Pharmaceutical & Medical Devices

Applications Guide

COGNEX

The Right Choice for Pharmaceutical & Medical Device Applications

Cognex vision and ID technology helps companies improve their manufacturing quality and performance by eliminating defects, verifying assembly, and tracking and capturing information at every stage of production to ensure the entire process is completed correctly. And, Cognex read and verify solutions for mass serialization help achieve compliance with new product authentication and traceability requirements.

With products that are easy to use, integrate and maintain, Cognex machine vision and ID systems provide the lowest cost of ownership in the industry. Whether it's using low cost sensors to ensure package integrity, tracking serialized product from manufacture to patient, or ensuring label accuracy with barcode and text verification, Cognex offers the products that add value every step of the way.

Cognex is the world's most trusted vision company, with 750,000+ systems installed in factories around the world, and over thirty years of experience focused on vision and ID technology. Cognex products are used by many of the world's top pharmaceutical and medical device manufacturers, suppliers and machine builders to ensure that the products that are being delivered match the stringent quality requirements of the industry.

Global Leader, Local Expertise, Worldwide Reach

Standardizing vision and ID solutions across all production lines reduces the total cost of ownership for any company. As the undisputed global leader in vision-based inspection and identification systems, Cognex is able to deliver and support large scale deployments at multiple global locations.

Customers and consumers worldwide are demanding higher quality products than ever before. To achieve this, it is critical for manufacturers to use products with the highest inspection, guidance and identification performance. Cognex advanced technology ensures the most consistent results, the highest accuracy, total traceability and the minimum setup time.

Leading pharmaceutical and medical device manufacturers and suppliers rely on local Cognex engineers and a network of over 450 partners to provide assistance wherever and whenever it is needed around the world.

The Cognex Product Family

Vision Systems

Rugged systems provide easy-to-use interface for configuring applications in a fully integrated package. In-Sight® vision systems are ideal for inspection, text verification and track and trace. A wide range of models, including line scan and color systems, meet all price and performance requirements.

Vision Software

A library of powerful vision tools allows complete flexibility in choice of cameras, frame grabbers, and other peripherals. VisionPro® software combines the power and adaptability of advanced programming with the simplicity of a graphical programming environment.

Vision Sensors

Easy, affordable sensors replace photoelectric sensors for more reliable inspection and part detection. Checker® vision sensors succeed where traditional sensors fail, and allow multiple inspections with a single device.

Fixed-Mount Industrial ID Readers

DataMan® readers offer the smallest size and highest performance in direct part mark and high-speed code reading applications, reading everything from 1-D barcodes to the most challenging 2-D codes, as well as multiple 1-D and 2-D barcodes on the same package. DataMan readers offer autofocus and Ethernet capability for ease of networking to factory platforms.

Handheld Industrial ID Readers

DataMan offers the widest range of industrial handheld readers in the industry. Innovative lighting, image acquisition, and code reading capabilities provide the most reliable reading of virtually any code on any surface.

Code Verifiers

Handheld and fixed-mount DataMan verifiers are easy-to-use, reliable, and enable accurate evaluation of code quality to ensure the highest read rates through production and the supply chain.

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Cognex Connect

Connecting Cognex systems into virtually every automation system

Cognex products link to a wider range of factory automation equipment than any other range of products. Whether you connect directly to a PLC (Programmable Logic Controller) or robot controller or manage multiple systems remotely from a networked PC or HMI (Human Machine Interface), Cognex Connect™ assures a seamless reliable communications link between Cognex products and all of your equipment on the factory floor.

This table summarizes just some of the communication capabilities with Cognex Connect:

	Factory Device	Checker	DataMan	In-Sight	Protocol	Protocol Type
PLCs	B&R			✔	POWERLINK	Industrial Ethernet
	Mitsubishi		✔	✔	MC Protocol	Industrial Ethernet
				✔	CC-Link	Fieldbus
				3	PLC Function Blocks	Pre-configured device commands and attributes
	Rockwell	✔	✔	✔	EtherNet/IP	Industrial Ethernet
				✔	DeviceNet	Fieldbus
		3	3	3	Ethernet/IP Add-on-profile (AOP)	Pre-configured device commands and attributes
	Siemens	✔	✔	✔	PROFINET	Industrial Ethernet
			✔	✔	PROFIBUS	Fieldbus
	Other Protocols		✔	✔	MODBUS TCP	Industrial Ethernet
				✔	Modbus	Serial
				✔	ASCII String commands	Serial
				✔	OPC	Industrial Ethernet
		✔	✔	✔	TCP/IP	Industrial Ethernet
		✔	✔	✔	UDP	Industrial Ethernet
FTP Server		✔	✔	✔	FTP	FTP Image Transfer
Robots	ABB, Denso, FANUC, Kuka, Mitsubishi, Motoman & Staubli			✔	Pre-configured drivers and ASCII string commands	Serial / Ethernet
	Adept, Epson, IAI, Kawasaki, Nachi, Yamaha & other Robots			✔	ASCII string commands	Serial / Ethernet

