



MEDICAL DEVICE SOLUTIONS

Ensure safety and compliance with machine vision, deep learning, barcode reading, and barcode verification solutions

THE GLOBAL LEADER

IN MACHINE VISION AND INDUSTRIAL BARCODE READING

Cognex®, the leading supplier of machine vision and industrial barcode reading solutions.

With over 3.5 million systems installed in facilities around the world and over forty one years of experience, Cognex is focused on industrial machine vision and image-based barcode reading technology. Deployed by the world's top manufacturers, suppliers and machine builders, Cognex products ensure that manufactured items meet the stringent quality requirements of each industry.

Cognex solutions help customers improve manufacturing quality and performance by eliminating defects, verifying assembly and tracking information at every stage of the production process. Smarter automation using Cognex vision and barcode reading systems means fewer production errors, which equates to lower manufacturing costs and higher customer satisfaction. With the widest range of solutions and largest network of global vision experts, Cognex is the best choice to help you **Build Your Vision.™**

**\$1.04
BILLION**
2021 REVENUE

OVER 41
YEARS IN THE BUSINESS

500+
CHANNEL PARTNERS

GLOBAL OFFICES IN
20+ COUNTRIES

3,500,000+
SYSTEMS SHIPPED



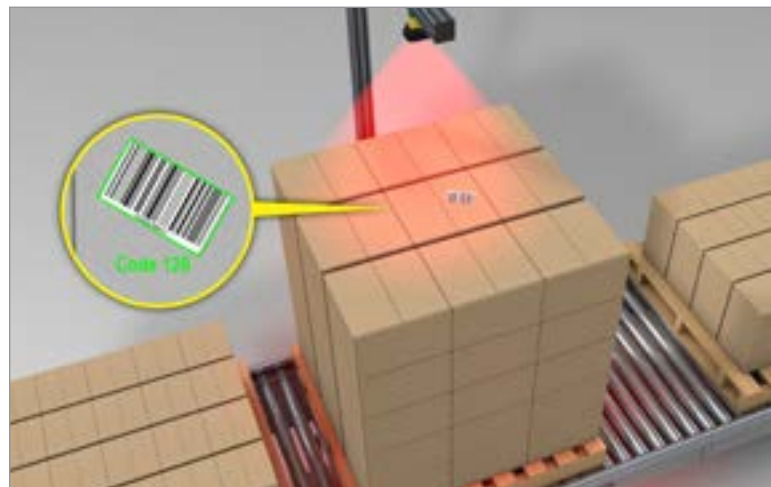
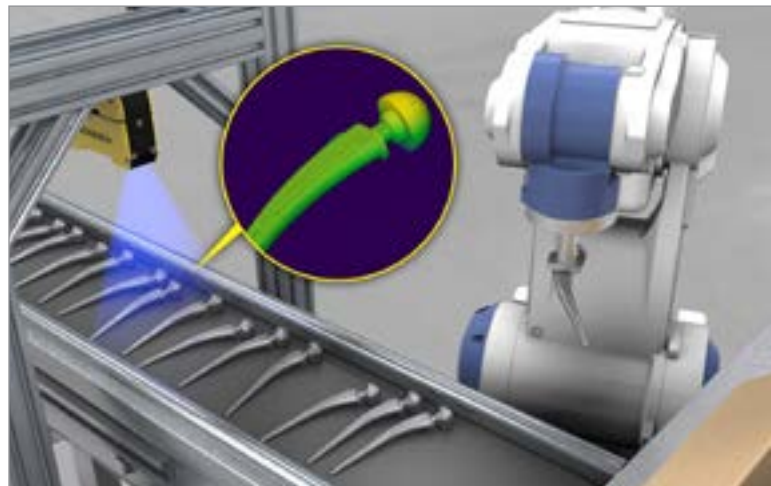
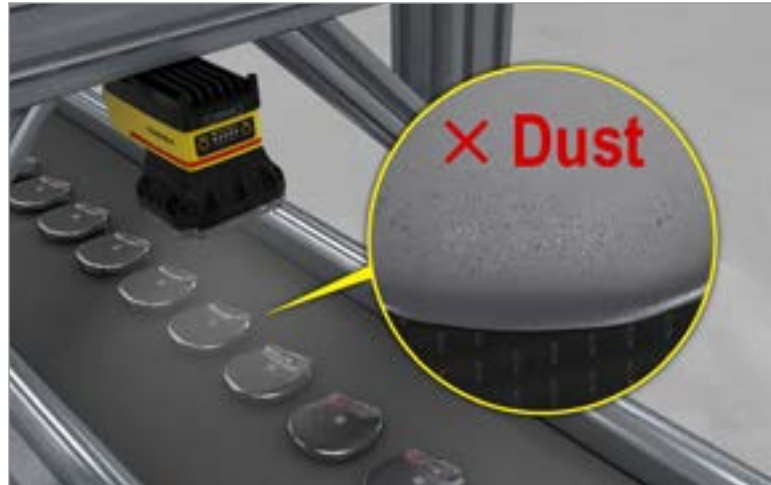
ENSURE SAFETY AND COMPLIANCE WITH COGNEX TECHNOLOGY AND SOLUTIONS

