



PERFECT
PLASTIC-FREE
PACKAGING

Bytronic
VISION AUTOMATION

Achieving sustainability while
ensuring pack stability

bytronic.com

BYTRONIC VISION AUTOMATION



John Dunlop
Chief Technology Officer & Founder

John is the founder of Bytronic and a passionate engineer by trade. He has spent many years specialising in the integration of data and vision technologies into the manufacturing sector. John is also a technology professional with a Doctor of Philosophy (PhD) focused in Artificial Intelligence from Coventry University.



Martin Hurworth
Chief Executive Officer (CEO)

Martin's engineering background has spanned across multiple industries throughout his career. He has a record of leading transformational growth in manufacturing businesses and is now leading Bytronic to become the UK's outstanding machine vision integrator.

Stability or sustainability? Let's consign this Hobson's choice to history

Plastic was once the wonder solution for the packaging industry.

For the secondary packaging of consumer goods in particular, its reliability has long been difficult to replicate sustainably.

Why so? Well plastic is predictable. It's easy to handle and manipulate for your production. Even at very high speeds.

And it was cheap too; financially, if not environmentally. But the monetary costs are beginning to stack up, with manufacturers soon being duty bound to pay for the safe disposal of any single-use plastic in their production.

The big challenge is how to move away from single-use, without going backwards on productivity, and actually making improvements instead.

Now, if you can be sure of the reliability of your packaging without the need for plastic overwrap, it is possible to remove single-use plastic from the production process entirely. This is where new automated technology is helping industry to reduce its carbon footprint without reducing product quality."

John Dunlop, CTO

Creating confidence in sustainable packaging solutions

Badly shaped cartons means poor product sales or wastage which can be extremely expensive for manufacturers. Hotspot is the most efficient automated inspection method to avoid this.

When it comes to finding both a sustainable as well as secure packaging solution, cardboard is the most popular and cost-effective option. Cardboard cartons are formed either on-demand or in advance and then the hot melt glue is applied to the carton flaps during packing. The flaps are then folded and sealed to the carton sides to complete the assembly.

By measuring that the glue is at the required temperature, has been applied to the correct area and in the desired quantity, manufacturers can be assured that the carton will not fail and is safe to be transported.

Missing or incorrectly applied glue can lead to potential breakages during handling and transport or even at the point of sale.



INTEGRATING VISION INSPECTION INTO INDUSTRY 4.0

Bytronic believes that every facility should have access to the latest automated inspection and data gathering systems as part of the Industry 4.0 journey. New challenges such as reducing single-use materials in the supply chain require new solutions. Bytronic specialises in producing non-contact, visual inspection systems. The Hotspot system utilises Infrared technology to inspect processes and applications which the human eye can not monitor.

By monitoring and analysing data intelligence collected using vision inspection, manufacturers are able to have clarity and confidence when making key changes and decisions. This is essential for implementing significant changes such as plastic-free packaging without having any safety or cost concerns.

The automated vision inspection data collected allows manufacturers and facilities to continuously ensure quality standards are met to prevent expensive defects and recalls. This allows production facilities to run continuously without any unnecessary downtime or errors and complement processes driven by accurate data.

manufacturing
solutions with
vision

GUIDING YOU THROUGH YOUR INDUSTRY 4.0 JOURNEY

For almost 25 years, Bytronic has been developing its knowledge and experience of machine vision. This experience has seen the innovative leader supply companies around the world with vision inspection solutions utilising 2D cameras, 3D cameras, barcode readers, thermal cameras, multispectral cameras, edge computing and deep learning.

Globally, 49% of tasks have the potential to be automated. Bytronic's deep learning Vision 4.0 offers new possibilities on previously impossible inspections, to make this change happen.

Automated vision inspection

Previously, quality control and inspections have been carried out by personnel on site, however, this can be a repetitive and time-consuming task. Human eye inspections can be subjected to fatigue and distractions leading to costly errors.

