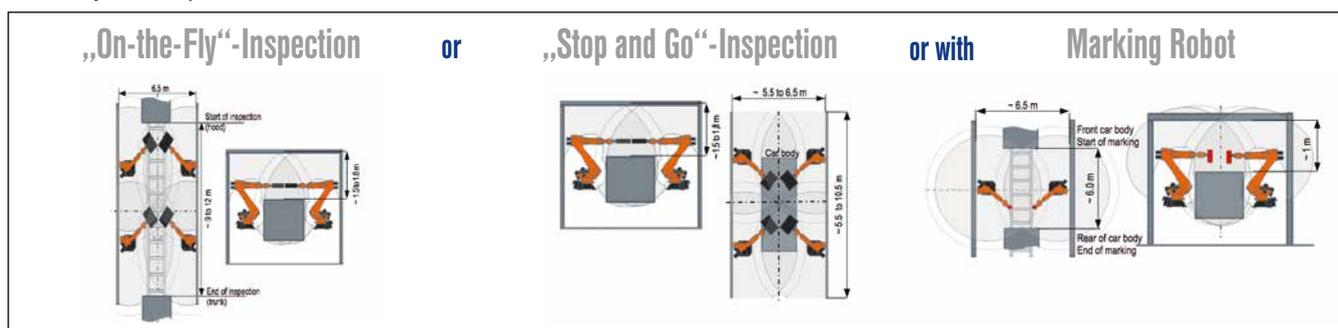
Intuitive Graphic User Interface

CarPaintVision – for Integration in any Production Line “On-the-Fly” or “Stop and Go”

CarPaintVision adapts to the production speed, meaning the inspection speed can be adjusted individually. Primed for robust functioning in difficult production environments, including vibrations and fluctuating light conditions. CarPaintVision can be integrated into any production line as a best practice application. The high-speed defect detection and classification with leading-edge 3D machine vision and LED technologies is easy to integrate into any produc-

tion line – „on-the-fly“ or „stop-and-go“. Images are generated reliably even under difficult ambient conditions. The scalable system can be used to inspect both static and moving objects and can be used in stationary or robot mounted configurations. The paint defects can be displayed in the CAD model on screen for reworking purposes or used in the fully automatic control of marking robots.

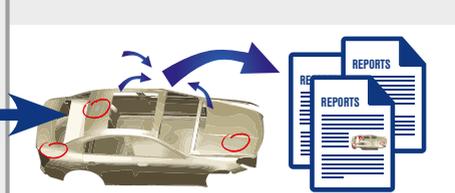
Flexible layout concept - Car Paint Vision with PAINTSCAN sensors



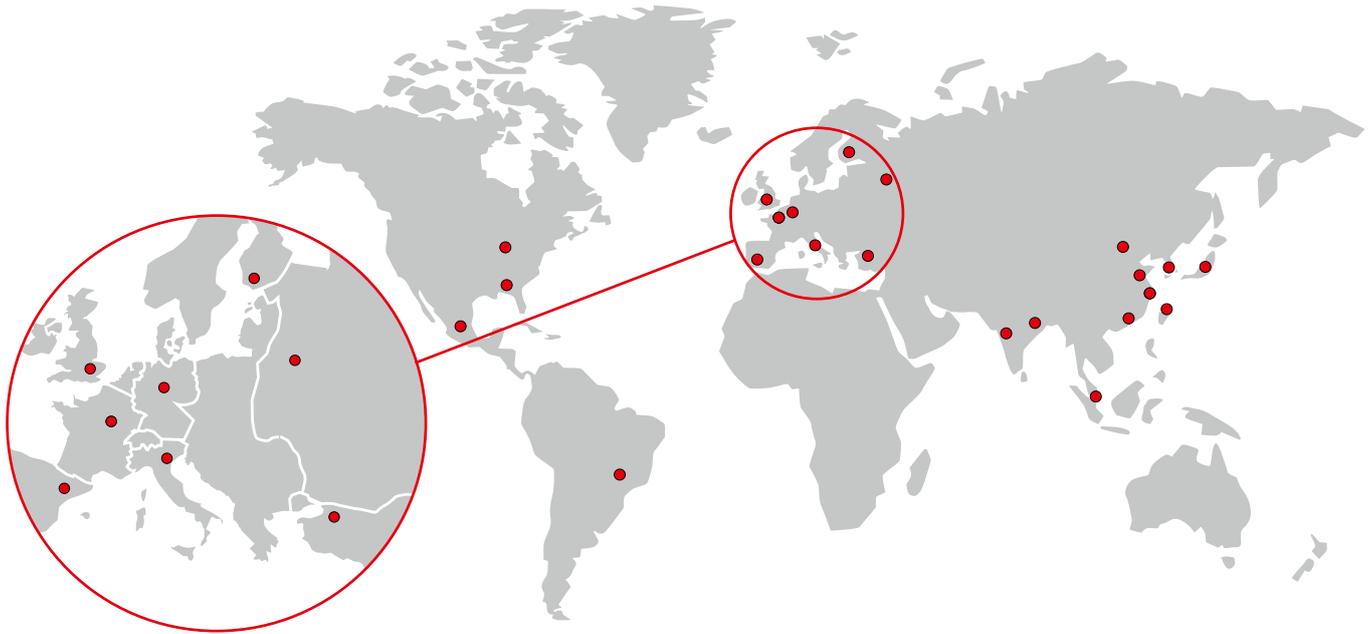
Self Learning Defect Detection



Reporting



Innovation for Robot Automation



Automation at its best

ISRA VISION has been a leading supplier of high-performance quality inspection, robot guidance and production logistics systems for more than 30 years.

Our systems are used around the world in many different industries and applications. Our mission is to offer a comprehensive portfolio of standard solutions, covering all requirements along the process chain.

ISRA's experience and technological competence in the field of industrial image processing has been proven by thousands of successfully installed systems worldwide.

Benefits at a glance

Customers opt for ISRA's solutions for the following reasons:

- Our development activities are consistently aligned with our customers' requirements.
- We are continuously expanding our knowledge and expertise in all core areas of industrial image processing.
- Our customer relationships do not end with the delivery of new products. The Customer Support and Service Center provides comprehensive support for the use of your systems and helps you to increase your productivity – be it via our telephone hotline, remote service, on-site service, or our maintenance services.
- More than 900 employees at our sites in Europe, North and South America, and Asia are committed to your success.

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