esφi

Eines Surface - Paint Quality Inspector

Automated Paint Scanner

eines VISION SYSTEMS | KONICA MINOLTA

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Automated Paint Scanner

/
A revolution in surface defect detection
/

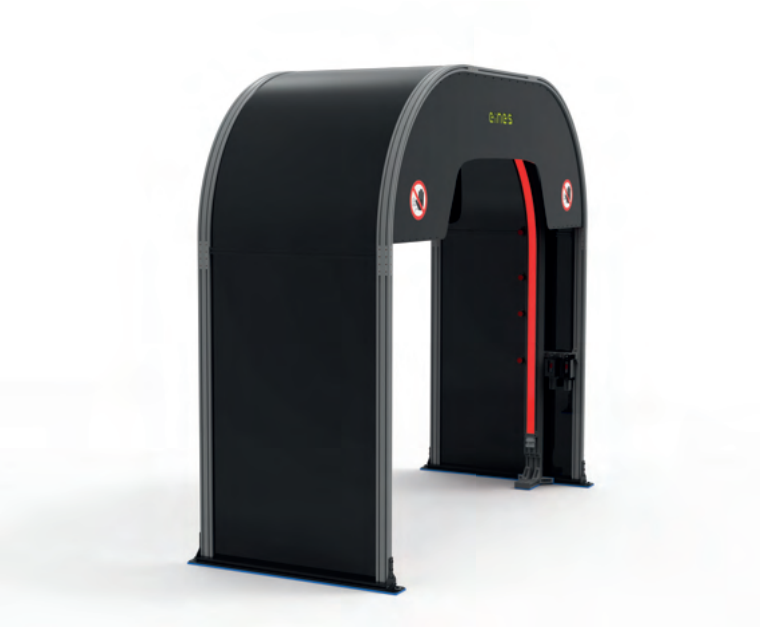
The EINES® Esφi Paint - Quality Scanner is the world first system able to scan on a moving line with short cycle times, and respectively no interruption of production tact times resulting in higher productivity and efficiency. The Scanner can be configured for all current and future car bodies within similar dimensions.

This revolutionary system uses machine vision to improve quality control in the automotive industry. Machine vision is a real technological revolution for the automotive industry and has direct benefits.

More than 30 systems installed

More than 50 different car models

More than 10 brands



SCANNING
MULTI-COLOR
SAFE
MONITORING
STORAGE
MOBILITY
LOGICAL
ANALIZING

/ **Fastest ROI through gains in efficiency & productivity** /

Innovative Technology

The EINES® Esφi Surface - Paint Quality Scanner employs new techniques and technology to precisely follow the curves of the vehicles. **Hightly accurate in detecting small coating defects** such as orange peel, pinholes and other paint microdefects, it also detects dents and peaks.

The **reduced dimensions** of the vision booth, with light aluminum structure, allows an immediate installation on site without costly conveyor modifications, using the existing transport conveyor, moving tables or lift. Since system is free of moving parts, there is no wear, no safety measurement required and thus very low maintenance costs.

The Scanner is able to scan **bi-tone cars** and has the capability of auto teaching new colors.

The EINES® Esφi Surface - Paint Quality Scanner is **ready for future expansions** by interfacing with forthcoming robotic refinishing systems providing the necessary type and exact location of defect. This will further enhance productivity, efficiency and cost reductions.

Key features

ADAPTABILITY

- **Smaller footprint** enable to install in it brown field.
- **Light weight** does not limit the location of installation.
- **Connectivity/Customizable** to any client existing system and Finish Line.
- **Varieties of reporting** function to accommodate versatile clients needs.

EXTENSIVITY

- Applicable to **multiple painting process** such as ED/Primer/Top coat
- Applicable to **auto repair systems**.

SAFETY

- **No moving parts** eliminate any risk about safety to your vehicles and operators.
- **Environmental friendly** design.

COST PERFORMANCE

- **Less** initial **investment.**
- **No maintenance cost.**
- Experienced **remote support.**
- Market proven start-of-art technology as market leader to provide **highest performance**.