Automating visual inspections not only increases accuracy, and the time-span available for checks but technology can utilise advanced solutions such as infrared. Using thermal infrared imaging cameras completes quality checks to a level that the human eye cannot meet.

Manufacturers can guarantee that adhesives are correctly applied to sustainable packaging using infrared camera technology. The human eye can only inspect what is in front of it, however, thermal imaging cameras can check the application of the adhesive through the cardboard to safeguard against potential packaging failure.



A black ruggedized industrial case with a monitor and the text "Bytronic HotSpot" overlaid. The case has a handle on the right and a latch on the left. A small sticker on the left side of the case reads "Bytronic www.bytronic.com COGNEX".

Bytronic HotSpot

HOTSPOT THERMAL VISION INSPECTION

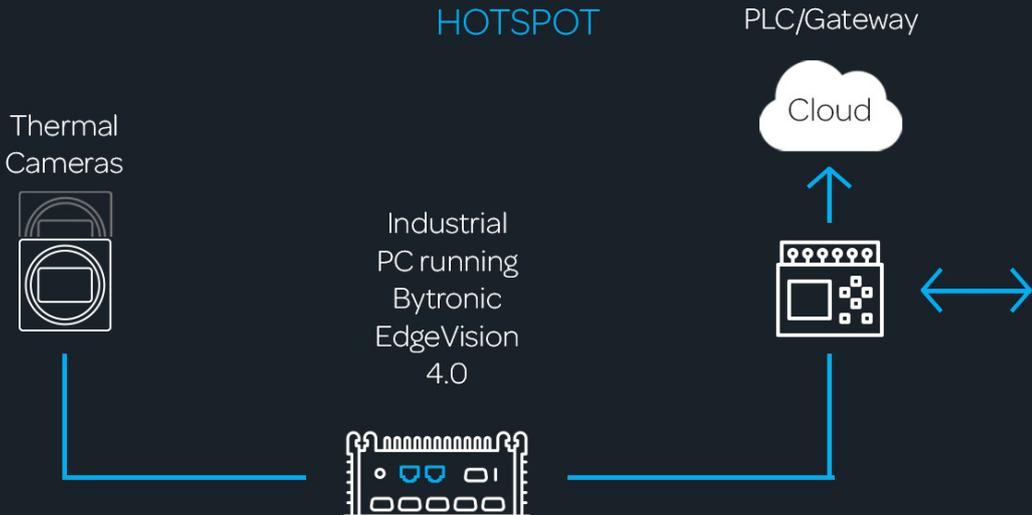
Bytronic's Hotspot hot melt glue inspection helps industries to phase out single-use plastic on production lines.

Make plastic wrap a thing of the past by guaranteeing your cardboard or paperboard packaging is strong, safe, and sturdy with HotSpot.

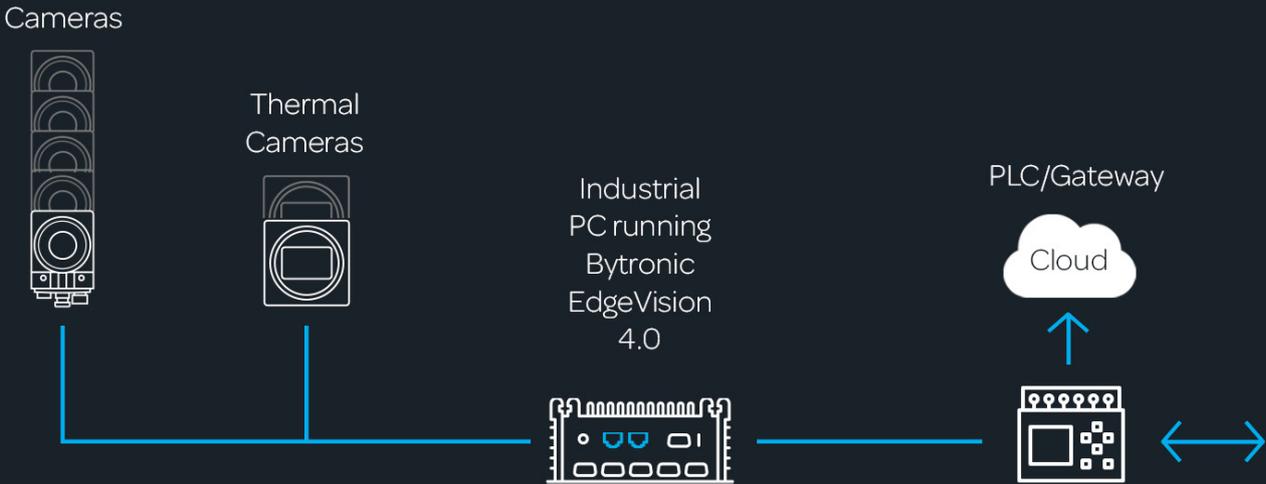
HotSpot is a fully automated quality control inspection system which accurately and instantly checks hotmelt glue adhesive across a wide variety of packaging types.

