

CONSUMER PRODUCTS SOLUTIONS GUIDE

Breakthrough Machine Vision and Barcode Reading Technology

COGNEX

THE GLOBAL LEADER

IN MACHINE VISION AND INDUSTRIAL BARCODE READING

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

With over 2 million systems installed in facilities around the world and over thirty seven 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.™**

**\$806
MILLION**
2018 REVENUE

OVER 37
YEARS IN THE BUSINESS

500+
CHANNEL PARTNERS

GLOBAL OFFICES IN
20+ COUNTRIES

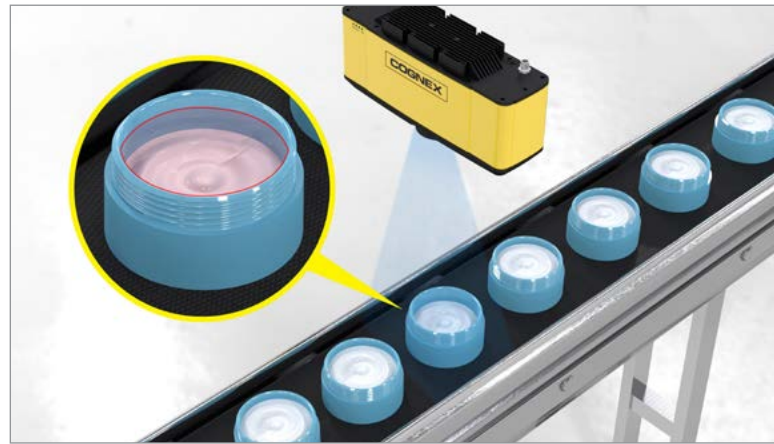
2,000,000+
SYSTEMS SHIPPED



THE RIGHT CHOICE FOR CONSUMER PRODUCTS APPLICATIONS

The consumer product and packaged goods industry demands high throughput, cost efficiency, and accuracy for its material handling, inspection, labeling, and assembly needs. Cognex is uniquely positioned to deliver the highest level of performance in product safety, product quality, and productivity improvements for consumer packaged goods (CPG) manufacturers and the machine builders and systems integrators that serve them. Our machine vision and barcode reading products provide solutions for every application, helping manufacturers maximize gross margin and customer satisfaction by improving product quality and protecting their brand.

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MATERIAL HANDLING

Manufacturers are searching for new ways to reduce manufacturing waste, such as scrap and defective product, by inspecting products more quickly and accurately. Many quality control tasks are being shifted from manual inspectors to automated systems in order to increase reliability and decrease labor costs.

Quality Inspection



Machine vision systems inspect materials, such as diaper padding, for defects and inconsistencies in size, shape, color, and texture.

Sortation

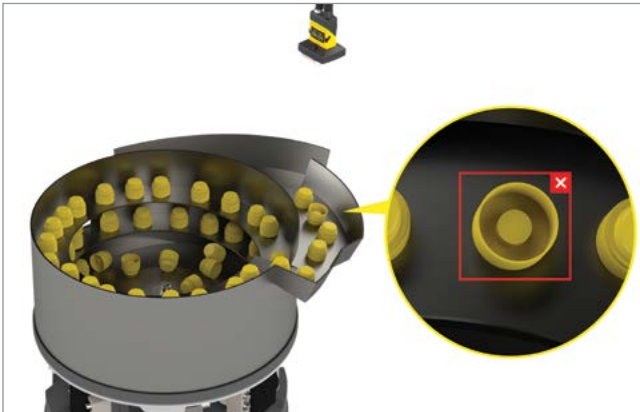


Machine vision systems separate products based on size, color, and visual characteristics.

AUTOMATED ASSEMBLY

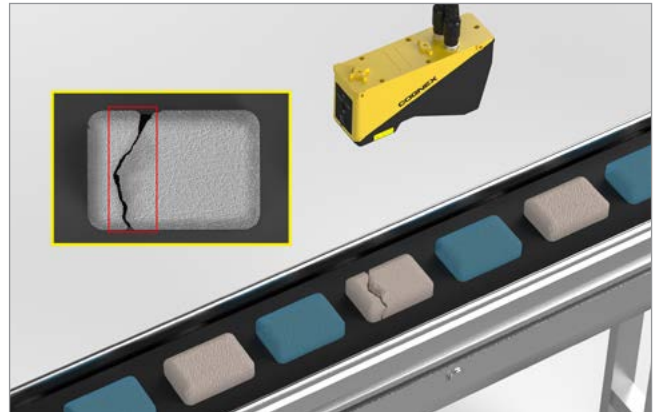
Cognex machine vision, barcode reading, and robotics solutions help automate industrial processes and verify that consumer products and packaged goods are defect-free. Cognex solutions handle challenging inspection and verification applications to guarantee maximum reliability and precision assembly, minimizing the need to quarantine product and scrap faulty goods.