If you need to integrate inspection images, quality data, and interactive controls into your own operator interface, Cognex Connect gives you an array of visualization options:

• In-Sight Display Control embeds an In-Sight image and CustomView display in your .NET or ActiveX compatible custom application, or a PC-based HMI/SCADA system from Rockwell, WonderWare, Citect and others.

• In-Sight and Checker allow you upload data to your HMI displays, SPC (Statistical Process Control) systems, plant supervisory systems, and even Microsoft Excel to monitor operations and record statistical data.

• Checker, DataMan and In-Sight all offer SDKs (Software Development Kit) to allow systems integrators to create a custom user interface for managing your systems, tailored to your exact requirements.

Application Categories

VISIon

Guide/Align	Inspection	Gauge/Measure	OCR/OCV	Presence/Absence

ID

1-D High Speed	1-D Low Speed	2-D Direct Part Mark	2-D Printed

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PHARMACEUTICAL
Packaging | Inspection

Customer: Arthur Theis GmbH & Co. KG

APPLICATION

Arthur Theis is an expert in the field of manufacturing folding cartons for pharmaceutical products. Until now, the inspection of product characteristics has been performed with the human eye. However, an increased level of automation has made it much more difficult to inspect packages for important information and requires far greater precision than the human eye can provide.

SYSTEM

In-Sight

RESULTS

With an In-Sight system in place, they are now able to handle the identification of labels on up to 40,000 cartons per hour with unrivalled accuracy.

PHARMACEUTICAL
Packaging | Inspection

Customer: Boehringer Ingelheim

APPLICATION

Inspecting the print quality of packages on a production line churning out around 300,000 blister packs and 100,000 folding packs every day with a 'human sensor' randomly inspect products did not meet the quality control requirements for the company.

SYSTEM

VisionPro

RESULTS

Perfect quality control has been achieved by deploying an industrial camera in each of the four blister pack inspection units supported by LED ring lights. VisionPro then recognizes all the relevant symbols and letters and, on the basis of previously-taught parameters and tolerance limits, assesses the quality of the product.

VISION

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PHARMACEUTICAL
Tablets | Inspection

Customer: Ackley Machine

APPLICATION

Ackley Machine needed to identify and reject bad items to comply with a US Food and Drug Administration's (FDA) mandate that each printed medicine tablet be identifiable.
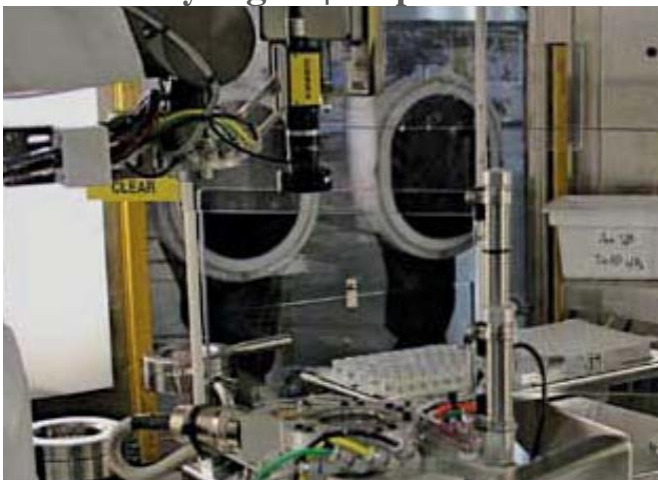
SYSTEM

In-Sight

RESULTS

By switching to a new In-Sight system, they can now inspect over 400,000 tablets per hour and still provide unique single tablet rejection capabilities—much faster than other machines available.