The United States Food and Drug Administration (FDA) Unique Device Identifier (UDI) mandate and the European Commission Medical Device and In Vitro Diagnostic Regulations (MDR/IVDR) require the use of UDI systems to trace medical devices through the supply chain. The goal of the UDI initiative is to provide a foundation for safe and secure global distribution of the various classes of medical devices.

Properly marking and registering medical devices provides a faster method to identify faulty, recalled, or expired products. It also helps address issues such as counterfeiting and gives doctors and patients more confidence in the quality of the products used. Even in the absence of regulations, medical device manufacturers need solutions that minimize the production of unsafe products and reduce costly product recalls.

Machine vision, deep learning, barcode reading, and barcode verification technology help automate part and marking inspections, code reading, and code quality while ensuring medical device safety and compliance.

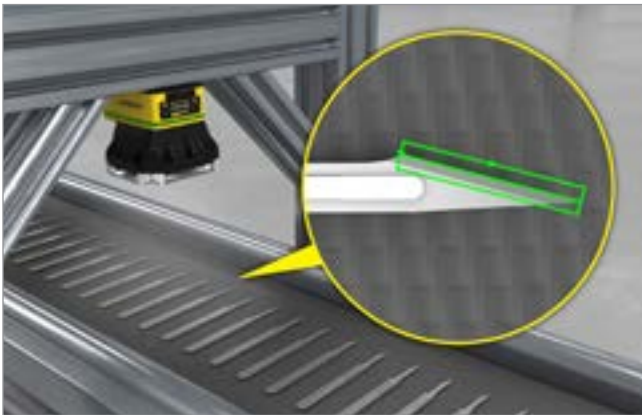
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MEDICAL DEVICE PART INSPECTION

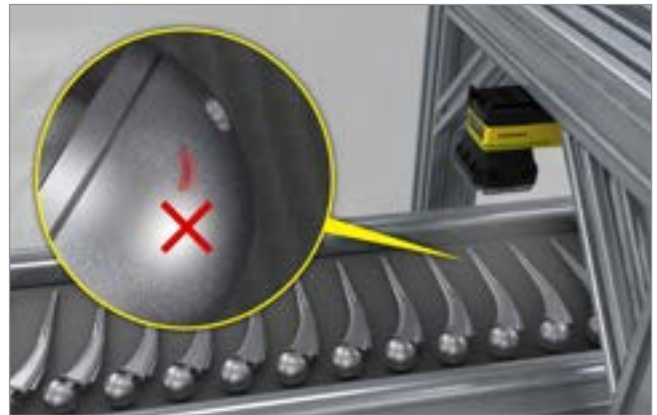
Medical devices come in many complex shapes, sizes, and materials, from a shiny metal knee replacement to the small webbing of a stent. Because medical devices are used on or implanted inside the human body, quality inspection of the part is critical. Machine vision and deep learning solutions help identify microscopic surface defects, scratches, dents, or contamination that could be harmful to a patient.