Part Orientation Verification



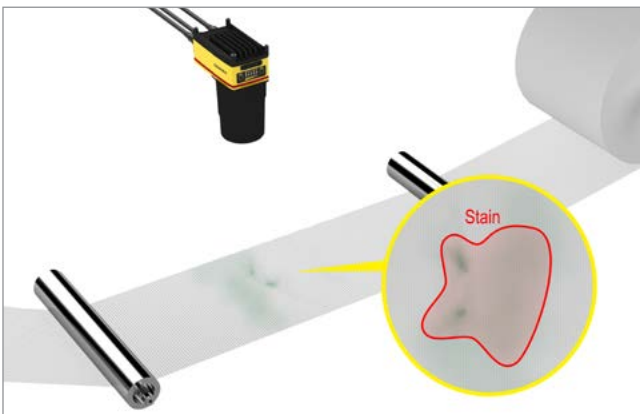
Vision sensors verify part orientation prior to assembly.

Product Inspection



3D laser displacement sensors inspect parts for damage and confirms dimensions.

Quality Inspection



Line scan cameras performs discrete inspections of continuous materials.

Defect Inspection



Deep learning-based image analysis detects unpredictable defects.

PACKAGING

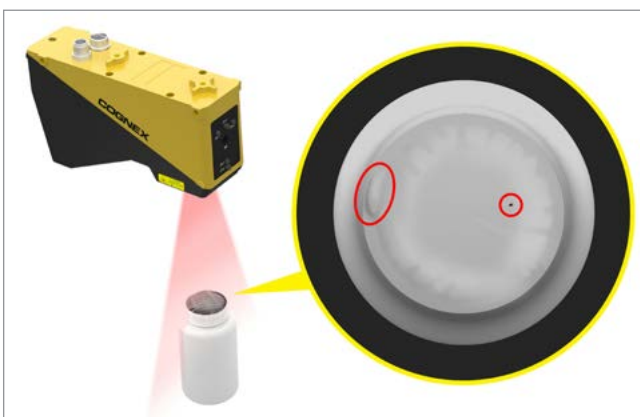
Faulty or damaged packaging adversely affects how consumers perceive a product's quality, safety, and value. In order to avoid damage and preserve brand loyalty, consumer packaged goods (CPG) manufacturers rely on machine vision to inspect primary and secondary packaging to ensure it is correctly assembled, tamper-proof, and defect-free. This assures manufacturers that only their highest quality products reach customers.

Kitting Inspection



Cognex ViDi locates and classifies various components in a multi-pack.

Tamper and Safety Seal Inspection



Laser displacement sensors verify seal integrity.

Cap Inspection



Laser displacement sensors check that caps are properly seated.

FILLING

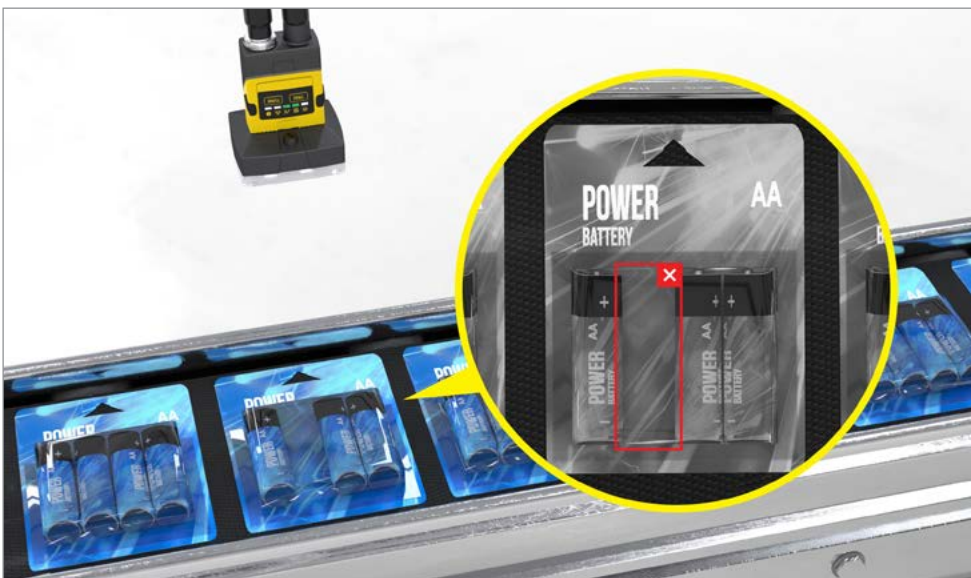
Machine vision is used to improve consumer filling equipment automation by both manufacturers and their equipment suppliers. These applications include inspecting for container flaws, determining package position and orientation, and detecting missing or underfilled product.

