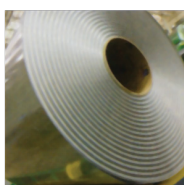
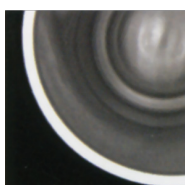
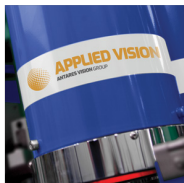




APPLIED VISION
ANTARES VISION GROUP

Simply Smart MachinesSM



Beverage End Inspection

The industry's most accurate and efficient systems for today's lines





End Inspection

For industry-leading accuracy and cost efficiency, beverage can makers worldwide turn to Applied Vision for their inspection solutions. No other name assures more powerful algorithmic functions specifically designed for this application.

The integrity and versatility of our proprietary optics (cameras and lighting), processor capabilities and our systems' simplified setup and operation are unrivaled. Every run, every day, Applied Vision systems help our customers achieve maximum productivity with the lowest spoilage rates possible. And as the industry's foremost technological innovator, we continually meet your changing and increasing challenges.

The Technologies

Working with top beverage can makers for decades, Applied Vision developed renowned Genius® inspection systems and has integrated them in nearly all of our lines.

Answering the growing demands for high-performance inspection that requires less space, cost, and installation and maintenance time, we introduced our groundbreaking

Cyclops® self-contained system and DoubleTake™ dual-image technology. Utilizing these Applied Vision exclusives and more, we efficiently provide the ideal solution for your operations.

Genius® beverage end inspection

Genius combines unsurpassed inspection optics, processing power, user ease and enclosure integrity for reliably accurate 100% inspection at line speeds. Available configurations include single-camera or multiple cameras serving a single processor. Camera and lighting enclosures mount directly onto the line and are conveniently retractable as needed. Setup and use are the most simplified in the industry, with our systems' integral self-training tools and Touch-N-Go® user interface.

Features:

- Digital camera technology
- Remote-mount flat-panel touch screen
- On-line setup
- Dedicated tab angle tool, pattern inspector tool and sub-pixel radius measurement
- Process feedback for reduced spoilage



Applied Vision Beverage End Systems

Inspect: Converted end, EOE, Lined shell, Unlined shell, Public end, Product inside

Detect: Curl defects, Tab alignment, Chuck wall, Rivet, Rivet cracks, Liner correlation, Dimples, Partial score, Compound, Dents and scratches, Embossing integrity, Diameter measurement, Foreign objects, Compound splashes, Scrap in die, and more



Defect in Compound



Rivet Crack



Curl Defects



Scrap in Die



Tab Alignment



Scratch

- Digital IO/alarms
- Remote diagnostics, monitoring and control
- NEMA/IP rated packaging
- Solid-state lighting
- Automatic image intensity adjustment for each individual part
- Product-side complete curl inspection without material handling
- Ease of use: Self-training, intuitive, simple terminology, easy-to-understand graphics

and its own processor are contained in a single enclosure, thus helping to reduce acquisition/installation/maintenance time and costs. Wi-Fi enabled, versatile and upgradeable, the innovative Cyclops delivers proven Applied Vision technologies effectively and with added efficiency.

Features:

- Wi-Fi enabled: Remote display
- Network access
- Rugged industrial mounting
- Flexible optical configuration to accommodate product heights from 0.1" to 8"
- Integrated eight-channel solid-state lighting
- Exclusive DoubleTake™ technology (optional)
- Artificial Vision defect classification (optional)
- Digital Gig-E camera technology
- Easy setup, reliable automatic operation
- Minimal false reject rate
- Display options: No display, DVI, Smart display (wired, wireless)
- Minimal cabling required
- High-performance solid-state drive
- Motorized height adjustment
- Visual status indicators



Cyclops® Inspection Solution

In multi-lane installations, or where a quick, flexible inspection solution is needed, Cyclops offers valuable capabilities and savings. Each camera

DoubleTake™ Technology

Where space on or above your lines is limited, Applied Vision's exclusive DoubleTake technology enables each Genius or Cyclops system camera to acquire two images, using different lighting geometries and durations. Two completely different lighting assemblies are used in one standard enclosure (Litehouse), creating the two-camera equivalent. Additionally, in both normal and tight conditions, DoubleTake maximizes inspection capabilities by not limiting inspections to a single lighting source.

Talk with Applied Vision now about the optimum beverage end inspection solution for your operations.