Surgical Equipment Gauging



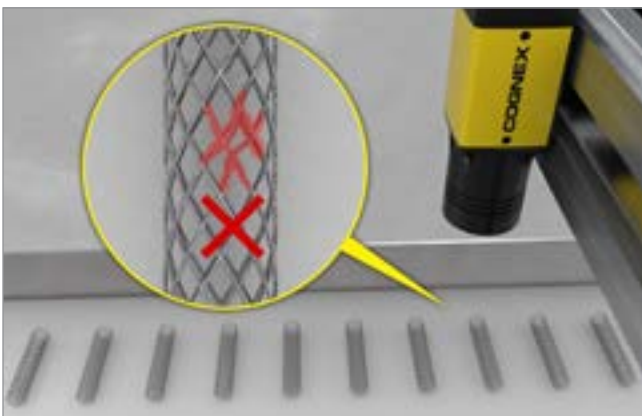
Gauging, measuring, and ensuring high quality standards is an integral part of the medical device manufacturing processes. In order to comply with rigorous quality standards, Cognex vision systems provide high accuracy and repeatability.

Hip Replacement Defect Detection



Deep learning image analysis software detects defects on metal surfaces of knee or hip replacements as reliably as human inspectors, but with the speed of a computerized system.

Stent Webbing Inspection



Stent quality is notoriously challenging to solve with traditional machine vision because of complex geometries and materials. Deep learning solutions understand complex shapes and patterns and can correctly identify abnormalities.

Contamination Detection

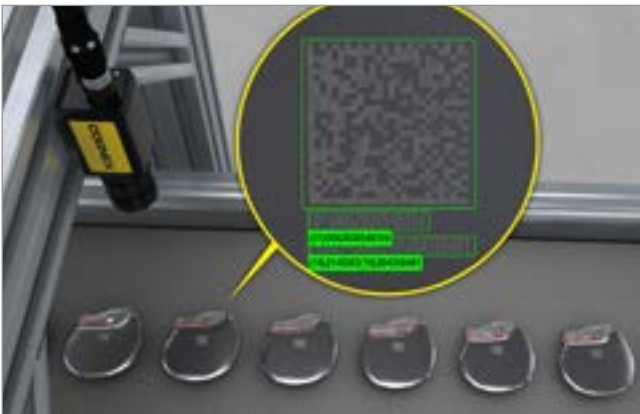


Contamination can occur at any stage of the manufacturing process and is hard to catch on medical device parts. Deep learning solutions can detect contaminated surfaces such as dust on a pacemaker.

UDI MARKING AND QUALITY INSPECTION

UDI marks include device and production identifiers with important information like lot number, serial number, manufacture and expiration dates. The mark must be readable and decipherable throughout the device lifecycle to maintain compliance. Machine vision and deep learning solutions verify that codes and text are present and accurately formatted. Barcode verifiers ensure codes meet quality standards.

DPM Code Quality Inspection and OCR



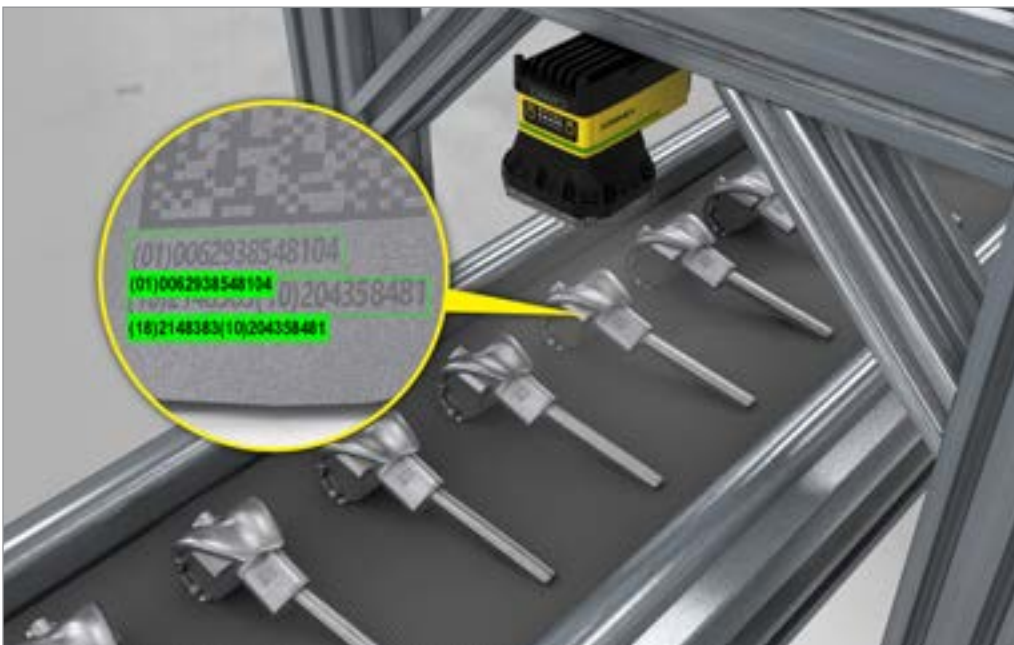
Maintaining UDI compliance is critical. Machine vision systems equipped with OCR technology verify that UDI codes are present and marked correctly.