/
One size fits all
/

/
One solution, multiple possibilities
/

Advanced features

Flexible → ability to inspect multiple car models, multiple variants and colors

Accurate → able to detect microdefects

Fast → able to inspect a whole car in a moving line

Cost effective→ Low consumption due to LED lighting and no extra motors or devices

Two-color → Able to scan a bi-tone car in one cycle

Small foot-print → Easy for re-location. With lightest and strongest materials

Zero maintenance cost → Just cleaning glass front covers now and then

Long life expectancy → Long life of LED lighting

Fast ROI → High cost performance with minimum running cost

Easy to use → Usability to be used and customized by people with no vision skills

Expandable → Able to move towards unmanned repairing stations

Traceable → ability to record all data for intuitive reports and further analysis with incorporated software

Open → ability to dialog with multiple PLC brands and multiple camera models throught multiple protocols

Speed → Fast scanning on moving lines for shortest cycle time

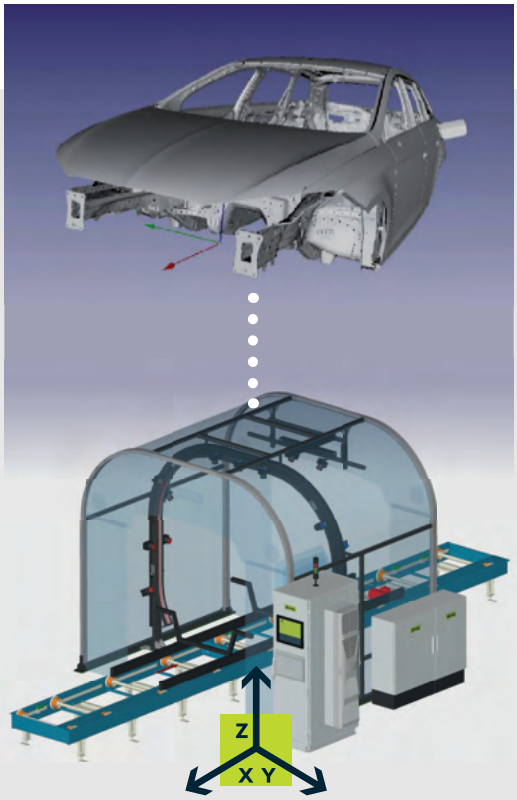
/
Processing +80.000 images per car in just a few seconds
/
Flexibility to scan multiple shapes & bi-tone car bodies
/

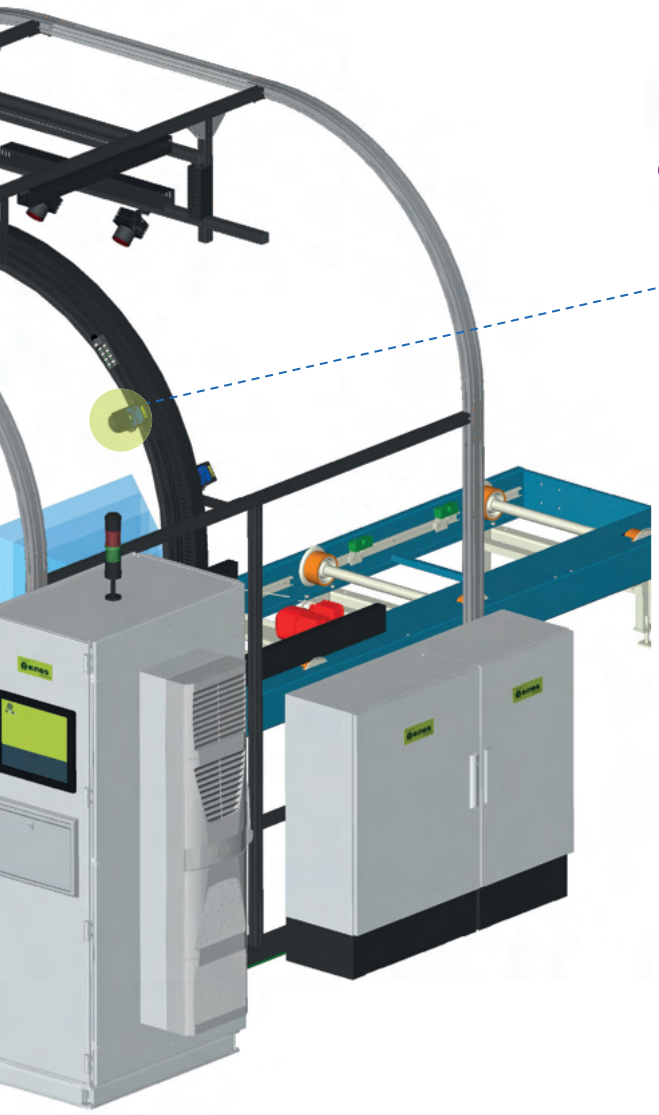
Performance processing power in a rack→
For parallel processing

