

# Food & Beverage



## Applications Guide

## The Right Choice for Food and Beverage Applications



Cognex vision technology helps companies improve their manufacturing quality and performance by eliminating defects, verifying assembly and tracking and capturing information at every stage of the production process. Smarter automation using Cognex vision systems and barcode readers means fewer production errors, which equates to lower manufacturing costs and higher customer satisfaction. Allergen management, product quality, assembly verification, packaging inspection and full traceability are all key issues for every manufacturing engineer and manager. Cognex has the widest range of solutions to all these applications, including advanced vision systems in stainless steel, color identification systems, inspection sensors and high performance 1-D and 2-D barcode readers.

Cognex is the world's most trusted vision company, with 850,000+ systems installed in factories around the world, and over thirty years of experience focused on machine vision and barcode reading technology.

Cognex products are used by many of the world's top food and beverage 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 barcode reading 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 food and beverage 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 Barcode Readers

DataMan® readers offer the smallest size and highest performance in direct part mark and high-speed code reading applications. Reading everything from simple 1-D barcodes, the most challenging 2-D codes, DataMan readers deliver the highest read rates and offer the greatest reliability with a solid state design with no moving parts.



### Handheld Industrial Barcode 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.

# 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                                      |
|        |   |         |         |          | ✓  | PLC Function Blocks                           | Pre-configured device commands and attributes |
|        | Rockwell  | ✓       | ✓       | ✓        | EtherNet/IP                                      | Industrial Ethernet                           |   |
|        |   |         |         |          | ✓  | DeviceNet                                     | Fieldbus                                      |
|        |   | ✓       | ✓       | ✓        | AOP  | Pre-configured device commands and attributes |   |
|        | Siemens   | ✓       | ✓       | ✓        | PROFINET   | Industrial Ethernet                           |   |
|        |   |         |         |          | ✓  | PROFIBUS                                      | Fieldbus                                      |
|        |   |         |         |          | ✓  | MODBUS TCP                                    | Industrial Ethernet                           |
|        | Other Protocols   |         |         |          | ✓  | Modbus  | Serial  |
|        |   |         |         |          | ✓  | ASCII String commands                         | Serial  |
|        |   |         |         |          | ✓  | OPC   | Industrial Ethernet                           |
|        |   | ✓       | ✓       | ✓        | ✓  | TCP   | Industrial Ethernet                           |
| ✓      |   | ✓       | ✓       | ✓        | UDP  | Industrial Ethernet                           |   |
| ✓      |   | ✓       | ✓       | ✓        | 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  |   |   |   |   | ID   |   |   |   |
|  |  |  |  |  |  |  |  |  |
| Guide/Align   | Inspection  | Gauge/<br>Measure   | OCR/OCV   | Presence/<br>Absence  | 1-D High<br>Speed  | 1-D Low<br>Speed  | 2-D Direct<br>Part Mark   | 2-D Printed   |

**FOOD PACKAGING**  
Cheese | 2-D Code Reading



Customer: Het Kaasmerk

APPLICATION

The 2-D codes used to mark cheese are not immune to damage, as they undergo the same treatment as the cheese itself during production. These codes are not only mandatory, but also necessary for safeguarding quality during production, so reading them was imperative.



SYSTEM

DataMan



RESULTS

With its superior reading capabilities, the DataMan hand held reader provided 100% certainty. It helped minimize food safety risks after the production phase, saving time and money and allowing every cheese to be individually traced.

**FOOD PACKAGING**  
Labeling | Barcode Reading



Customer: Master Kong

APPLICATION

Traditional manual information collection methods on the production lines meant the accuracy of the data collected was seriously affected by the visual fatigue of workers which increased the probability of errors.