Label-based Verification on Packaging



Inline barcode verifiers grade the quality of label-based barcodes on medical device packaging to ensure they meet quality standards.

Challenging OCR Code Reading

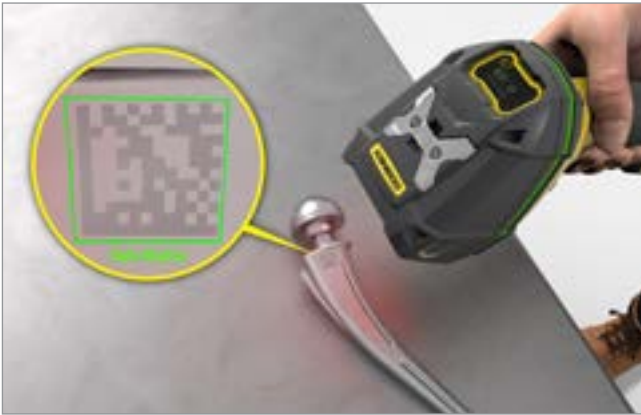


For challenging OCR codes including laser-engraved or chemically-etched DPM text, deep learning reads and verifies that the chain of numbers and letters is correct.

MEDICAL DEVICE TRACEABILITY

After the marking or label printing process, codes can be low contrast or damaged, recessed, marked on shiny or white surfaces, or printed under shrink-wrap that makes them hard to track and trace. Image-based barcode readers and machine vision OCR technology can ensure medical devices of all shapes and sizes are properly scanned and can be easily identified and located in the event of a product recall.

Laser-Etched Barcode Reading



Handheld barcode readers decode small laser-etched codes on shiny and cylindrical surfaces like those found on medical instruments and artificial implants such as a replacement hip or knee.

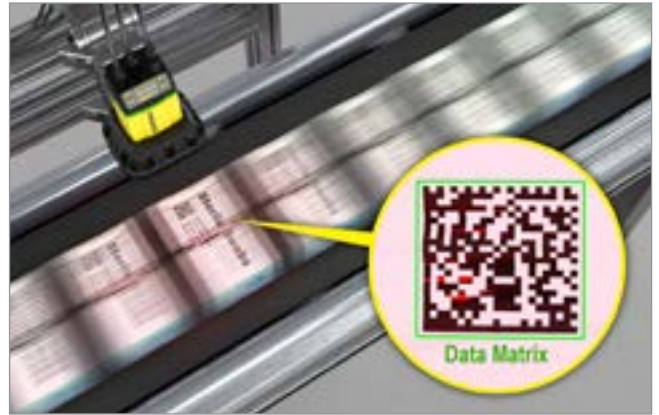
Pallet Barcode Reading



With large depth-of-field and wide field-of-view coverage, Cognex barcode readers read multiple codes on pallets simultaneously.



High-Speed Barcode Reading Under Shrink Wrap



Fixed-mount barcode readers decipher label-based codes quickly and reliably on high-speed lines, even under shrink-wrap.

