

etz

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

The cover of etz magazine, Issue 5/2026, features a large image of Panduit cable management solutions in a server room. The Panduit logo is prominently displayed in the bottom right corner of the main image. Above the main image, the etz logo is shown in blue, with the text 'elektrotechnik & automation' below it. To the right of the etz logo, the issue number '5/2026' and the website 'www.etz.de' are listed. In the top right corner, there are two small logos: 'FIBERLIPPER powered by FIBERON und etz' and 'VDE VERBAND'. Below the main image, there are three columns of text in German, each with a small image of a Panduit product. The first column is titled 'TITELSTORY' and discusses 'Kabelschellen' (cable ties) in the context of 'Glas im Grey Space'. The second column is titled 'PROZESSAUTOMATION' and discusses 'Füllstandüberwachung und -abwehrung in Silos'. The third column is titled 'SPECIAL: ENERGIEEFFIZIENZ' and discusses 'Energie- und Lichtmanagement für eine Smartmanufaktur'.

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PANDUIT

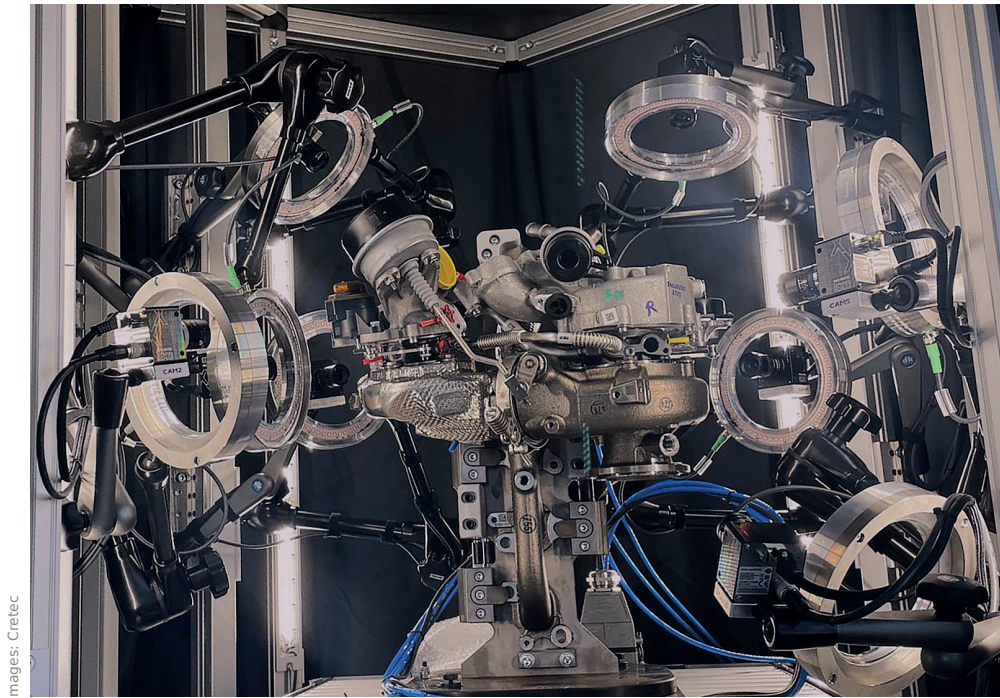
TITELSTORY
Kabelschellen
Gegen den Worst Case im Grey Space

PROZESSAUTOMATION
Füllstandüberwachung und
-abwehrung in Silos

SPECIAL: ENERGIEEFFIZIENZ
Energie- und Lichtmanagement
für eine Smartmanufaktur

Synergies in machine vision applications

Original publisher cover imagery. Magazine covers, logos and advertisements are retained in their original language.



Images: Cretec

01 The modular design of QBIC production cells enables efficient implementation of demanding machine vision automation tasks.

Synergies in machine vision applications

Fast payback is a common requirement for machine vision applications. Accelerated feasibility studies, substantial development time savings and quick, straightforward installation can all contribute. The example below (Figure 1) demonstrates successful implementation: scalable machine vision integrated into the corporate communications of a global automotive supplier.