SYSTEM

In-Sight

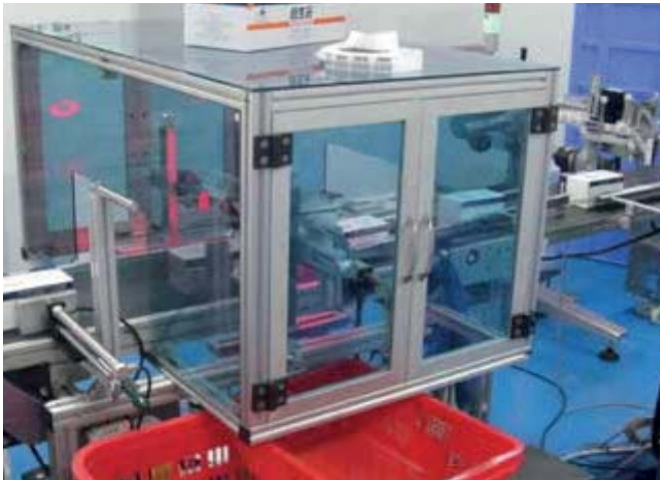


RESULTS

The introduction of the In-Sight system delivered accurate packaging information, an automatic data collection system, improved security on the operation site, eliminated potential safety hazards and reduced the workload for machine operators.

INDUSTRIAL

**FOOD PACKAGING**  
Labeling | Barcode Reading



Customer: Bios Time

APPLICATION

When barcode or printing errors occurred, the production line was being stopped so that a correction could be made manually in the process. This was inefficient and could not guarantee the quality of product packaging because the naked eye was becoming tired. As a result, substandard product was passing through the production line.



SYSTEM

In-Sight



RESULTS

The introduction of the In-Sight system guaranteed the packaging quality, improved the level of automation and increased overall productivity.

**BEVERAGE**

Tax Stamps | Barcode Reading



Customer: Goody Goody Liquors Inc.

APPLICATION

The automated system being used applied tax stamps to bottles and processed them at the rate of one per second. Besides the high speeds, the bottles had different shapes and the labels different backgrounds. The label position also varied and the lighting continually changed, making the application a challenge.



SYSTEM

DataMan



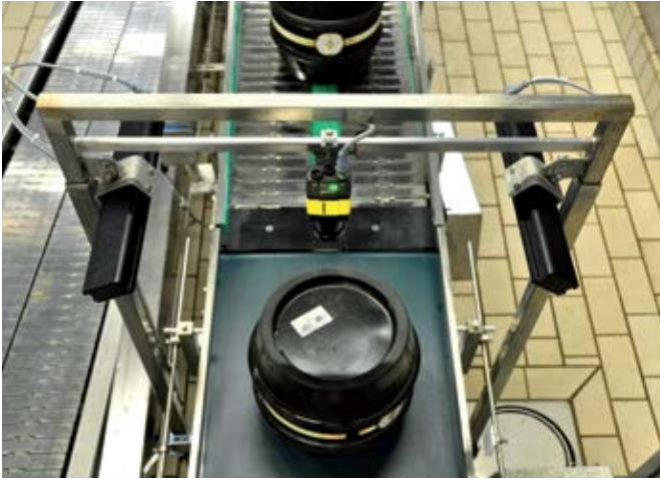
RESULTS

With its larger depth of field, higher resolution and decoding technology, the DataMan 500 barcode reader made it possible to reliably read the barcodes despite the challenges of the application.

INDUSTRIAL

BEVERAGE

Labeling | Barcode Reading



Customer: Warsteiner Brewery

APPLICATION

Complex manual re-weighing was necessary of the beer kegs before and after the filling process to ensure the fill quantity matched the stated weight. Labels were soaking wet and wrinkled and the distance from the reader varied because of the size of the kegs – these created challenging work for the barcode readers.



SYSTEM

DataMan



RESULTS

The 2DMax+ algorithm, the liquid lens autofocus capabilities, the controllable and field replaceable red lighting of the DataMan and the two weighing stations were a complete success for Warsteiner. Application read rates increased from 92% to 100%!

BEVERAGE

Labeling | Barcode Reading



Customer: Everards Brewery

APPLICATION

Reading poor quality and damaged codes during the keggung process via a laser scanner, led to a 60-65% read rate. This meant that a significant amount of necessary information was not being captured as accurately as possible.