Optical Character Recognition (OCR)

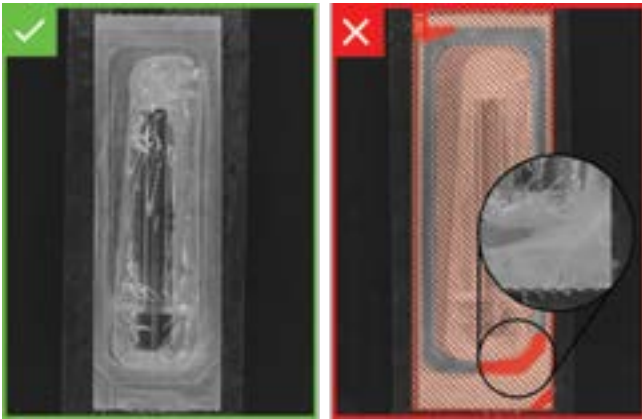


Machine vision systems with OCR technology reliably read alphanumeric date/lot codes throughout the supply chain.

PACKAGE INTEGRITY AND STERILITY

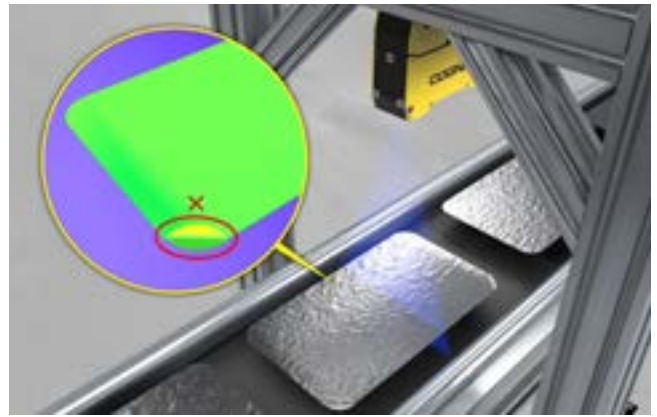
Package, label, and seal integrity are critical to ensure packaging is correct, sterile, and contaminant-free when heading into a doctor's office or operating room. Machine vision and deep learning solutions check for bubbles or punctures and reliably identify foreign objects, void seals, and a host of other issues that can impact medical device package integrity and sterility.

Seal Inspection with Deep Learning



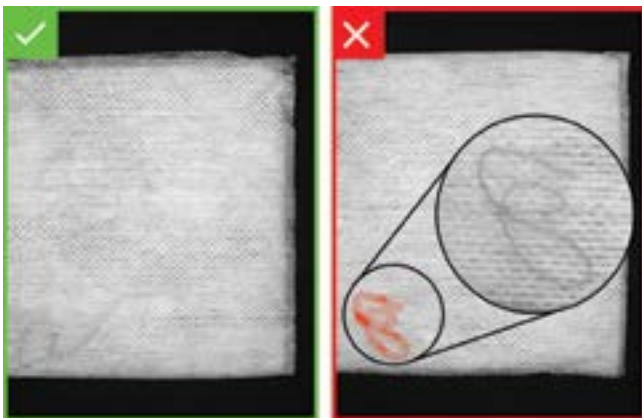
Seal inspection has previously been a complex and expensive process using ultrasonics and operators to find defects. Deep learning technology resolves complex issues such as underseals, overseals, voids, and foreign material to avoid contamination and product recalls.

Seal Inspection with 3D Vision



Cognex 3D solutions ensure even and consistent final packaging either during or at the end of a medical device packaging process.

Defect and Contamination Detection



Cognex Deep Learning technology allows medical device manufacturers to capture cosmetic defects in real time before shipment. This includes white on white anomalies and other hard to capture defects previously impossible to inspect using traditional vision technology.

Package and Label Integrity Inspection

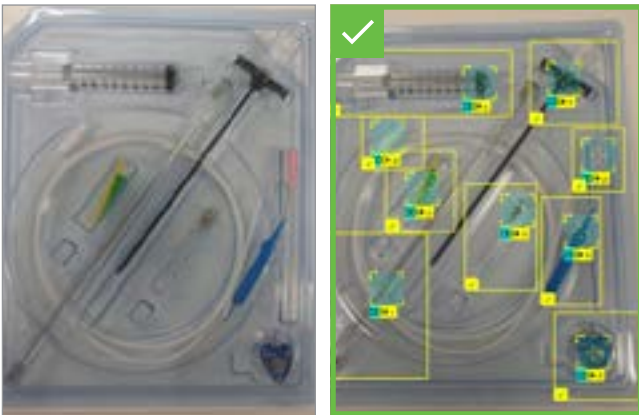


Deep Learning image analysis software detects packaging defects, bubbles in labels, torn labels, and other package integrity and cosmetic defects that could otherwise result in device mix-ups or scrappage.