PHARMACEUTICAL
Vials and syringes | Inspection

Customer: Automated Systems of Tacoma

APPLICATION

Automated Systems of Tacoma was asked to develop an alternative to conventional pharmaceutical filling machinery, with the flexibility to be able to handle various sizes of pre-filled syringes, vials, cartridges and IV bags with minimal product changeover times.

SYSTEM

In-Sight

RESULTS

The In-Sight system installed can now precisely locate each container and stopper and provide two robots with these locations prior to processing. This approach reduces the changeover time and eliminates the risk of cross contamination.

VISION

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PHARMACEUTICAL
Ampules | Inspection

Customer: **Krempien+Petersen Qualitäts-Kontrollsysteme GmbH**

APPLICATION

K+P worked with a pharmaceutical manufacturer that wanted to outfit their facility with systems that could check the fill level of glass ampoules or vials and perform other inspections.

SYSTEM

In-Sight & VisionPro

RESULTS
In-Sight systems and VisionPro software were deployed to verify OCV codes, color codes and labels, and check fill levels. These systems are now an essential part of their efforts to ensure effective quality control, process optimization and product traceability.

PHARMACEUTICAL

Labels | Inspection

Customer: **AstraZeneca**

APPLICATION

AstraZeneca China needed a vision supplier capable of ensuring accurate label detection and positioning in their high speed production.

SYSTEM

Checker

RESULTS
The Checker system installed showed itself to be more capable and reliable than traditional photoelectric sensors in maintaining the quality of label inspection and counting. Checker also offers integrated LED lighting and optics which made it more cost-effective.

VISION

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PHARMACEUTICAL
Vials | Inspection

Customer: FP Developments

APPLICATION

FP Developments wanted to save money by opting to use multiple area-array cameras rather than a single line scan camera in a system designed for the inspection of drug vials.

SYSTEM

OmniView

RESULTS

After individual vial labels are captured using four cameras, OmniView unwraps the images, stitches them together and OCR and barcode inspection are performed. The system has been integrated into existing production lines and runs as quickly as 600 parts per minute making it both less costly and faster than the alternative of using a line scan camera.

PHARMACEUTICAL
Vials | Inspection

Customer: Fresenius Kabi

APPLICATION

Fresenius Kabi, a global leader in infusion therapy and clinical nutrition, needed a special machine capable of tackling the challenge of inspecting small vials of serum as well as detecting even the tiniest impurities within the serum.

SYSTEM

In-Sight

RESULTS

In-Sight cameras were installed to inspect the levels of liquid in vials of serum as well as to inspect for impurities at a speed of 10,000 bottles an hour. For this particular application, the In-Sight system was the only system that was capable of performing the inspections.

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PHARMACEuTICAL

Vials | Inspection

Customer: Genesis Machinery Products

APPLICATION

When packaging vaccines or other injectable medicines for patient treatment, manufactures cannot afford to take risks. That's why Genesis Machinery Products wanted to switch from photoeletric sensors to vision sensors on their new vial inspection system.

SYSTEM

In-Sight

RESULTS

The new system has helped to improve the repeatability of the process, while minimizing downtime, changeover time and process waste. The system provides 100% automatic inspection to detect raised stoppers on vials containing injectable liquid and lyophilized drug products prior to capping and sealing.

PHARMACEUTICAL

Vials | Inspection
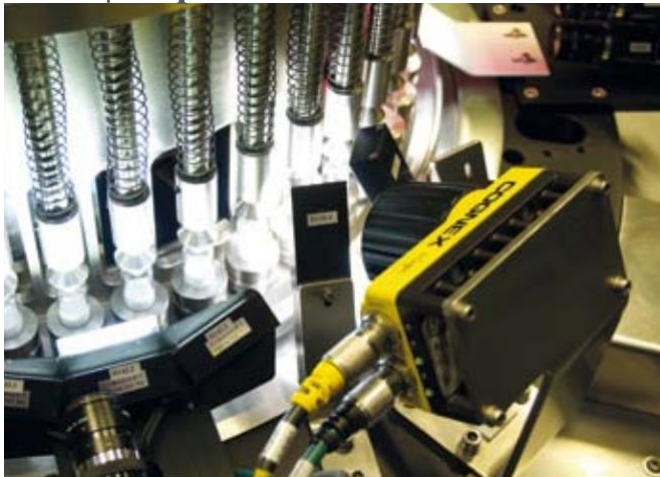
Customer: EISAI Machinery