SYSTEM

DataMan

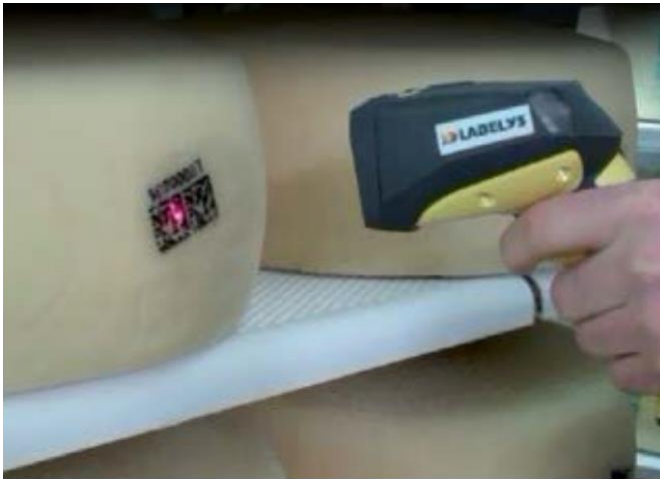


RESULTS

The amount of data now collected identifies and weighs the kegs during production correctly. These improvements now comply with the Weights and Measure Act much more comprehensively. It was noted that the DataMan 500 was easy to use and set up which meant operators could adjust and alter the system themselves without the need for technical assistance.

INDUSTRIAL

**FOOD PROCESSING**  
**Cheese | 2-D Code Reading**



Customer: Labelys

APPLICATION



Labelys cheese labels are made of casein and are therefore subject to dimensional degradation, incorrect positioning or partial damage that occurs during the cheese production process. These labels are not only needed for identification and traceability, but act as a passport so reliable reading is essential.

SYSTEM



DataMan

RESULTS

The powerful DataMan algorithms ensure that even the most degraded codes can be reconstructed with 100% reliable identification.

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**FOOD PROCESSING**  
Pizzas | Product Recognition



Customer: Pizzeria

APPLICATION

The Italian producers needed to quickly and easily adapt to consumer demand by being able to package three different shapes of pizza that were all randomly placed on the same conveyor belt.



SYSTEM

VisionPro



RESULTS

Guided by VisionPro, a robotic picker can now identify and communicate the location of different pizzas as they move along the conveyor belt. This system is capable of packaging 60 to 80 pizzas per minute while maintaining proper shape and without losing any toppings.

**FOOD PROCESSING**  
Bread | Tin Inspection



Customer: Frank Roberts

APPLICATION

With 5,200 farmhouse loaves being baked every hour, six days a week, leftover bread needed to be removed manually before the tins could be reused in the process. Normal vision methods were not sufficient to detect when manual de-panning was necessary because of the dark-colored tins. Waste and production delays required an urgent resolution.



SYSTEM

In-Sight



RESULTS

Thanks to the improved tin inspection with the In-Sight system in place, waste figures were dramatically dropped, increasing overall production and reducing costs.

**FOOD PROCESSING**  
Pizzas | Product Recognition



Customer: Dafgård

APPLICATION

When supplying over 110,000 units of pizza everyday, it was important to make sure that each product was fully checked. Manual inspection was being carried out under complicated circumstances that made it difficult for the company to secure reliable quality control of production on the pizza line.

SYSTEM

In-Sight

RESULTS

The In-Sight system now inspects the position of pizzas on the production line ensuring the look, the size and the form of the pizzas are correct. Even the coverage of cheese on the surface of the pizza is inspected. Any pizzas not conforming are now rejected.



**FOOD PROCESSING**

Hogs | Code Reading



Customer: Quality Meat Packers

APPLICATION

Quality Meat Packers needed to be able to trace meat inspections throughout every stage of the disassembly process.