Text: Kamillo Weiß

The existing end-of-line station, the final complete quality assurance stage for finished automotive turbocharger assemblies, needed further automation and efficiency improvements. Previously, two employees per shift in a three-shift operation applied labels, inserted plugs, scanned IDs and performed visual quality checks. Finally, the turbocharger assemblies were placed in the trays of shipping boxes, with each placement documented by images.

A flexible, time-saving solution

The existing process, which included several manual tasks, had to become more efficient, automated and sustainable. This applied both to operation with the robot active and to the contingency concept in the event of a robot fault. A cycle time of less than 100 seconds was specified for the entire process. The QBIC system philosophy delivered decisive advantages in the final machine vision solution. At the end of the line, an employee attaches a label to the turbocharger and scans its ID. This starts the robot, which picks up the unit, presents it to the

employee for insertion of the plugs, and positions it in the QBIC inspection cell (Figure 2). Four 5 MP cameras above and four below capture the complete unit spatially and use machine vision to check numerous features (Figure 3). The robot then places the turbocharger in the box, where an existing vision system captures the unit for final image documentation. Each box reaching the end customer thus contains inspected, completely defect-free goods.

Cretec [1] and the global automotive supplier have maintained an intensive, continuous exchange of experience for years through the supply of numerous vision systems. Their joint development work also produced the Turbo-PCS communications system, into which the production lines' machine vision solutions are fully integrated.

A versatile, space-optimised system

The consistently modular architecture of the QBIC cell concept enabled a particularly space-saving standalone or integrated solution to this complex vision task, with high flexibility and automation. Its many practical benefits in smooth industrial operation yield a significantly shorter payback period.

The QBIC system proves highly advantageous as early as the feasibility study, because it simplifies many demanding machine vision requirements and approaches. This makes it possible to adopt the final solution on a one-to-one basis.

The mobile QBIC platform combines a minimal footprint with modular hardware and software, ensuring highly flexible complete vision solutions. Modules offering a broad spectrum of capabilities in robotics, control, data analysis and communication are integrated directly into an autonomous system.

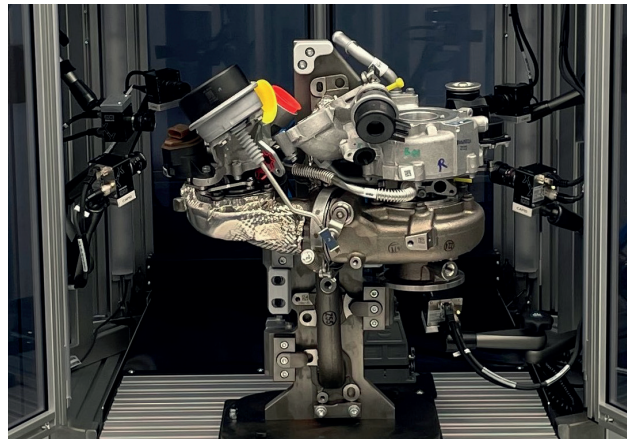
Good access for greater flexibility

The patented hexagonal QBIC platform provides easy access from all sides and flexibility when designing particularly compact, mobile solutions. Integrated retractable wheels allow quick transport for delivery or relocation, and multiple QBIC units can be connected with minimal space requirements.

The system can integrate electrical equipment, controls, a high-performance PC, cameras, the VisionTube code verifier, a cobot or robot, various vision modules, intelligent lighting, a large touchscreen, Industry 4.0 communications modules, OPC UA, IOTA and neural networks. A power supply independent of the mains maintains operation during a power failure and prevents data loss. Integrated high-performance PCs also make these solutions suitable for complex AI tasks such as deep learning.

Applications

Complete QBIC solutions cover a broad range of applications: pick-and-place, registration and



02 A robot positions the turbocharger in the QBIC inspection cell.



03 The eight 5 MP cameras are positioned so that their individual high-resolution fields of view provide complete all-round 3D inspection of the turbocharger assemblies.

classification tasks, ID codes, inspection, 2D and 3D measurement, surface inspection, decision-making and sorting. An additional benefit in the complete development and turnkey installation of highly automated vision solutions is Cretec's status as an ISO-certified expert in industrial machine vision. (mh)

References

[1] Cretec GmbH, Bidingen: www.cretec.gmbh

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