Specifications

Environment:

- 0-45° C (32-113° F),
Up to 90% Relative Humidity
Non-Condensing
- Dual Vertical Dimensions:
71 cm x 152 cm x 36 cm
(28"w x 60"h x 14"d)
- Power: 120 or 230 VAC
- Air Requirements for
Reject Blowoff:
410-550 kPA (60-80 psi)

Communications:

- Digital I/O – Discrete
Optically Isolated 8 Inputs
and 16 Outputs
- Optional – Extended
Configurable I/O for Results
Export Feature Up to 32 Channels
- Optional – Full Remote
Operation Via Internet
Connection



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Total Beverage Can Inspection

The world's most accurate and efficient
solutions for can makers





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Applied Vision Corporation is the world's leading provider of machine vision inspection systems for the container manufacturing industry. Propelled by a spirit of innovation spanning more than three decades, we continue to set the global standard for inspection solutions for can makers across the globe.

Because of our ongoing development of application-specific technologies, meeting ever-higher standards in accuracy, cost efficiency, and ease of use, leading beverage and food can makers continue to turn to Applied Vision for the inspection solutions that best serve their operations worldwide.

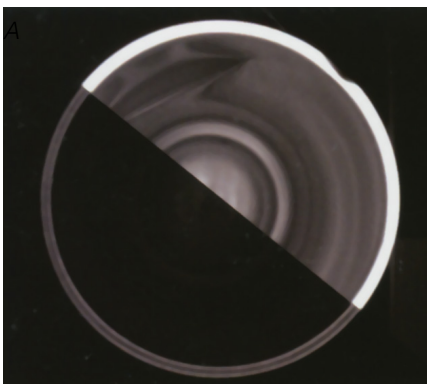
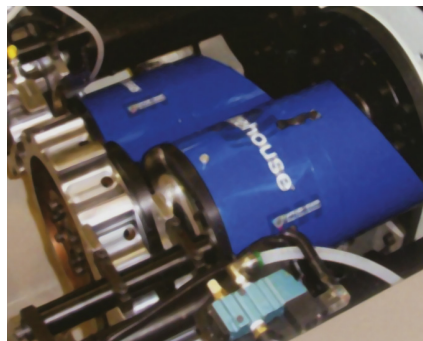
Find out how our complete capabilities can work to your advantage.



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The **Genius® Inside Can Inspection (ICI) System** provides proven capabilities in a variety of configurations and production environments. Used in conjunction with high-resolution digital cameras and proprietary optics, Genius produces image quality that excels over other multi-camera systems. It incorporates powerful inspection algorithms designed specifically for beverage can applications, while its intuitive Touch-n-Go® user interface makes programming and defect analysis simple. Housed in state-of-the-art NEMA/IP rated enclosures, Genius systems can withstand the harshest industrial environments.

Inside Can Inspection



A 3-camera cage (top left) is a common configuration. Installing Genius in a necker (top right) provides the most upstream process feedback. DoubleTake (bottom left) allows one camera to take two images, using different lighting geometries and durations, in a tight environment.

► **Detects: creases, puckers, wrinkles, neck pleats, die/draw marks, scratches, dents, coating voids, narrow flange, flange defects, flange measurement, grease and oil stains, foreign objects, metal whiskers and more**

The following are common installation locations:

Conveyor Applications

Installed on both horizontal and vertical conveyors, Genius detects and rejects defects before palletization. A common configuration typically includes three imaging assemblies (Litehouses) to inspect the flange, neck and body of standard-sized beverage cans. For cans 16 oz. or larger, a four-Lighthouse configuration is also available.

Necker Applications

Inside can systems are compatible with all neckers, including ANC, Belvac and CMB. Installing Genius ICI in a necker provides the most upstream process feedback, including necker pocket correlation, body maker ID (BMID) tracking, and Color Dot/UV detection. These data correlation options are included in our VTRAC™ package (see VTRAC for more information).

Light Tester Applications

Genius systems are commonly installed in light testers such as the RT6 and LT16. Because space is limited in light tester environments, Genius utilizes DoubleTake™ technology, which allows one camera to take two images with different lighting geometries (see *DoubleTake* for more information).

Beverage Can Inspection Points In-line

LUMINUM COILS

LUBRICATOR

CUPPER

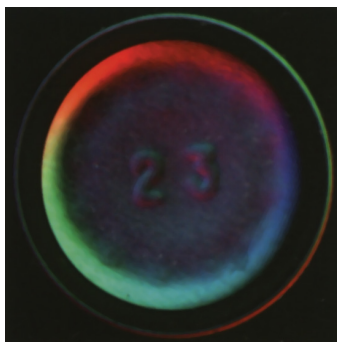
BODY MAKERS AND TRIMMERS

WASHER

BASECOATER

VTRAC Advanced Process Monitoring

An exclusive enhancement to Genius Inside Can Inspection Systems, VTRAC technology enables can makers to achieve unprecedented insight to their manufacturing process. VTRAC is intelligent-machine software that indicates where a specific manufacturing process is causing a defect, eliminating guesswork during troubleshooting. This helps alleviate downtime and assures consistent operational integrity and efficiency.