APPLICATION

Few industrial sectors have such stringent quality requirements as the pharmaceutical industry. To meet these exacting specifications, EISAI Machinery wanted to utilize an intelligent vision system to inspect their delicate glass vials.
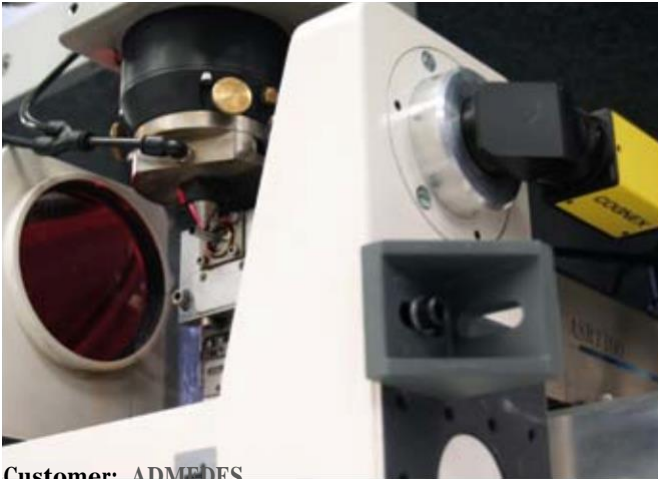
SYSTEM

In-Sight

RESULTS

Depending on the application and customer requirement, they can now check approximately 6,000 packages, and in its fastest version, can even test up to 12,000 test units per hour with unerring accuracy.

VISION

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MEDICAL DEVICES
Medial Implants | Inspection

Customer: ADMEDES

APPLICATION

Medical implant manufacturing demands maximum precision, where a few thousandths of a millimeter can differentiate between a good part and a reject in the production process. In view of those demands, ADMEDES needed the know-how of an experienced vision system expert for its new laser-cutting line.
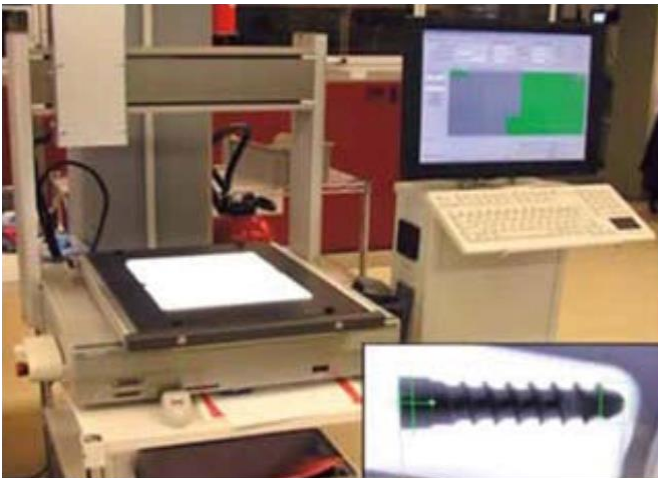
SYSTEM

In-Sight

RESULTS

The unbeatable high-resolution of the In-Sight system now ensures precision cutting control to an unprecedented degree of accuracy, using highly reliable image processing algorithms.

MEDICAL DEVICES
Surgical Implants | Inspection

Customer: Depuy Spine (Johnson & Johnson)

APPLICATION

Depuy Spine wanted to update their low volume inspection process using PC vision in order to inspect surgical implants and ensure that their production process was fully CFR Part 11 compliant.
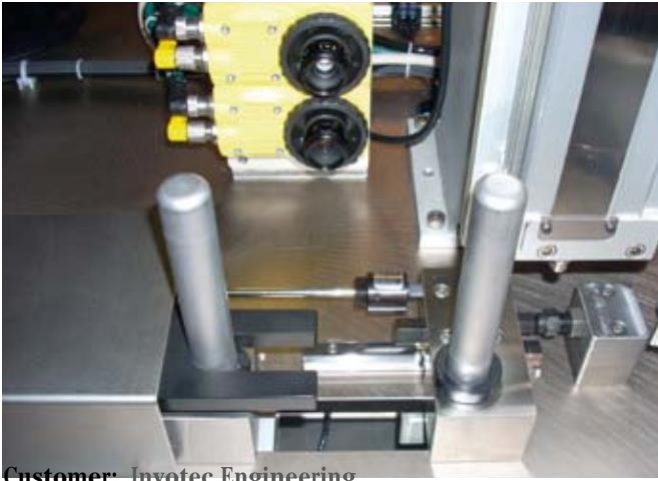
SYSTEM

VisionPro

RESULTS

Using a desktop robotic solution based on Cognex vision tools, they are now able to automate a low volume production process and ensure that delicate surgical implants are 100% reliably inspected before being shipped all over the world.

