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Lückenlose Rückverfolgbarkeit



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Efficient ID quality management

The supplied archive cover calls this article “Lückenlose Rückverfolgbarkeit”; its actual printed title is “Effizientes ID-Qualitätsmanagement”. Historical 2019 standards, CE-marking statements, patent / uniqueness claims and LED grades are translated as published, not independently validated. Original publisher artwork, logos and advertisements are retained in their original language.



The compact design, modular pre-calibrated lighting options, powerful functions and flexibility make Vision-Tube ideal for integration and combination in complete, fully automatically controlled manufacturing cells. Images: Cretec

Standards-compliant code verification

Efficient ID quality management

Precisely verified code quality enables optimised processes and lower costs. Quality assurance and complete traceability of pharmaceutical and medical-technology products are a standardised obligation and are essential for patient safety and legal certainty.

Without quality assessment, poor codes are only detected when reading problems arise. Errors in 1D or 2D codes, on labels or in DPM (Direct Part Mark) codes can have many adverse or serious consequences and generate costs throughout the process chain. Production lines may have to slow down or stop; additional costs arise from re-marking, reduced read rates, scrap or false rejects, customer dissatisfaction and complaints, recourse and even liability claims, problems with quality certification and much more.

A trump card: inspection at the touch of a button

Not every verifier fully supports all standards. Previously, there have been either manual inspection stations or systems permanently integrated into production lines at considerable expense. Vision-Tube is a universal code verification system that can serve as a manual inspection station or inline system, with extremely simple operation and installation, high flexibility and performance. This unique concept creates many new applications even in harsh industrial environments or where hygienic requirements are higher. Highly

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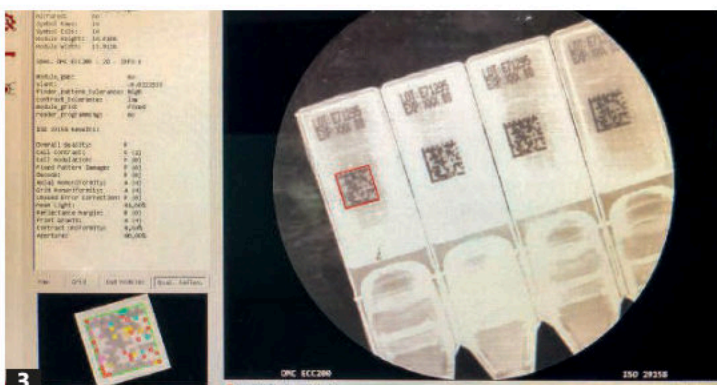
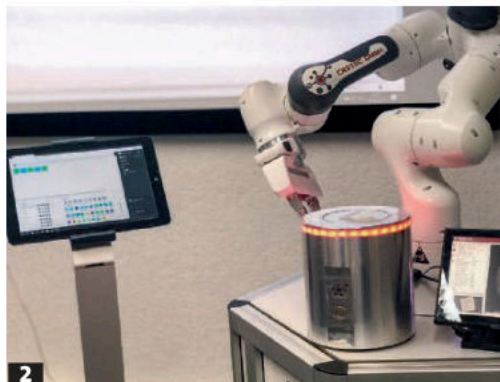
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1: Standards-compliant code verification is indicated by the coloured LEDs at the touch of a button.

2: Simple operation and fast installation open up new applications even in harsh environments. The universal verifier delivers high processing power without a PC and is entirely made in Germany.

3: Precise verification validates data according to all common international standards for 1D (ISO 15416) and 2D codes (ISO 15415, ISO 29158, AIM/DPM).

reliable code-quality inspection takes just one button press, for sampling or triggered series inspection. It operates independently without a PC and is completely made in Germany. Detailed verification results enable early corrective action throughout the automated identification process.

Essentially, Vision-Tube is a complete, modular, open vision system that combines all tasks in a single device: checking code structures, reading human-readable text (OCR), comparing it with code contents, serialisation tasks, checking the presence, readability and quality of best-before dates, checking component presence and much more.