Using FLIR longwave infrared thermal cameras and Cognex Vision Pro high resolution optical imaging systems, combined with intelligent machine vision software, HotSpot can monitor the shape, size, location, and temperature of hotmelt glue application and ensure that packaging is correctly formed and sealed.

HOTSPOT HOT GLUE INSPECTION



HOTSPOT WITH PROCESS VISION



Fitted to any packaging line or cartoning machine, HotSpot checks every package, ensuring your products are distributed in safe, reliable packaging without the need for plastic wrapping.

HotSpot stops faulty packaging in its tracks, with 100% accuracy.

HOTSPOT

THERMAL VISION INSPECTION

HOW IT WORKS



The HotSpot technology combines FLIR longwave infrared thermal cameras and Cognex Vision Pro high-res optical imaging with Bytronic's intelligent machine vision software.

By capturing a thermal image through the cardboard, it verifies the glue position and shows whether glue has been applied correctly - the right amount, in the right place and at the right temperature.

If HotSpot identifies a failure from either camera, the system can provide a digital output to the production line.

HOTSPOT VISION INSPECTION FACTS

HotSpot technology replaces the destructive tear test

100% Non-contact in-line inspection

Eliminate defects and expensive recalls

Tower lights can be installed as an option

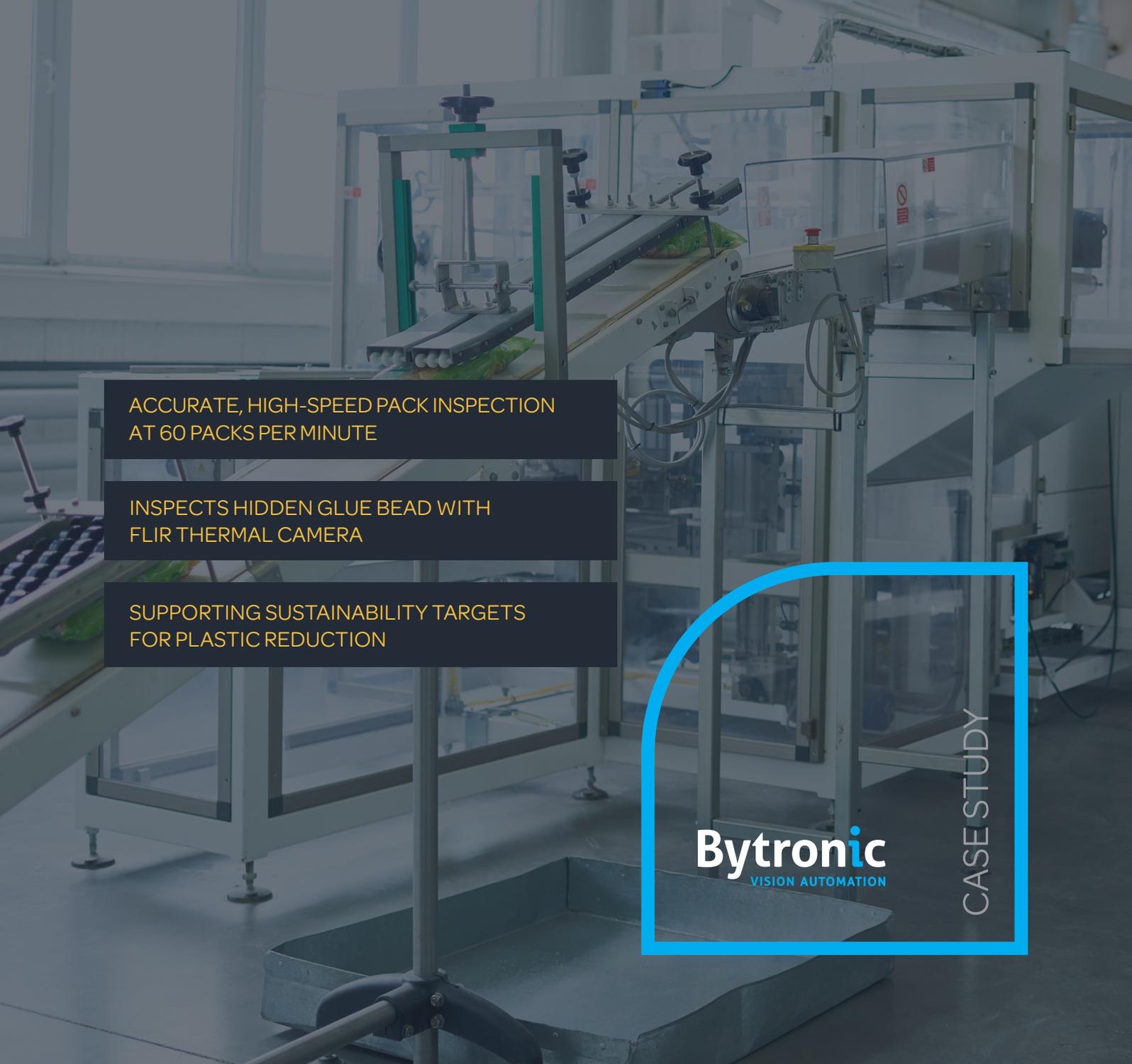
Can be installed or retrofitted to any conveyor or cartoning machine

Industry 4.0 ready: compatible with data capture systems for real-time production insight

