System for the detection of defects on a surface of at least a portion of a body and method thereof

INVENTORS: Marco Bianchi
Paolo Dario
Calogero Maria Oddo
Gastone Ciuti
Stefano Roccella
Mario Milazzo
Marcello Chiurazzi
Tamas Czimmermann
Luca Massari
Domenico Camboni

STATUS PATENT: Granted

PRIORITY N°: 102018000004368

PRIORITY DATE: 10/04/2018

PUBLISHED AS: IT; PCT; EP

The invention

The invention is a platform, and the relative method, for the identification, classification and subsequent removal of manufacturing defects present on vehicle components. The system allows to identify and correct defects before and after painting, allowing a more accurate reconstruction of the three-dimensional defect geometry and a more focused and effective correction intervention. The parts of the motor vehicle bodies may originally have defects that must be adequately corrected in the assembly line in order not to compromise the quality of the product. To date, an operator is in charge of inspecting and removing the defect. In the solution, the defect removal process is automated by the construction of a robotic cell consisting of three anthropomorphic robotic arms and as many tools dedicated to the inspection of the body for the location, classification and identification of the defect, by means of algorithms of comparative analysis of the forms and/or statisticians, and the removal of the defect.

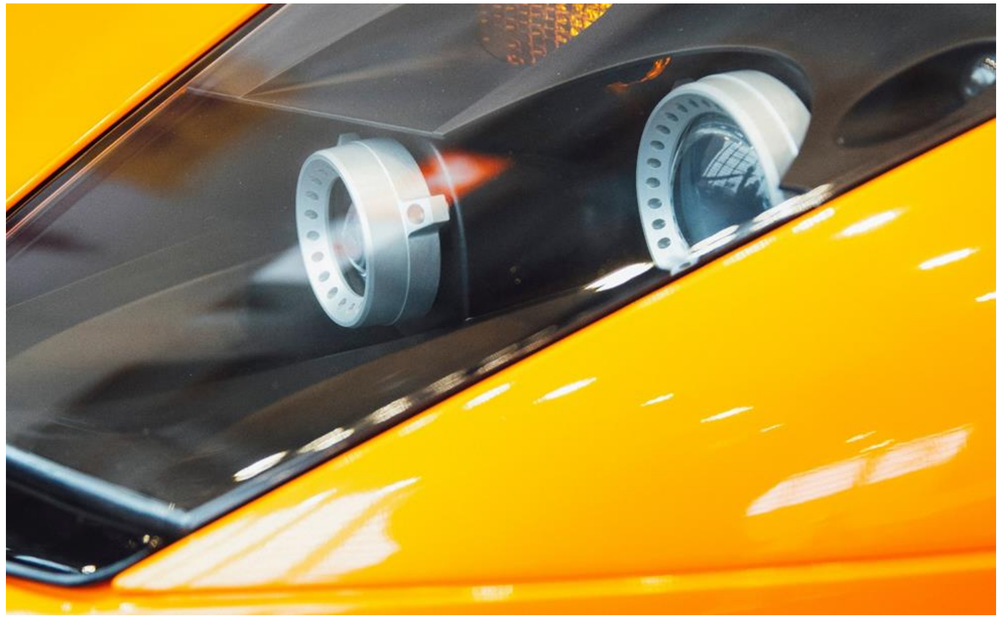
The platform consists of the following modules: Tool Handling System, Body Positioning System, Tool Tactile, Vision Tool and Grinding Tool.

The main advantages are:

- Reduction of the physical work load for the operators involved in the frame grinding operation (OCRA index <= 1.5)
- Increase in the efficiency and competitiveness of the company through the 20% reduction of the execution time of the pre-painting car body grinding operation
- Environmental protection for 10% reduction in painting waste.

ROBOTSYSTEM Automotive and PIAGGIO are co-owners of the patent.

Drawings & pictures



Industrial applications

The main industrial applications are:

- Production of motorized vehicles
- Two-wheeled vehicle industry
- Footwear sector

Possible developments

The research group is interested in obtaining industrial collaborations aimed at increasing the technological maturity of the present invention or industrial partners interested in taking the license of the technology object of this patent.

For more information:

Tech Transfer Office of Scuola Superiore Sant'Anna

Headquarters: Piazza Martiri della Libertà 33- Pisa

Web site : www.santannapisa.it

E-mail: uvr@santannapisa.it

For more information:

Ufficio Regionale di Trasferimento Tecnologico

Headquarters: Via Luigi Carlo Farini, 8 50121 Firenze (FI)

E-mail: urtt@regione.toscana.it

SCUOLA SUPERIORE SANT'ANNA PISA

REGIONE TOSCANA

urtt Ufficio Regionale di Trasferimento Tecnologico