No gaps in information

Medical-device manufacturers share responsibility for patient safety and must demonstrate the technical safety of supplied components. Since March 2019, a quality management system compliant with ISO 13485:2016 has been required. Evidence of such a QM system forms the basis for legitimate CE marking of medical devices on the European market. Manufacturers can save time and costs by selecting ISO 13485-certified suppliers.

Accordingly, complete traceability by code is essential in almost every area of medical technology and its products. In hospitals, for example, the particularly stringent requirements for verifying surgical-instrument

codes must be reliably met both during manufacture and after refurbishment. Linear, 2D matrix or OCR codes are permanently and tamper-resistently laser-marked onto polished, shiny surfaces. However, the highly aggressive solvents used for sterilisation can cause chemical reactions in the hardened steel at the codes and lead to corrosion. Completely reliable verification is therefore extremely important even for individual parts or small batches.

Code verification - the classification of all quality parameters - differs fundamentally from simply reading codes. Many mechanical parameters, such as shiny surfaces, and optical parameters, such as illumination, must be managed precisely. Numerous features relating to size, resolution, defects, reflection and contrast must be detected. This requires analysing large amounts of data in the shortest possible time for high cycle rates. Compliance with international identification norms and standards, documentation, user management and integration into internal and external business communication add further requirements.

Vision-Tube provides standards-compliant verification under ISO 15415, 15416 and 29158 (AIM/DPM). The modular unit has a robust aluminium enclosure measuring 200 mm in diameter and 200 mm high, and is available with IP54/IP65 protection. It is factory-calibrated at all focal planes and works straight out of the box, enabling extremely

simple Plug & Work within seconds. A monitor can be connected directly via HDMI and USB.

Vision-Tube is the world's only verification system with autofocus; a patent has been applied for. The 10 MP camera has a 100 mm-diameter field of view and provides high resolution for reliable detection of even very small 1D and 2D codes. The fast autofocus lens makes handling test objects more flexible.

Optimised lighting modules

A distinctive feature is the modular, easily and very quickly exchangeable, individually calibrated, variable multicolour lighting. Four RGB LED lighting modules are available to suit the application: on-axis coaxial, off-axis diffuse

dome, four-segment 30° dark-field and four-segment 45° low-angle lighting. This creates ideal conditions for optimising the assessment of readability according to standardised quality criteria for each application, including brightness, contrast, defects, contamination, distortions and much more.

The vision kernel is based on the proven, highly sensitive HALCON Steady 18.11 software. It analyses code quality with extremely high reliability, assigns the corresponding quality grades, stores the results and integrates them into internal and external business communication. Immediate indication is provided by a light ring on top, clearly visible from every direction. In accordance with the international grading system, the LED indication uses green for grades A+B, yellow for C and red for D+F. Grade A codes remain readable even under difficult conditions. Grade B may have minor defects, but still ensures that the code can be fully decoded.

The object is roughly positioned on the glass plate, within the camera's field of view. The standards-compliant code-quality result is immediately displayed and saved. A printer for the inspection report can be connected directly via USB/RS232. The integrated processing power delivers up to 7 fps with the camera.

Three digital outputs control rejection of defective products. Optimised direct illumination of the test object prevents disruptive external influences. Data validation is compliant with all common international standards for 1D codes (ISO 15416) and 2D codes (ISO 15415, ISO 29158, AIM/DPM).

The verifier is also offered in combination with a collaborative robot, as a complete mobile verification station measuring only $0.8 \times 0.8 \times 2$ m, including height adjustment, a darkened inspection chamber and all lighting options.

Author: Camillo Weiß for Cretec

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Weltweit müssen Produkthersteller zunehmend individualisierte Produkte anbieten – mit Maschinen, die zugleich den Footprint reduzieren und die Produktivität verbessern. Dies ermöglicht das eXtended Transport System XTS in Kombination mit der PC- und EtherCAT-basierten Steuerungstechnik. Seine hohe Konstruktionsfreiheit erlaubt neue Maschinenkonzepte für Transport, Handling und Montage. In der Hygienic-Version aus Edelstahl ist das XTS ideal für den Einsatz in der Pharma- und Lebensmittelbranche.

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