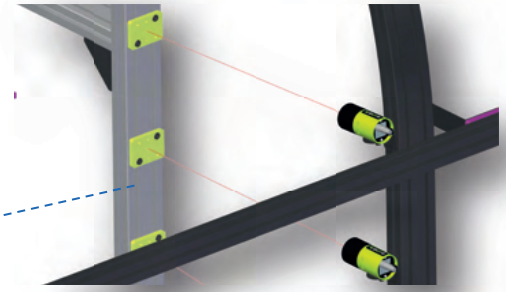
Advanced 3D technology

All cameras are calibrated on a 3D space and therefore defects found are accurately position with six degrees of freedom including pointing vectors.

EINES SURFACE QUALITY INSPECTION	- Surfaces analisys. - Paint defects detection.
EINES UNIVERSAL 3D MEASUREMENT	- Car Body reference - 2D to 3D coordinates - Angle orientation
EINES FLOW CONTROL DB	Send data (X,Y,Z,Rx,Ry,Rz) to upstream Quality System.







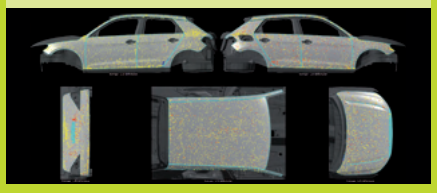
Camera Recalibration tool

- Non-flammable or fireproof material.
- Individual camera brackets with 2 axis adjustments.
- Calibration tool with individual targets for each camera.
- Wizard assistant with overlapped images (master versus actual), for a quick and easy camera reorientation.

Advanced Reporting Tools

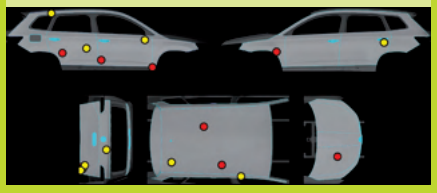
Paint quality display

So easy and intuitive. Enter a VIN and click the Search button. All quality data recorded for that VIN number will be shown analysis or warranties checks.



Distribution map analysis

Produces a visualization of all defects that were found on a model type over a given period of time.
Big data can help to analyze trends by shifts, lines, ovens, etc and therefore system retrofits by appliying predictive and preventive actions based on these studies.



Executive sumary report

Generates a list of defect distributions, ordered by:

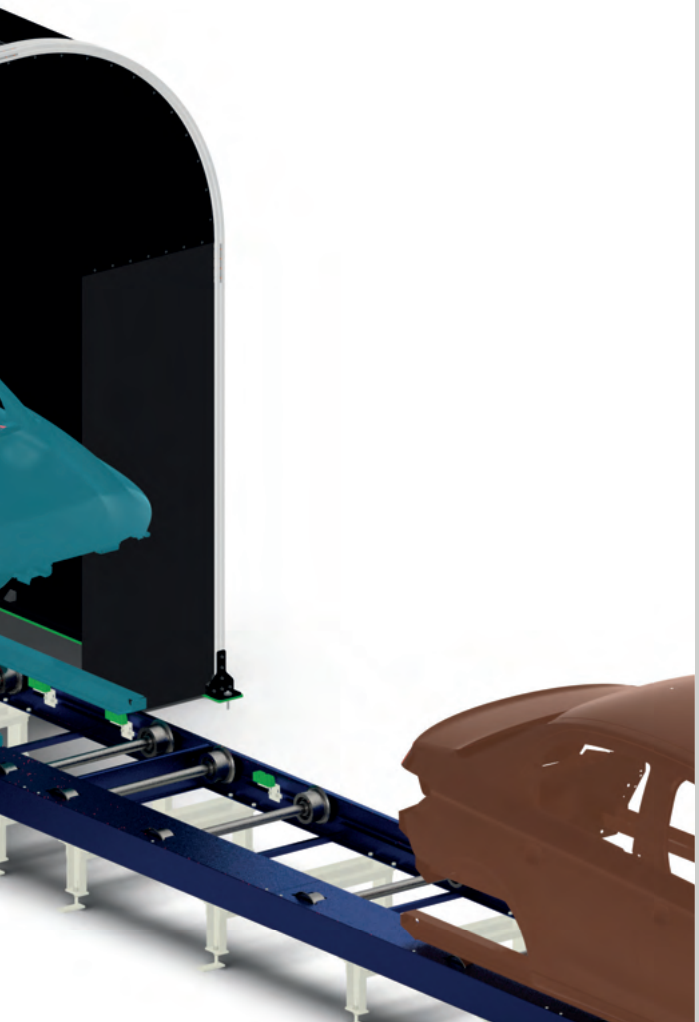
- Model
- Defect type
- Color
- Zone
- Parts

Human Machine Interface

Results can be shown to operators via monitors, tablets, smart phones, printers and Augmented Reality (AR) allowing finishing corrections done in real time on the line to no interruption of production times resulting in higher productivity and efficiency.

Operator's feedback

Smart watch
Smartphone
Smart tablet
Fixed HMI Station
Augmented Reality



Web services

The Eines Web Service allows the user to generate reports, using a standard windows web browser on his own office PC.

- → **Distribution Map Analysis Report**
- → **Executive Summary Report**
- → **Print Report**

eines VISION SYSTEMS
A Konica Minolta Company

/ Since 1992 /

The Company

Eines Vision Systems has become one of the main partners of automotive manufacturers worldwide, developing complex systems and software solutions for measurement, error detection and machine vision systems.

Our name stands for innovative, top-class light measurement technology and unrivalled specialist knowledge over an extremely broad range of applications. Our company is fully focused on providing solutions to the automotive industry, developing machine vision solutions since 1992.

Eines Systems, as a leading technology company, has competitive advantages in the core business of providing automated quality inspection systems and solutions for the automotive production process. The company excels in agile, customer-oriented development for its global customer base.

Our focus on the automotive industry reflects many installations that enjoy benchmark status for these applications worldwide.

As a Konica Minolta Group company, EINES® customers will benefit from the global sales and service capabilities of a global player.

Our business is exclusively focused on the automotive industry and we are a reference in 2D/3D guidance, inspection and quality control systems thanks to our successful installations.

We are proud to have won 3 Henry Ford awards for our innovations. We also hold several international patents on some of our products.

Capable of guarantee world class quality control on the 100% of the cars produced, we are specialized in inline machine vision technology development for the automotive sector.

Our superb fit and finish and our tailor-made vision sensors provide outstanding performance in your ability.

We have as well several international patents on some of our products:

- **Quality Inspection Systems**
- **Metrology Systems**
- **3D Robot Guidance Systems**
- **Part ID & Multi Error Proofing Systems**

/ All over the world /

Our systems are installed all over the world, from Australia, Asia, the Middle East and Europe to the Americas.

We're proud of verify the correct quality on more than 8.000.000 cars per year for the mayor car manufacturers and provide them:

WORLD CLASS QUALITY

REDUCE ERRORS

BRAND IMAGE ENHANCEMENT

INCREASE CUSTOMER SATISFACTION

Many Konica Minolta Sensing products are used as standard colour measurement instruments. In particular, Konica Minolta has a significant market share in the global for display image quality measurement and inspection and has a strong presence as a market leader.