SYSTEM

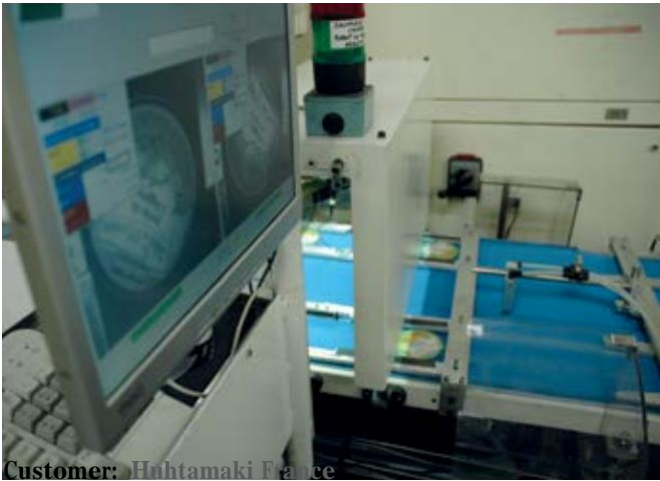
VisionPro

RESULTS

Capturing up to forty frames per second from four cameras, the system now enables information to be obtained from prior inspection stations in real time. They can now signal if there is a problem as meat comes down the line, and production has increased from 5,400 to 7,700 hogs per day.



**FOOD PACKAGING**  
Baby Food | Label Inspection



Customer: Huhtamaki France

APPLICATION

As a baby food manufacturer, Huhtamaki had no choice but to try and attain a zero defect level inspection system while continuing to maintain high levels of productivity.



SYSTEM

In-Sight



RESULTS

With the In-Sight system in place, 100% reliability was achieved without the quality of production being compromised. The system also proved so simple to use that even workers with limited vision experience were easily trained to work independently with the program giving them the ability to make simple changes.

**FOOD PACKAGING**  
Sausages | Dividing Quantities



Customer: Singer & Sohn

APPLICATION

Dividing sausage strings manually created a bottleneck in the production process – damages also occurred throughout the cutting process.



SYSTEM

In-Sight



RESULTS

A fully automatic solution fitted with a Cognex In-Sight vision system was implemented – this is able to divide more than 200 pairs of sausages per minute. In-Sight's software, In-Sight Explorer, reduced the calibration phase to a minimum and on top of that, the high-quality stainless steel casing provided by Cognex means there is no need for further protective measures.

**FOOD PACKAGING**  
**Food Sachets | Seal Inspection**



Customer:

APPLICATION



A visual inspection of any broken sachet seals was made at the end of the production line. Knorr wanted a system to ensure they would meet their goal of zero defects.

SYSTEM



In-Sight

RESULTS

The vision system that Knorr deployed consisted of an In-Sight® Micro camera, In-Sight Explorer vision software with PatMax® pattern recognition technology and a Cognex VisionView 700 visualization panel. This system is able to assess the sealed seams at breakneck speeds.

**FOOD PACKAGING**  
**Ice Cream | Label Reading**



Customer: Tip Top

APPLICATION



As New Zealand's leading ice cream company, a recent decision to remove the barcode from the lid of the container introduced a challenging food safety concern for Tip Top: How to guarantee the correct packaging was being used for the ice cream currently in production?

SYSTEM

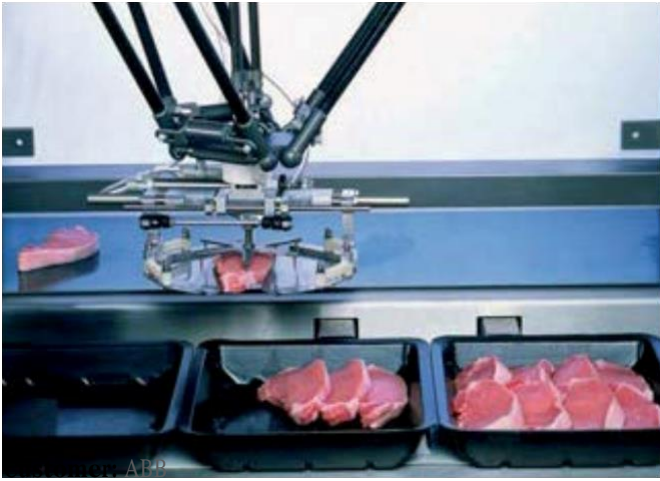


In-Sight

RESULTS

With the In-Sight system installed, an area of text and certain aspects of the label as well as its positioning on the lid can now be memorized and recognized. The simplicity and reliability of the solution allows Tip Top to maintain a high level of production without compromising quality.

