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Prüfsystem erkennt den Fehler im Kennzeichnungs-Code



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Inspection system detects errors in marking codes

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Inspection system detects errors in marking codes

Standards-compliant code verification | Complete traceability of pharmaceutical and medical-technology products is a standardised obligation and is essential for patient safety and legal certainty. Manufacturers must therefore ensure the required quality of their product marking.



Vision Tube is suitable for integration in complete, fully automatically controlled manufacturing cells.

Essentially, Vision Tube is a complete, modular, open vision system combining all tasks in one device. These include checking code structures, reading human-readable text, comparing it with code contents, serialisation tasks, checking the presence, readability and quality of best-before dates, and checking component presence.

Complete traceability by code is essential in almost every area of medical technology, including surgical instruments. Particularly stringent requirements for verifying these instruments' codes must be met during manufacture and after refurbishment. Linear, 2D matrix and OCR codes can be permanently and tamper-resistently laser-marked onto polished, shiny surfaces.

Processing large amounts of data in a short time

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

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.

Previously, there have been either manual inspection stations or systems permanently integrated into production lines. Vision Tube from Cretec GmbH, Hammersbach, is a universal code verification system for use as a manual inspection station or inline system with simple operation and installation, high flexibility and performance. Reliable code-quality inspection takes just one button press, for sampling or triggered series inspection. Detailed verification results enable early corrective action throughout the automated identification process.

KEYWORDS

- CE marking
- ID quality management
- Standards-compliant code verification
- Automation
- Traceability



Standards-compliant code verification is indicated by coloured LEDs at the touch of a button, in an instant.

communication add further requirements.

A distinctive feature in code verification is the modular, simple and rapidly exchangeable, individually calibrated, variable multicolour lighting. Four RGB LED modules are available to suit requirements: on-axis coaxial, off-axis diffuse dome, four-segment 30° dark-field and four-segment 45° low-angle lighting. This enables the many parameters used to assess readability according to standardised quality criteria to be adapted to the application, including brightness, contrast, defects, contamination, distortions and many more.

Vision Tube's vision kernel uses the highly sensitive HALCON Steady 18.11 software to analyse code

quality reliably, assign the corresponding quality grades, save the results and integrate them into internal and external business communication. Immediate indication is provided by a light ring on top, clearly visible from every direction. According to the international grading system, the LED indication differentiates green (A+B), yellow (C) and red (D+F) quality grades. 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.

Kamillo Weiss
Technical journalist in
Leinfelden-Echterdingen
www.cretec.gmbh

Standards-compliant verification

Vision Tube provides standards-compliant verification under ISO 15415, 15416 and 29158 (AIM/DPM). The modular system has a robust aluminium enclosure 200 mm in diameter and 200 mm high, and is available with IP54/IP65 protection. It is factory-calibrated at all focal planes and ready for the customer to use according to the Plug & Work principle within seconds. A monitor can be connected directly via HDMI and USB. According to the supplier, Vision Tube is the only verification system with autofocus; a patent has been applied for. Its 10 MP camera and 100 mm-diameter field of view provide high resolution for reliable detection of even very small 1D and 2D codes. The fast autofocus lens makes handling test objects more flexible.

The object is roughly positioned on

the glass plate, in the camera's field of view, and the standards-compliant code-quality result is immediately displayed and saved. An inspection-report printer can be connected directly via USB/RS232. Data validation complies with all common international standards for 1D codes (ISO 15416) and 2D codes (ISO 15415, ISO 29158, AIM/DPM).



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Telefon +49 781 624-0

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Kratzer GmbH & Co. KG, D-77694 Offenburg, www.kratzer.de