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Complete traceability

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Cretec enables standards-compliant code verification

Complete traceability

Precisely verified quality of 1D and 2D codes on labels or direct part marks, using systems such as Cretec's VisionTube, can optimise processes and reduce costs. In industry, particularly pharmaceutical and medical-technology products, quality assurance and complete traceability are often also a standardised obligation.

Kamillo Weiß, technical journalist, for Cretec GmbH, Hammersbach

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.

Verification of code quality in accordance with current international quality norms and standards for the relevant sector has therefore become almost essential. Detailed verification results enable early corrective action throughout the automated identification process. Cretec GmbH's VisionTube offers fast autofocus; the high resolution of its 10-megapixel camera ensures reliable detection of very small 1D and 2D codes, both on various labels and as direct marks.

Modular, open vision system

Unlike many other verifiers that do not fully support all standards, VisionTube 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. This concept also enables applications in harsh industrial environments or with stricter hygienic requirements. Reliable code-quality inspection takes only one button press, for sampling or triggered series inspection. It operates independently without a PC; detailed results enable early corrective action throughout the automated identification process.

Essentially, VisionTube 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.



Bild: Cretec

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.

Its compact design, modular pre-calibrated lighting options and flexibility make Cretec's VisionTube ideal for integration in fully automatically controlled manufacturing cells.

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Verification system with autofocus

VisionTube provides standards-compliant verification of 1D codes (ISO 15416) and 2D codes (ISO 15415, ISO 29158, AIM/DPM). The modular system is housed in 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 immediate Plug & Work. A monitor can be connected via HDMI or USB. The 10-megapixel camera provides a 100 mm-diameter field of view; its fast autofocus lens offers users flexibility in handling test objects.

Another distinctive feature is the modular, 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 optimised verification of the many inspection parameters for each application.

Automatic verification station

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, 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.

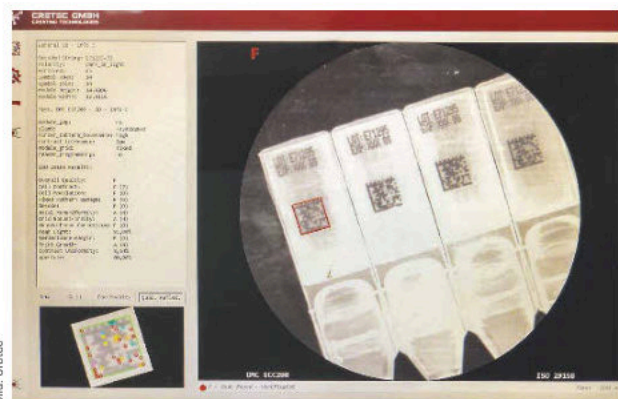
VisionTube's integrated processing power delivers up to 7 fps with the camera. Three digital outputs control rejection of defective products. Optimised direct illumination of the test object prevents disruptive external influences. The verifier is also available combined with a collaborative robot in a complete mobile verification station, including height adjustment, a darkened inspection chamber and all lighting options.

Traceability by code

Medical-device manufacturers illustrate the importance of fully verified codes. They 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.



One button press triggers standards-compliant verification of 1D (ISO 15416) and 2D codes (ISO 15415, ISO 29158, AIM/DPM).



The vision kernel uses the highly sensitive HALCON Steady Version 18.11 software.

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.

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www.cretec.gmbh



Details of Cretec's VisionTube code verification system:
hier.pro/FAJy1

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