**FOOD PACKAGING**  
Meat | High Speed Picking



APPLICATION

A range of packaging applications were needed, from high speed picking to palletizing of boxes for final transportation.



SYSTEM

VisionPro



RESULTS

By coordinating eight robots with eight cameras simultaneously, powerful process functions allowed the production to be evenly distributed on all robots and guaranteed that all packages were filled. Even if one robot was taken out of production, the system still continued to run reliably with just the slightly reduced capacity of the one robot.

**FOOD PACKAGING**  
Unlabeled Cans | Code Reading



Customer: Matrix Technologies

APPLICATION

With unlabeled cans passing by at a speed of one every 60 milliseconds, conventional manual inspection was not possible.



SYSTEM

In-Sight



RESULTS

With an In-Sight vision system in place, product codes could be inspected against the bright can background at a speed of 1,000 products per minute, providing accurate results with virtually no downtime.

**FOOD PACKAGING**  
Sausages | Product Recognition



Customer: Unilever

APPLICATION

To increase throughput and achieve quick-change versatility on their sausage production line, Unilever wanted to change over from manual to automatic packaging operations.

SYSTEM

VisionPro

RESULTS

Guided by VisionPro, a robotic picker now picks a sausage off the conveyor belt for packaging, nearly doubling how many production cycles they complete per minute and can change over from one size sausage to another in three minutes.



**FOOD PACKAGING**  
Automation | OCR Reading



Customer: CJ Food System

APPLICATION

Focusing on the distribution of food materials for business, contract food services and the supply of raw material commodities to the food processing industry, the company needed to ensure reliable tracking of their products during a high speed process.

SYSTEM

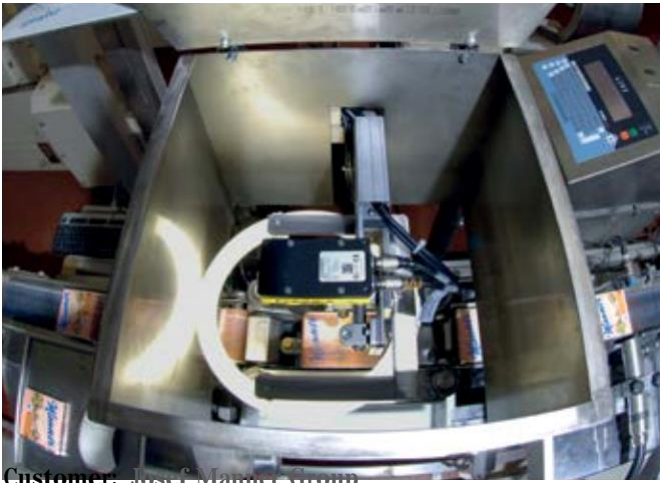
In-Sight

RESULTS

Now relying upon an In-Sight system to assure the code reading and verification of their products, the cameras guide robots to ensure the right products are stacked for distribution.



**FOOD PACKAGING**  
Confectionery | Label Inspection



Customer: Josef Manner Group

APPLICATION



With individual packages of wafers flowing through an inspection station on a conveyor belt at high speed in irregular positions, it was essential that defective packages were instantly recognized. This was not just a question of cost as it would also have a negative effect on the production flow.

SYSTEM



In-Sight

RESULTS

The 100% quality checking of each package helped to guarantee large customer orders and improved quality certification.

**BEVERAGE**  
Bottles | Label Inspection



Customer: FT Systems

APPLICATION



With the varying position of bottles on the line, it was important to eliminate the costly requirements associated with mechanical rotation of parts, previously needed to perform inspections.

SYSTEM



OmniView®

RESULTS

With OmniView's capability of constructing an accurate final image from four cameras placed on the line, it was possible to generate one-dimensional images of the bottles, enabling label checks to be made as if the product was flat.