Fill Level Inspection



Area scan 3D cameras ensures that containers are properly filled.

Missing Product Detection



Machine vision inspects packages for missing items.

LABELING AND MARKING

Labeling errors which occur during primary or secondary packaging can damage consumers' perception of an item's quality and safety. To meet the expectations of customers, it is important for manufacturers to catch labeling defects before their goods reach the market. Quality inspections using machine vision help ensure that labels are placed correctly and don't exhibit any folds, rips, or misprints.

Label Damage Inspection



Vision systems identify torn, damaged, and missing labels with defect detection technology.

Final Packaging Inspection

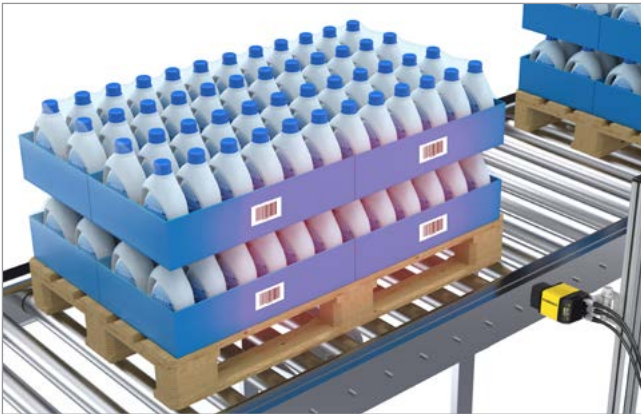


Barcode readers confirm that packaging components match.

WAREHOUSING AND DISTRIBUTION

Consumer products manufacturers must optimize not only their production capacity and quality, but also their warehousing and fulfillment operations to meet growing performance criteria and customer demands. Increasingly, these manufacturers are embracing barcode reading solutions to minimize equipment downtime and manual rework while driving throughput, lowering maintenance costs, and guaranteeing traceability. Cognex vision systems and image-based barcode readers decode the most challenging 1D and 2D codes quickly and accurately to help increase the productivity of warehouses and distribution centers. Some of the world's top retail manufacturers and distributors use Cognex image-based barcode readers to ensure sorting, picking, packing, and shipping operations meet or exceed performance requirements.

Pallet Scanning



Barcode readers scan pallet labels on arrival.



Automated Sorting



Barcode readers sort packages and track goods through a facility.

Pick and Pack Sorting



Cognex fixed-mount barcode readers improve pick times.

MACHINE VISION SYSTEMS



Vision Sensors

In-Sight 2000 vision sensors perform simple pass/fail applications that help ensure products and packaging manufactured on an automated production line are error-free and meet stringent quality standards.

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.



3D Vision Systems

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

IMAGE-BASED BARCODE READERS

Fixed-Mount 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.



Handheld Barcode Readers

Versatile DataMan barcode readers provide best-in-class performance for 1D, 2D, and DPM codes, where ruggedness and speed are critical to success. A range of field-changeable communication options ensure these readers are ready to meet your application requirements.



Mobile Terminals

The MX series of vision-enabled mobile terminals leverage the latest iOS® and Android® smartphones in a rugged housing, tough enough to stand up to the most challenging environments—all while providing superior 1D, 2D, and DPM code read rates.



INDUSTRY-LEADING VISION TECHNOLOGY

Cognex ViDi Deep Learning-Based Image Analysis

Deep learning technology uses neural networks that mimic human intelligence to distinguish anomalies, locate deformed parts, and read challenging characters while tolerating natural variations in complex patterns. Deep learning complements traditional machine vision approaches, which struggle to appreciate variability and deviation between visually similar parts. In factory automation, Cognex ViDi can now perform judgment-based part location, inspection, classification, and character recognition more effectively than humans or traditional machine vision solutions.