VISION

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MEDICAL DEVICES
Membrane Bands | Inspection

Customer: Invotec Engineering

APPLICATION

Manual inspection of an elastomeric band is difficult because there is no objective way for a human inspector to determine what is or is not a defect. Invotec was asked for a solution that could define an objective specification and produce repeatable inspection results.

SYSTEM

In-Sight

RESULTS

The In-Sight vision system demonstrated the ability to repeatedly inspect the bands fast enough to enable 100% accurate inspection.

MEDICAL DEVICES
Syringe Assembly | Inspection

Customer: AVTEX

APPLICATION

Syringe manufacturers wanted to maintain a high level of quality to ensure the safety of patients and caregivers while at the same time maximising productivity to deliver their product at a competitive price.

SYSTEM

VisionPro

RESULTS

Machine vision inspection stations were customised for a two-machine syringe assembly process giving the ability to produce syringes at a rate approximately twice the level that was previously possible. A key to this success was the use of machine vision systems that operate at the high production rates of the machines while providing 100% inspection to ensures the quality of every unit.

VISION

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MEDICAL DEVICES
needles | Inspection
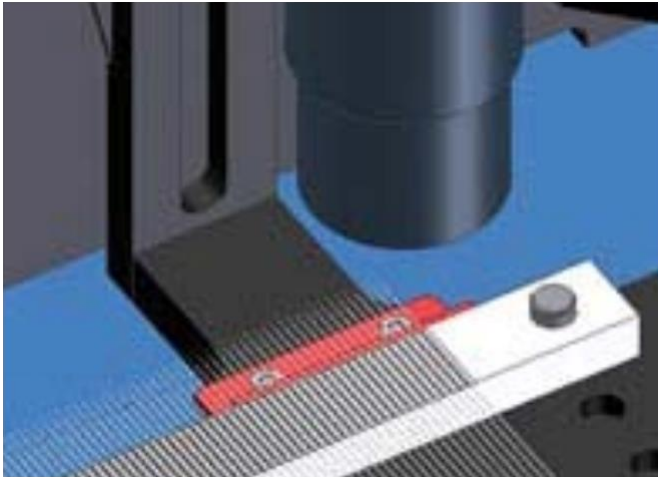
Customer: Point Technologies

APPLICATION

Point Technologies needed to meet their customer's high quality requirements for electrosurgery-needles, while increasing production throughput by upgrading from human quality inspection to automated inspection.
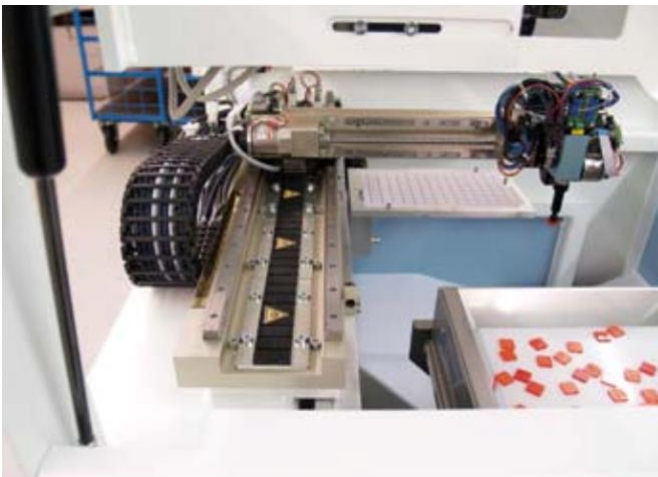
SYSTEM

VisionPro

RESULTS

The inspection system developed uses VisionPro and is capable of 100% inspection of electrosurgery-needles within a period of three to five minutes. Each shipment that is inspected has a label with a summary of the results. It is also able to adapt quickly to different test parameters.

MEDICAL DEVICES
Medical Products | Pick & Place

Customer: iTECH Engineering

APPLICATION

When manufacturing medical products, the success of automation solutions depends on three criteria: speed, precision and ease-of-use. The engineers at iTECH Engineering wanted to come up with an ultra compact, extremely efficient system for the identification of parts and optional inspection.