**BEVERAGE**  
Bottles | Product Recognition



Customer: Meridian Beverage Co

APPLICATION



With a new line running almost non-stop at 375 bottles a minute, down time on the system wasn't an option and inspection rates had to be unbeatable.

SYSTEM



Checker

RESULTS

The ability of the Checker sensor to self-trigger a rejection station on the bottling line has reduced the company's equipment costs by 20%. After final in-place tuning, the system tested 100% for cap placement and proper fill level.

**BEVERAGE**  
Packaging | Product Recognition



Customer: ottakringer

APPLICATION



The main priority of the brewery's maintenance department was the inspection of beer crates and boxes of cans to guarantee packaging units contained the full number of defect-free products. This was a quality measure to prevent customer complaints.

SYSTEM



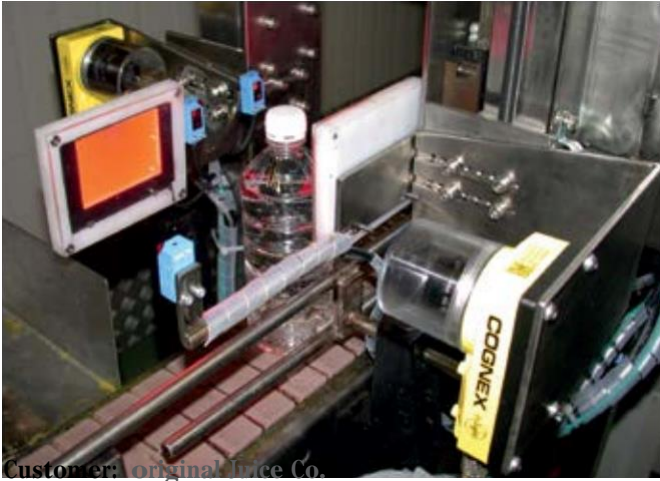
Checker

RESULTS

The checking station now reliably inspects beer crates at a rate of approximately one per second. Integration of Checker into the control technology of the production system was easy due to the standardized interface. Checker now also causes the production belt to stop automatically if a fault is registered.



**BEVERAGE**  
Bottles | Bottle Inspection



Customer: Original Juice Co.

APPLICATION



A system was required to prevent incorrectly sealed bottles from being sent to customers and to prevent any other flaws in the packaging.

SYSTEM



In-Sight

RESULTS

In order to keep pace with line speeds of 300 bottles per minute, two vision systems were installed on each side of the conveyor belt. The two systems inspected all aspects of the bottle and offered the flexibility to readily accommodate any new bottle designs.

**BEVERAGE**  
Bottles | Cap Inspection



Customer: Changde Microfabrication Technology Co. Ltd

APPLICATION



The great demand for beer bottle caps has resulted in a need for a higher speed of manufacturing. However, it has been difficult for current defect detection systems to keep up with the production rates, with detection accuracy barely meets quality requirements.

SYSTEM



VisionPro

RESULTS

The VisionPro software produced a high-speed defect detecting system for beer bottle cap production at a rate of 2,400-2,600 pieces per minute. It also helped to meet quality requirements by realizing defect detecting accuracies of 0.5mm<sup>2</sup> on both the front cover and the side of the cap that touches the bottle.

**BEVERAGE**  
Bottles | Label Inspection



Customer: AFA nordale

APPLICATION



When using transparent cartons to package its bottled drinks so that the branded labels are visible to consumers, the need to orient the bottles so that the right part of the label was visible made automated packaging a challenge.