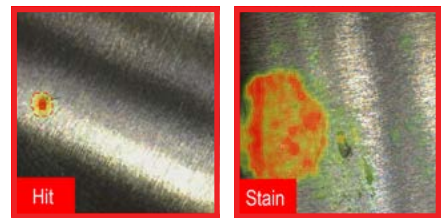
Locate

Finds and counts complex features and objects



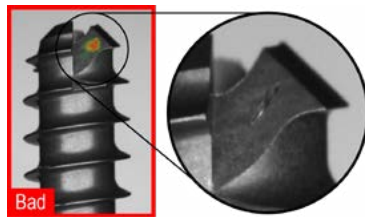
Classify

Classifies and sorts objects and complete scenes



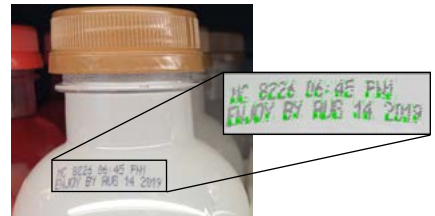
Analyze

Detects anomalies and cosmetic defects



Read

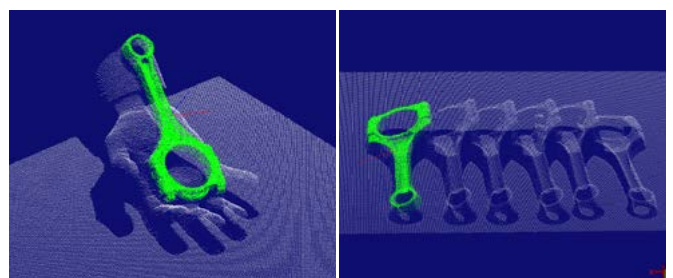
Reads challenging, deformed characters



Industry Leading Object Location

PatMax RedLine™ is an accurate, highly repeatable tool that locates trained patterns no matter the size, rotation, or location of the target part. It is ideal for industries and applications that require large fields of view, high accuracy, large angle and scale tolerances, and multiple targets.

PatMax® 3D is an accurate 3D vision tool that locates trained patterns based on its 3D geometry under 6 degrees of freedom (X, Y, Z, Rx, Ry, Rz). It finds 3D objects within a 3D point cloud image and is ideal for locating and identifying objects which are tilted, stacked or not properly seated with a fixture.



Advanced Image Formation

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.

SurfaceFX™ uses lighting and software algorithms to remove noise and clutter from the surface background and isolate features and defects that are recessed or embossed on parts. It highlights surface defects such as chips, wrinkles, punctures, stamped text, and codes so other vision tools can perform their tasks.

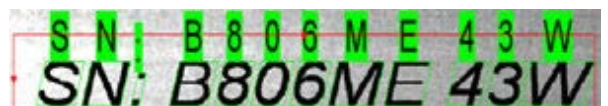
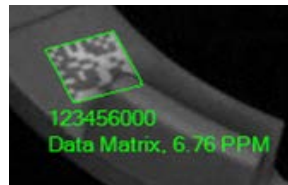


Code Reading

2DMax® with PowerGrid® is a breakthrough algorithm and technology designed to read 2D codes with significant damage to or complete elimination of a code's finder or clocking pattern, or quiet zone.

1DMax® with Hotbars® is an algorithm and technology optimized for omnidirectional 1D barcode reading, decoding up to 10X the speed of a conventional barcode reader.

OCRMax™, a font-trainable Optical Character Recognition and Verification (OCR and OCV) tool, has set industry records for ease of use, read rates and speed in complex images. This powerful algorithm prevents misreads, handles process variations, and provides easy font management.