SYSTEM

VisionPro

RESULTS

A highly compact, yet extremely robust, stand-alone solution was designed to pick up precision parts with a positioning accuracy of 0.05 mm and deposit them onto small pallets at the exact spot required. When combined with the flexible VisionPro technology, delivery times were reduced, dramatically cutting costs.

VISION

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PHARMACEUTICAL
Packaging | Mixed Code Reading
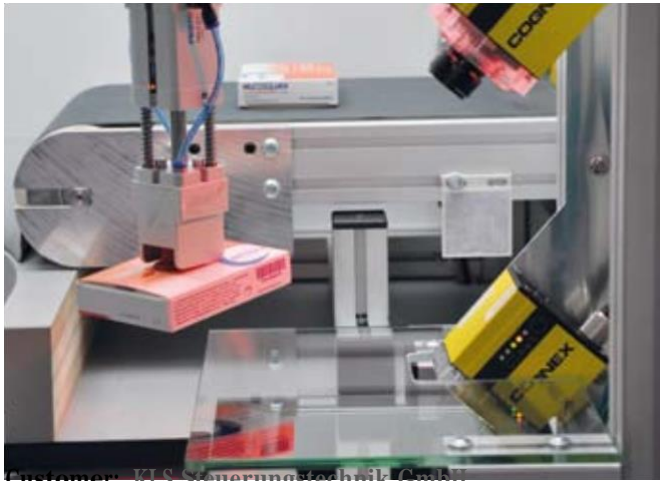
Customer: KLS Steuerungstechnik GmbH

APPLICATION

With increased efficiency and process optimization becoming hot topics for professional pharmacists, many are looking towards technology to assist in overall customer service. One such possibility is a fully automated warehousing system.

SYSTEM

DataMan

RESULTS

With DataMan 500 barcode readers installed, KLS Steuerungstechnik has been able to make more time available for customer contact and to generate additional sales. Up to 450 units can be scanned hourly as they arrive in the warehouse so their data can be transferred to the company's enterprise resource planning system so all warehoused items are cataloged.

PHARMACEUTICAL
Packaging | Mixed Code Reading

Customer: A. nattermann & Cie

APPLICATION

According to the EU Commission, the rate of counterfeit drugs has risen by around 400% since 2005 and it is assumed that around 10% of all medicines worldwide are counterfeits. It is therefore more important than ever in the fight against drug counterfeiters to have a clear identification and traceability of the original products.

SYSTEM

DataMan

RESULTS

With its new Mark & Vision system, A. Nattermann & Cie has been able to prevent counterfeit medicines from being released. A key part of the system are DataMan barcode readers which read Data Matrix codes for full traceability of the products.

INDUSTRIAL ID

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PHARMACEUTICAL
Packaging | Multiple 2-D Code Reading

Customer: Advanco

APPLICATION

Manufacturing and distributing over 60 million medicine boxes each year, Advanco needed an accurate and reliable code reading system, essential to achieve the required levels of traceability. Furthermore, the ability to read multiple codes within one field of view as well as any potentially blurred or distorted codes was a necessity.

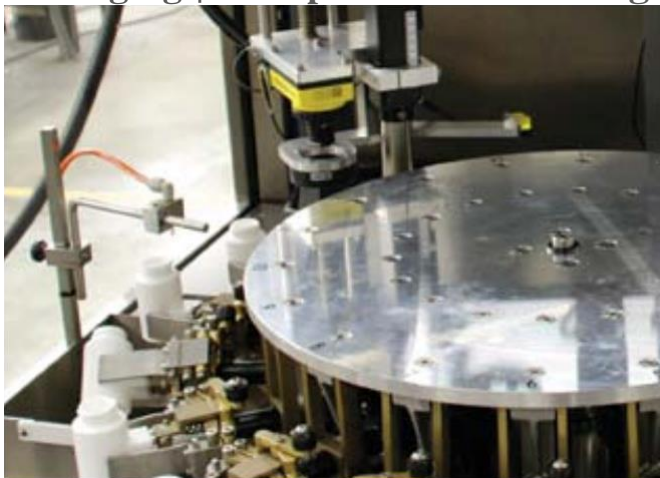### SYSTEM

In-Sight ID

RESULTS

The In-Sight ID reader solution installed has ensured high read rates for all products, even when the 2-D codes have been obscured by the plastic shrink wrap. Advanco is now 100% satisfied that all 2-D codes are fully readable before leaving the facility.