PACK ASSEMBLY AND KIT INSPECTION

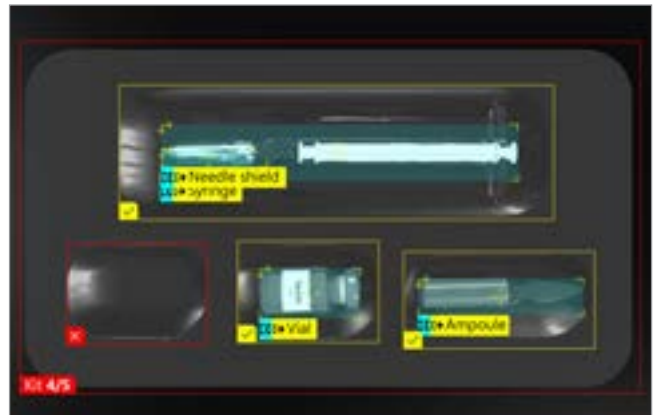
Kitting or system and procedure pack applications must verify that the correct item is in the correct location of a kit and confirm the presence or absence of items. Regulations also require patient implant cards, directions, and/or caution documents to be included in the assembly. Machine vision and deep learning solutions verify that all medical devices and other items are present and accurate, even under shrink-wrapped packaging.

Medical Kit Assembly Verification



Deep learning systems count, ensure proper orientation, and maintain correct quantities for a number of kit assembly applications, from syringe sets to medical device components.

Vaccine Kit Assembly Verification



Cognex Deep Learning inspects vaccine kits for overlapping or missing parts and ensures the correct parts are present and in the right orientation.

Patient Implant Card Confirmation



Cognex Deep Learning reliably locates and identifies the insert in boxes regardless of orientation and lighting conditions to prevent recalls and ensure patient safety.

Final Assembly Verification

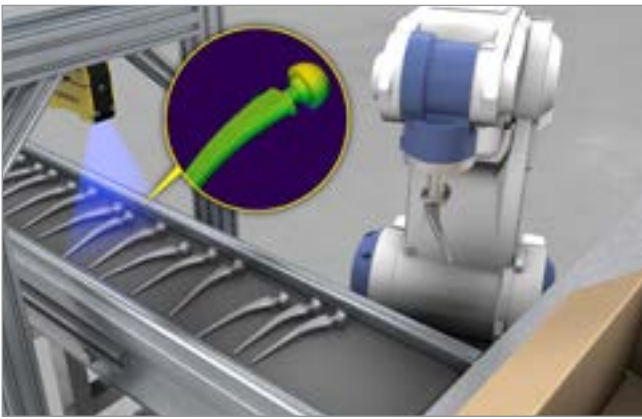


Completed and packed medical and drug kits made up of several parts are checked for completeness and damage through Deep Learning X-ray inspection immediately before shipping.

PACK AGGREGATION AND PALLETIZATION

In preparation for shipping, kits are aggregated into cases according to specific orders and then put on pallets. The accuracy of the case contents must be verified, and any missing items identified. Image-based barcode readers and vision-guided robotics are able to read multiple codes at one time in a large field of view and perform advanced inspections for reliable pack confirmation.

Robotic Case Packing



Packing objects with complex geometries can be very challenging. Cognex 3D toolsets communicate to robots for easy case packing.

Robotic Palletization



Vision-guided robotics palletizes cases for distribution, eliminating the need to physically handle the products and risk contamination.

Multiple Barcode Reading on Pallets



Cognex has optimized and engineered specific multi-barcode reading and vision systems to manage wide fields of view with high read rates for inbound and outbound pallets.

