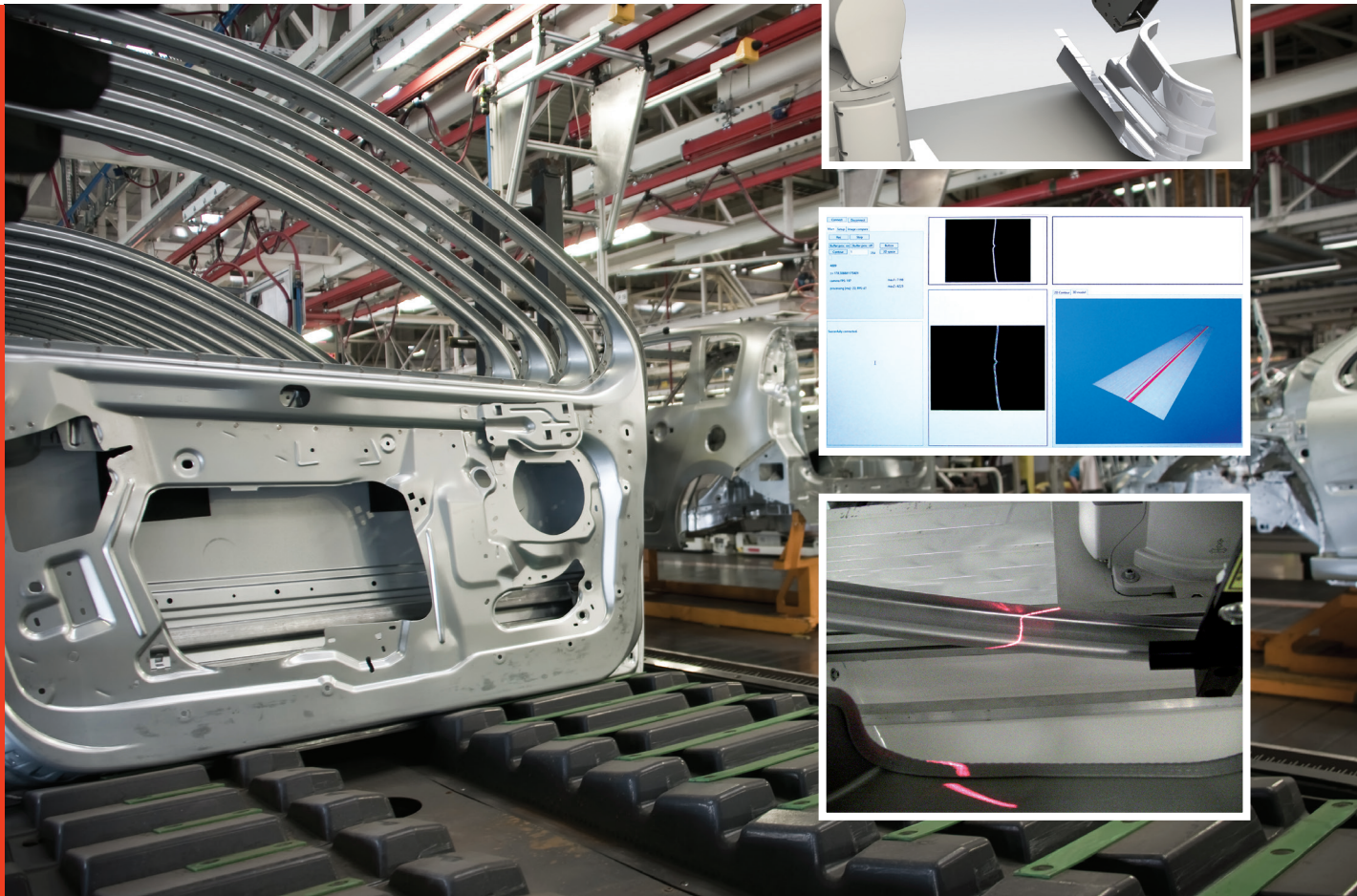


## FLAW DETECTION OF STAMPED PIECE



### MAIN FEATURES

- FLEXIBLE ROBOTIC INSPECTION
- DETECTION OF DEFECTS LESS THAN 100 MICRONS
- SCANNING SPEED OF 6 M/S
- EASY ROBOT PROGRAMMING

# FLAW DETECTION OF STAMPED PIECE

Metal sheet stamped parts are now a base of self-supporting constructions not only in an automotive industry. So the strength of them must not be reduced by weak places, strained parts and cracks or clefts originated during a pressing process. Modern CAD software can simulate a metal sheet strain in a pressing form and predict critical places. Due to this prediction the material can be used up to the limits of its strength parameters and so that during a mass production the enormous costs could be saved. But this could be supposed only for production using the absolutely flawless material, because otherwise even only meaningless in homogeneity could cause a critical stamped part defect. That is why the checking of final product critical parts is necessary while the pressing operation is running. The company FCC Industrial Systems has already dealt with a flaw stamped parts detection for a long time and it has developed several methods suitable for this use. We provide systems inspecting the most critical bendings by industrial cameras which are directly in built in pressing forms. For an additional inspection we have developed a scanning head which can be carried by a robot. With this head the defects can be found practically anywhere on the final pressed part. A robotic inspection is situated at the output of assembly line and it could be programmed to find flaws which could not be inspected by in built camera because of technical reasons or flaws which may exist when different metal batches are used, when the form is worn or when other effects must be counted.

The scanning head works using an optical triangulation. A system of a source laser, a high speed camera and an evaluation software is optimized for detecting flaws originating during ruptures of metal sheet homogeneity when sheets are stamped. By this optimization we can find surface ruptures in depth below 100µm using velocity up to 6 m/s. Using maximal velocity and a suitable trajectory of a robot the inspection even on several critical places can be done in the stamping press production cycle without any problem.

Moreover this method does not critically depend on precise robot trajectory or an even movement of scanning head which makes robot programming more easy. This principle also reduces detection errors caused by dirt on the pressing part surface originated by oil, lubricant or by an other reason.

*The new scanning head is a real turning point in defect detection of pressed parts and it has already been ordered by an important producer in automotive industry area.*

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