COGNEX GLOBAL SERVICES

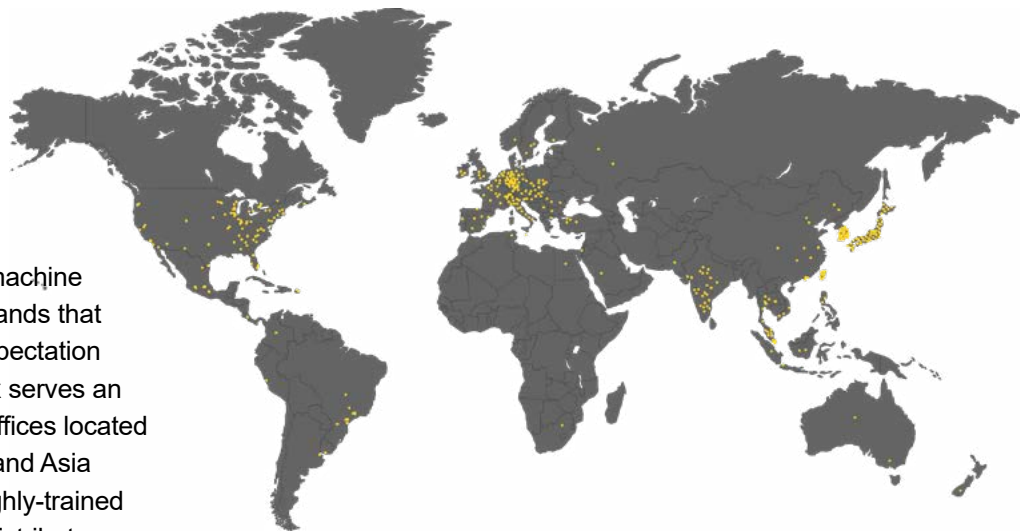
Customers get more than software when they purchase from Cognex. They get a company focused exclusively on machine vision, with the most comprehensive application experience. Add direct, high-quality worldwide service and support, and it's easy to see why Cognex is the machine vision company that industries rely on.

Technical Support
Product Training
Hardware Programs
Product Lifecycle

When it comes to protecting your machine vision investment, Cognex understands that responsive, expert service is an expectation all customers should have. Cognex serves an international customer base from offices located throughout the Americas, Europe, and Asia and through a global network of highly-trained partners, system integrators, and distributors.

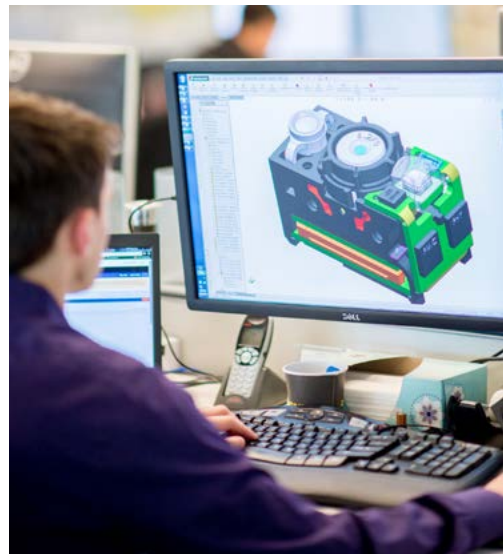
From development to deployment, Cognex is there to help you get your vision systems up and running as fast as possible. Whether you're considering machine vision for the first time or are already an expert user, Cognex global services provide the expertise to help your organization succeed.

cognex.com/support/Cognex-services



OFFICES IN **20+** COUNTRIES

500+ GLOBAL PARTNERS
IN 30 COUNTRIES



VISION FOR EVERY INDUSTRY

Cognex vision systems perform 100% inspection, ensure brand quality and improve your production processes. With over one million systems installed worldwide, Cognex machine vision systems are accepted in nearly every industry and used by most major manufacturers.

Automotive



The manufacturing processes for building virtually every system and component within an automobile can benefit from the use of machine vision.

Mobile Devices



Machine-vision-enabled robots provide scalable, final assembly of mobile phones, tablets, and wearable devices. Cognex vision technology enables high precision touchscreen display manufacturing and 3D quality inspection.

Medical Devices



Quality inspection is critical to success. Liability for defective products, inconsistent quality, rapidly changing costs and pending regulations, all challenge medical device manufacturers.

Consumer Products



Improve production and packaging operations with high-speed image acquisition, advanced color tools, and 3D inspection systems.

Pharmaceutical



The need to comply with patient safety and traceability requirements is imperative, and machine vision helps meet compliance goals.

Food & Beverage



Food and beverage applications require vision that can perform precisely, accurately and quickly to keep up with the fast-paced production lines.

Semiconductor



Cognex vision provides the precise, sub-pixel alignment and identification essential to every step of the semiconductor manufacturing process, despite increasingly fine geometries and process effect challenges.

Electronics



Machine vision provides the high-speed alignment and traceability for electronics assembly, even on the newest miniaturized components and flexible circuits.

BUILD YOUR VISION

2D VISION

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 the most challenging applications.

www.cognex.com/machine-vision



3D VISION

Cognex In-Sight laser profilers and 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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