

# inVISION

4/2020 · September 2020

## UNOFFICIAL ENGLISH TRANSLATION

The original article was published in German in inVISION, a trade magazine published in Germany. Prepared for CRETEC. The German original remains the reference.

**inVision Ausgabe 09/2020**  
**Formatwechsel auf Knopfdruck**



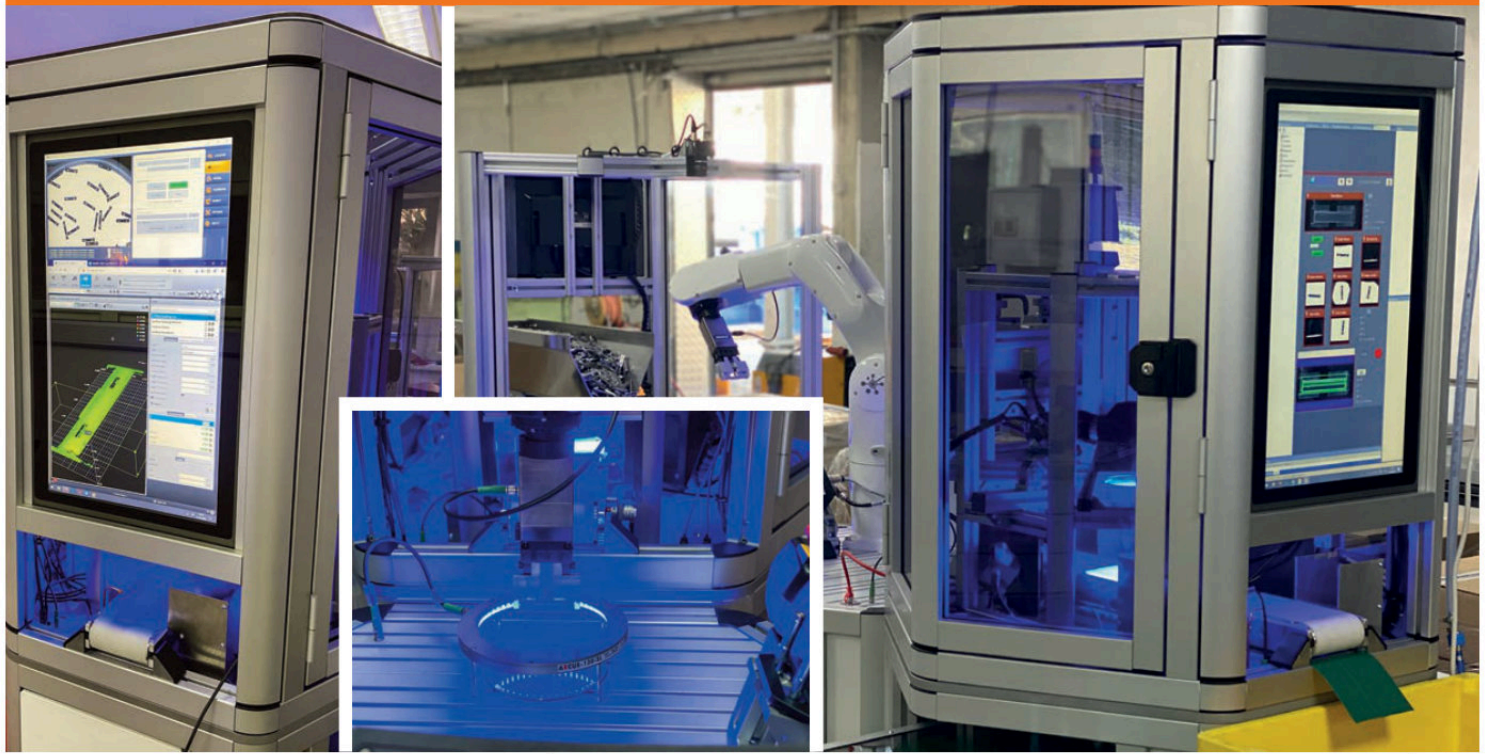
CRETEC Pressemappe

Stand: 12.2020

Seite 34 / 178

## Format change at the touch of a button

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Cretec's modular QBIC system is a mobile, fully automated work platform based on cobots. Different modules with a broad range of capabilities are combined in control, communication and analysis to form an autonomous system.

## Format change at the touch of a button

Autonomous inspection of safety-critical automotive components

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The modular QBIC systems occupy a footprint of 0.8 x 0.8 m and stand 2 m high. Integrated components include electrical equipment, controls, a PC, cameras, the VisionTube code verifier, different vision modules, intelligent lighting, communication modules, a monitor, a robot and an additional independent power supply. All inspection steps and inspection data are displayed on a large screen. The LBK protective-space monitoring system uses radar technology with 3D detection. It incorporates a restart interlock and, if requested, automatic restart. Inspection parts are supplied in bulk under motor control to the FlexiBowl parts feeder from ARS. It distributes parts measuring 1 to 250 mm and weighing 1 to 250 g reliably on a

vibrating disc. Even sensitive components are separated. An air blower keeps parts away from the edge. VisionTube reads and verifies 1D, 2D and DPM codes. The vision system supplies precise part and position data relating to geometry, surface properties, material condition and weight for reliable gripping by a six-axis robot.

The turnkey solution uses nine 5-megapixel cameras in total and handles twelve parts per minute in three-shift operation. The 3D inspection checks planarity, protrusions, recesses, burrs and missing material. Subsequent 2D surface inspection checks for voids and damage from 0.2 mm<sup>2</sup>. Further functions include 360° 2D inspection, dimensional measurement to an accuracy of 0.2

mm and detection of defect features from 80 µm. Neural networks and deep learning are already considered for complex inspections. In the same process, conventional machine vision can check dimensional accuracy and tolerances while AI simultaneously checks variable defect classes. The QBIC station can be unplugged and moved to a new location while remaining fully operational. Complete solutions can be integrated directly into production lines or used to inspect reworked rejects and falsely rejected parts.

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