PHARMACEUTICAL
Packaging | Multiple 2-D Code Reading

Customer: omega Design

APPLICATION

An increasing problem in the US of counterfeit drugs being intermingled with the legitimate drug supply has led to the need for improved Track-and-Trace programs to be introduced to ensure accuracy and safety at all times.

SYSTEM

In-Sight ID

RESULTS

The new approach used by Omega involving In-Sight ID readers has proved a cost effective, easy-to-implement method of incorporating 2-D Data Matrix serialisation within new and existing packaging lines without compromising machine speeds or accuracy.

INDUSTRIAL ID

COGNEX

PHARMACEUTICAL
Packaging | 2-D Code Reading

ACSIS

APPLICATION

ACSIS needed to address the challenge of upgrading their huge installed base of pharmaceutical manufacturing equipment to comply with imminent serialization requirements.

SYSTEM

In-Sight ID

RESULTS

The installation of In-Sight ID readers helped to validate the presence, accuracy, and readability of the various labels with 2-D barcodes, and also ensure product safety and package integrity.

PHARMACEUTICAL

Packaging | 2-D Code Reading

Customer: Sanofi-aventis/Wedzony

APPLICATION

Responding to new regulations affecting readability of GS1 codes, Sanofi-aventis was keen to implement a product verification solution to ensure zero operator errors caused by data input, a reduction of waste products, and improved product coding quality across a range of products at their factory in Poland.

SYSTEM

In-Sight ID

RESULTS

With the introduction of In-Sight ID readers, production efficiency has improved with impressive levels of accuracy. Integrated Track & Trace software helps deliver a ready-to-deploy data capture and verification solution designed to help achieve unit-level product traceability.

INDUSTRIAL ID

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MEDICAL DEVICES

Surgical Instruments | Data Matrix Codes

Customer: TPL Vision

APPLICATION

The aim was to exploit the use of identification technologies in hospitals to ensure the individual monitoring of instruments during the sterilisation process, re-compile instrument sets for use in operating rooms and create a link between the instruments used with a patient file.

SYSTEM

DataMan

RESULTS

With the DataMan code reader installed, all Data Matrix codes are now read three times faster than other readers on the market and full inventories are provided of surgical instruments with 100% reliable traceability.

MEDICAL DEVICES

Surgical Instruments | Data Matrix Codes

Customer: Censis

APPLICATION

Assembling accurate sets of surgical instruments in a typical hospital is a time-consuming and difficult manual task. If problems occur and instruments go missing, it may be necessary to delay surgery while technicians race around looking for them.

SYSTEM

DataMan

RESULTS

Censis developed a software product that allows a 2-D Data Matrix barcode to be electrochemically applied to each instrument. This barcode is scanned during the assembly process to ensure accurate set assembly and track the location of every instrument. After using five different ID readers they finally found only the DataMan provided the 100% accuracy, speed and ease of use required by this critical application.

INDUSTRIAL ID

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MEDICAL DEVICES
Surgical Instruments | Data Matrix Codes

Customer: ulrich Swiss

APPLICATION

Traceability and transparency for instrument management are critical factors in hospitals and clinics. Ulrich Swiss needed to develop a system that would set new standards in operating theatre safety, central sterilisation units as well as administrative efficiency for hospital cost centres.

SYSTEM

In-Sight ID

RESULTS

With each instrument being permanently marked with a 2-D Data Matrix code, the introduction of the In-Sight solution gave Ulrich Swiss the 100% accuracy and reliability it required. They are now able to perform around 40 readings per second which is reflected in the fact that numerous clinics have now upgraded and expanded their own systems.

INDUSTRIAL ID

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AB&R
identify. track. manage.

AB&R is a certified Cognex Partner. For more information on products and services.
Contact an AB&R Specialist 800-281-3056 or visit www.abr.com

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

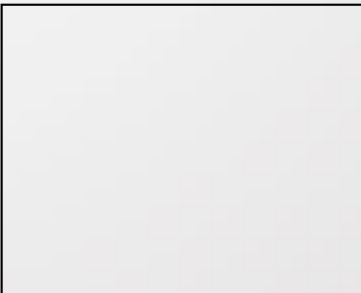**Corporate Headquarters, One Vision Drive, Natick, MA, USA. Tel: +1 508.650.3000 Fax: +1 508.650.3344**

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