Large Depth of Field Barcode Reading

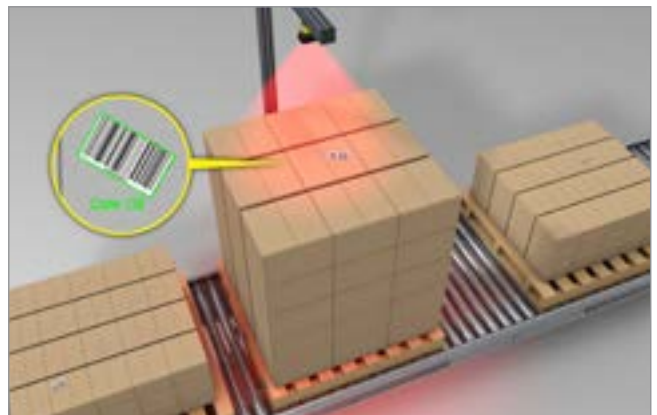


Image-based barcode readers with high-powered integrated torch light adapt to changes in pallet heights and ensure codes are read quickly and accurately.

COGNEX DEEP LEARNING SOLUTIONS

Cognex Deep Learning is the first set of deep learning-based vision solutions designed specifically for factory automation. The field-tested, optimized and proven technology is based on state-of-the-art machine learning algorithms.

Rather than following a rule-based approach to solving inspection challenges, like traditional machine vision applications, Cognex's deep learning solutions learn to spot patterns and anomalies from reference image examples. Deep learning automates and scales complex inspection applications that until now still required human inspectors such as defect detection and final assembly verification.



In-Sight ViDi

In-Sight® ViDi™ deep learning applications are deployed on the In-Sight D900 smart camera without the need for a PC, making deep learning technology accessible to non-programmers. It uses the familiar and easy-to-use In-Sight software platform which simplifies application development and factory integration.

VisionPro Deep Learning

VisionPro® Deep Learning software combines a comprehensive machine vision tool library with advanced deep learning tools inside a common development and deployment framework. It simplifies the development of highly variable vision applications and allows engineers to build flexible, highly customized deep learning solutions tailored to their specific needs.



COGNEX SOLUTIONS

2D Vision Systems

Cognex In-Sight 2D vision systems are unmatched in their ability to inspect, identify, and guide parts. These self-contained, industrial-grade vision systems combine a library of advanced vision tools with high-speed image acquisition and processing.



Advanced Image Formation Technology

High Dynamic Range Plus (HDR+) is a patent-pending technology that delivers a high-contrast, uniform image in a single acquisition for multi-point inspections of parts with varying depths of field and lighting conditions.

Conventional Sensor



HDR+



Conventional Sensor



HDR+



Image-Based Barcode Readers

Compact but powerful DataMan® barcode readers offer unmatched code reading performance with patented 1D and 2D code reading algorithms. The flexible options, easy setup, and quick deployment make them ideal for the most demanding industrial applications.



3D Vision Systems

Cognex 3D vision systems provide ultimate ease of use, power, and flexibility to achieve reliable and accurate measurement results for the most challenging 3D applications.



Barcode Verifiers

Barcode verification is the process of grading the quality of 1D, 2D, and direct part mark (DPM) codes. Cognex barcode verifiers use high quality optics, advanced algorithms, and simple software to demonstrate compliance to industry standard guidelines.



BUILD YOUR VISION

2D VISION SYSTEMS

Cognex machine vision systems are unmatched in their ability to inspect, identify and guide parts. They are easy to deploy and provide reliable, repeatable performance for common to complex tasks.

www.cognex.com/machine-vision



3D VISION SYSTEMS

Cognex laser profilers and area scan 3D vision systems provide ultimate ease of use, power and flexibility to achieve reliable and accurate measurement results for the most challenging 3D applications.

www.cognex.com/3D-vision-systems



VISION SOFTWARE

Cognex vision software provides industry leading vision technologies, from traditional machine vision to deep learning-based image analysis, to meet any development needs.

www.cognex.com/vision-software



BARCODE READERS

Cognex industrial barcode readers and mobile terminals with patented algorithms provide the highest read rates for 1D, 2D and DPM codes regardless of the barcode symbology, size, quality, printing method or surface.

www.cognex.com/barcodereaders



COGNEX

Companies around the world rely on Cognex vision and barcode reading solutions to optimize quality, drive down costs and control traceability.

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