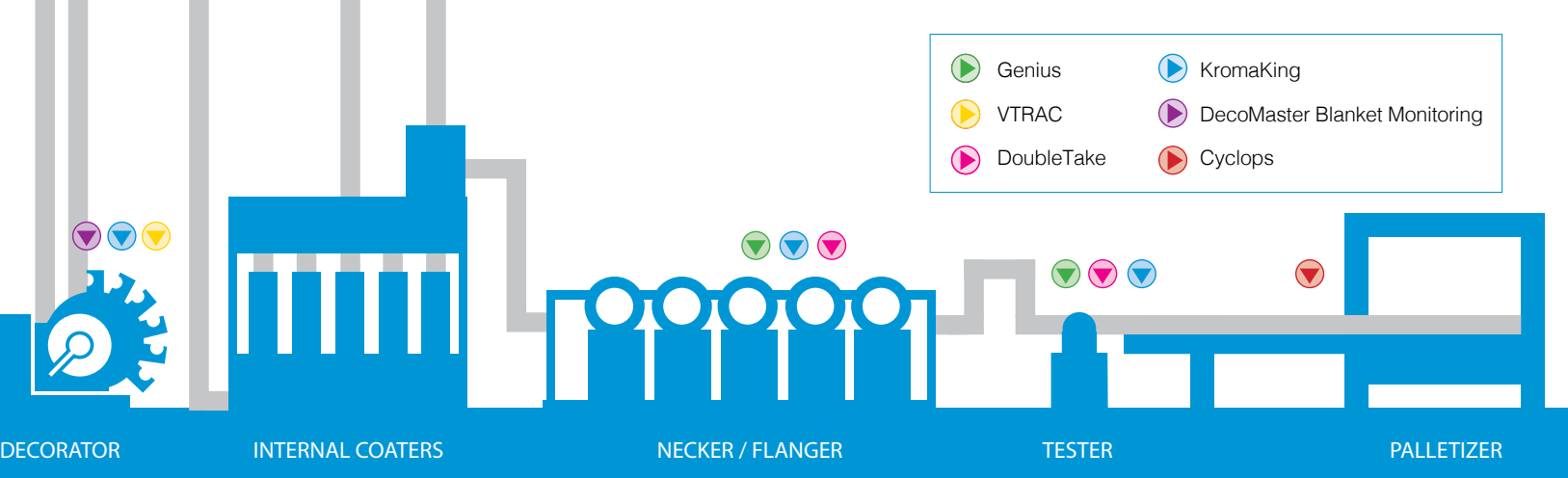
VTRAC dramatically reduces spoilage by instantly pinpointing defect-causing body makers, neckers and more.

How VTRAC Works

Equipped with VTRAC, Genius correlates each product feature to the machine performing the job upstream. When a feature is detected that is not within acceptable parameters, Genius immediately identifies the body maker, necker pocket or spray gun causing the defect. Alarm outputs can be configured to alert personnel through a variety of outputs, including discrete I/O and plant PLC. VTRAC data also can be sent using OPC or UDP protocols according to plant requirements.

Unlike conventional process feedback that can only monitor, count and report, VTRAC pinpoints defect sources in real time. This allows Genius to perform in-line as an integral part of the manufacturing process.

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As well as being available in new installations, VTRAC can also be integrated into existing Genius Inside Can Inspection Systems.

► **Reports: body maker ID, necker pocket ID, and UV/ color dot**

DoubleTake™

DoubleTake technology allows one camera to take two images, using different lighting geometries and durations, in a tight environment. It allows the use of completely different lighting assemblies in one standard Litehouse, as if there was more than one camera. This maximizes your inspection capabilities by not limiting inspections to a single lighting source.

DoubleTake can be used in any application, but is used most often in applications where space is a concern.

► **Detects: multiple images at a single location**

KromaKing®

KromaKing® is Applied Vision's suite of products that utilize color technology.

In KromaKing applications, white light is used instead of using different color LEDs in lighting assemblies. Because white light contains all colors, KromaKing technology is able to filter out any desired color in software to enhance particular defects. This flexible approach allows for infinite changes in color filtering, rather than being limited to a particular color of lighting.

Mixed Label Inspection (MLI)

KromaKing MLI color vision systems detect mixed labels (rogue cans) on beverage can lines and eliminate the likelihood of a mixed label occurrence.