SYSTEM

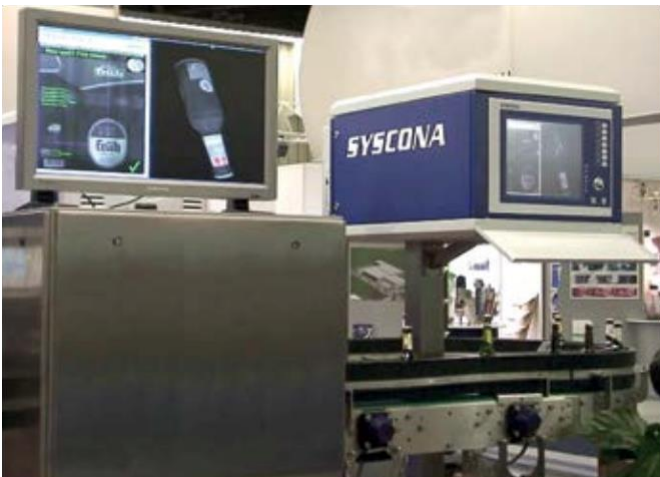


Checker

RESULTS

With the Checker in place, the success rate in orienting the bottles on the conveyor was 99.9%, meeting the beverage manufacturer's requirement of 450 bottles per minute and has since been tested to 600 bottles per minute.

**BEVERAGE**  
Bottles | Label Inspection



Customer: Syscona Kontrollsysteme

APPLICATION



There were two key challenges to implementing machine vision to aid in the quality control of labels on cylindrical objects. Firstly, the inconsistent aligning within the labeling machine itself, and secondly, unfavorable ambient conditions and lack of appropriate space to contain the vision system.

SYSTEM

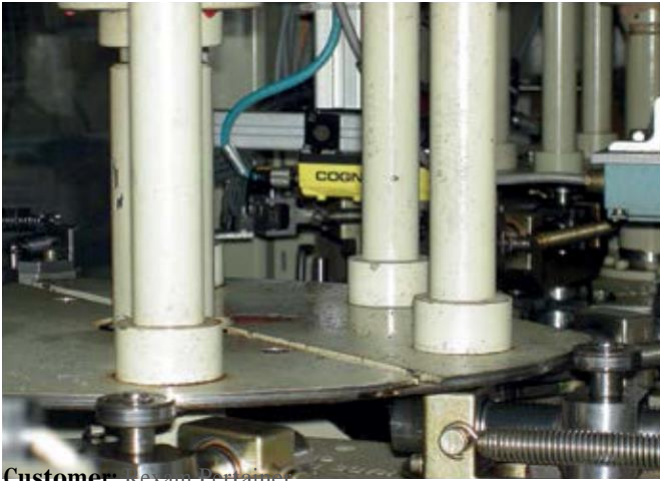


OmniView

RESULTS

The answer was to make checks outside the labeling machine as the non-aligned bottle traveled freely along the line. At a rate of 72,000 bottles an hour, the inspection data and 360° image for each bottle was available after just 50 milliseconds. The result was a complete inspection of all bottle features with maximum identification reliability.

**BEVERAGE**  
Bottles | Bottle Inspection



Customer: Rexam Petalmer

APPLICATION



Manufacturing 80% of all plastic bottles sold in Nordic countries, Rexam needed to ensure they could meet all their customers high expectations and demands regarding the quality, logistics and visual appearance of their bottles as well as end-consumer satisfaction.

SYSTEM



In-Sight

RESULTS

They have gone from doing manual random testing on a production of several hundred million bottles per year, to a systematic inspection of everything that is manufactured. Through automated inspections, they have a wide cover which together with other quality-control measures minimizes the incidence of error.

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**BEVERAGE**  
Bottles | Crowning Inspection



Customer: Tooheys

APPLICATION



With two fast-paced production lines running at 1,200 bottles per minute, producing two different products, with two separate bottle caps or crowns, how could lines be regularly changed over without error?

SYSTEM



In-Sight

RESULTS

With its superior defective product rejection accuracy rate, the In-Sight system was an easy choice. Selected for its speed and simple interface, its capacity to detect defects in any 360° orientation and its robust design, the system surpassed all expectations.



**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](http://www.abr.com)**

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

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**Americas**

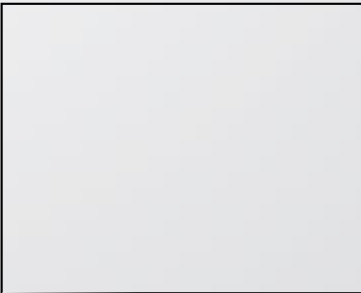
United States, East +1 508.650.3000  
 United States, West +1 650.969.8412  
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