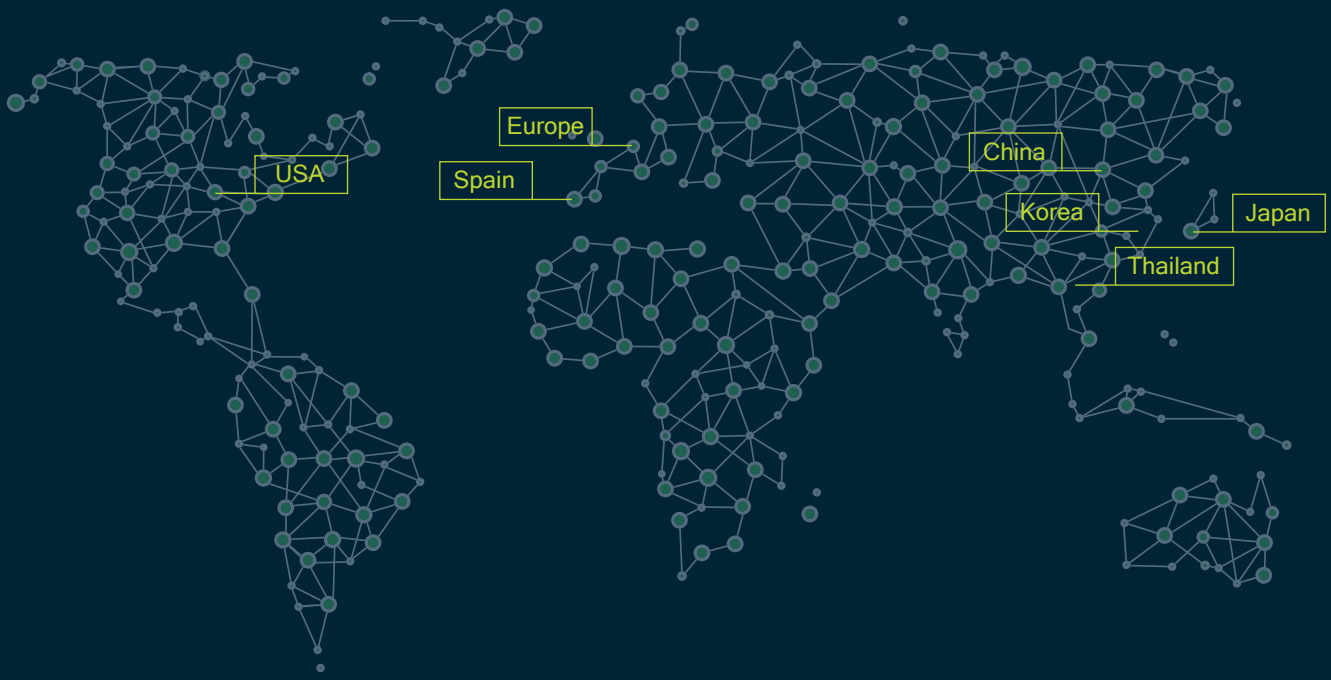
Konica Minolta has actively promoted investments to strengthen its competitiveness. In 2012, the company acquired Instrument Systems (Germany), which develops high-end optical measurement instruments and has a strong track record in high-performance measurement of LED displays and lighting devices.

In 2015, the company acquired Radiant Vision Systems, USA, which excels in high-resolution 2D display measurement instruments, image processing software and automated appearance inspection systems.

Eines as a part of Konica Minolta Sensing

Finally, with the addition of Eines Systems in June 2019, the Konica Minolta Group will accelerate the launch of visual inspection businesses for the automotive industry.

Konica Minolta remains committed to developing its measurement instrument business as a market leader, offering diverse products and high value-added solutions that enable high-precision light and colour measurement for the ever-growing ICT and automotive industries.



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