KromaKing is the advanced technology today's extreme colors, intricate patterns and global operations demand.

The system, which can be installed on the conveyor, light tester and necker, is self-training, detects mixed labels automatically and runs reliably without operator intervention.



The KromaKing MLI system detects and rejects rogue cans with industry-leading technology for exceptional accuracy, saving time and loss.

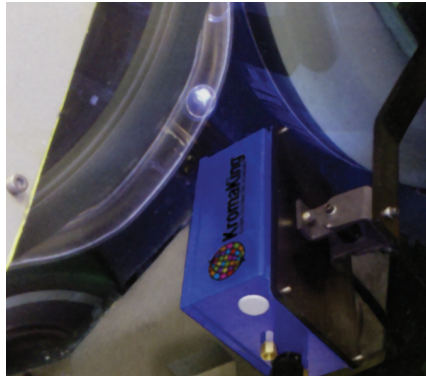
While self-training, the system learns the normal, acceptable variations of the production run to help minimize false rejects. When it detects a (new) label change, it starts its next self-training process automatically. And while the system trains on a new label, it still rejects cans from previous runs, eliminating the risk of a rogue label getting past the system during a new training phase.

Proven superior in extensive evaluations by major can makers, KromaKing MLI has been found to have substantially lower false reject rates than the competition, while still detecting all mixed labels.

▶ **Detects: label changes, ignores normal variations**

A KromaKing MLI installation includes:

- Digital camera technology
- Solid-state lighting
- Optional LCD touchscreen monitor
- Choice of NEMA enclosure configurations (12/IPG61 or 4/IPG65)



KromaKing DecoMaster detects beverage can decoration defects at the earliest possible opportunity.

DecoMaster Blanket Monitoring

The KromaKing DecoMaster is a breakthrough monitoring system that detects beverage can decoration defects at the earliest possible opportunity. By monitoring the decorator blanket, the DecoMaster easily detects everything from process variations such as low ink, to gross defects such as cut blankets. The system also monitors, detects and rejects cans with unacceptable decoration.

An LCD touchscreen user interface allows the operator to review the current process easily and identify potential blanket issues. For example, when a cut blanket is detected, the system tracks which blanket is at fault, making blanket replacement easier. By utilizing a one-button retrain, the operator can set up a new label in seconds.

Built for the hostile environment of the decorator, the robust optical imaging head is sturdy and easy to maintain. A cost-efficient turnkey

system, DecoMaster can be added easily to any decorator with minimal downtime. And with its early detection of decoration problems, this system delivers a fast ROI.

▶ **Detects: color shifts, cut blankets, ink blobs, ink smears, absence of date code, loss of color, excessive color**

The DecoMaster's key features include:

- Imaging speeds of up to 3,000/ppm
- One-button re-train
- Real-time decoration display
- Blanket correlation (patent pending)
- Blanket-matching algorithm (patent pending)
- Remote-mounted flat-panel touch screen user interface
- Sealed low-maintenance enclosure
- Digital I/O alarms
- Remote diagnostic monitoring and control
- Ease of use: intuitive, simple technology and easy-to-understand graphics
- Floor- and decorator-mount options available

Cyclops® Inspection System

Each camera is self-contained with its own processor and housing, making multi-lane installations more affordable, easier to install and simpler to maintain.

By combining lighting and processing into a single enclosure, the proven technology of Applied Vision now can be brought to you more efficiently and effectively.

▶ **Detects: creases, puckers, wrinkles, neck pleats, die/draw marks, scratches, dents, coating voids, narrow flange, flange defects, flange measurement, grease and oil stains, foreign objects, metal whiskers and more**

The Cyclops® inspection system's features include:

- Wi-Fi enabled: Remote display
- Network access
- Rugged industrial mounting
- Flexible optical configuration to accommodate product heights from 0.1" to 8"
- Integrated eight channel solid-state lighting
- Exclusive DoubleTake technology (optional)
- Artificial Vision defect classification (optional)
- Digital Gig-E camera technology
- Easy setup, reliable automatic operation
- Minimal false reject rate
- Display options: No display, DVI, Smart display (wired, wireless)
- Minimal cabling required
- High-performance solid-state drive
- Motorized height adjustment
- Visual status indicators



The self-contained Cyclops Inspection System unleashes groundbreaking technology to quickly solve inspection issues.



Specifications

Environment:

- 0-45°C (32-113°F),
Up to 90% Relative Humidity
Non-Condensing
- Dual Vertical Dimensions:
71 cm x 152 cm x 36 cm
(28" w x 60" h x 14" d)
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410-550 kPA (60-80 psi)

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