FLIR longwave infrared thermal cameras, Cognex Vision Pro software and touchscreen control panel included as standard

Easy changeover between SKUs





ACCURATE, HIGH-SPEED PACK INSPECTION
AT 60 PACKS PER MINUTE

INSPECTS HIDDEN GLUE BEAD WITH
FLIR THERMAL CAMERA

SUPPORTING SUSTAINABILITY TARGETS
FOR PLASTIC REDUCTION

Bytronic
VISION AUTOMATION

CASE STUDY

ENSURING PERFECT PRODUCT QUALITY ACROSS MULTIPACK PRODUCTION LINES AT 60 PACKS PER MINUTE

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CHALLENGE:

In the drinks industry, open or damaged packs are a major health and safety issue. Yet traditional manual checks leave room for human error. We helped one of the world's largest brewing companies ensure perfect product quality on its cardboard multipack production lines, without the need for plastic wrap or manual inspection.

Preventing downtime or pack defects while eliminating plastic wrapping



SOLUTION:

Bytronic's Hotspot vision inspection system was the ideal solution for high-speed lines producing 60 packs per minute.

A fast, dependable and non-destructive test of packaging integrity, it checks hot melt glue adhesive on packaging, using thermal cameras placed above the line to inspect every seal on every pack before it leaves the line.

The technology combines FLIR longwave infrared thermal cameras and Cognex Vision Pro high-res optical imaging with Bytronic's intelligent machine vision software.

By capturing a thermal image through the cardboard, it verifies glue position and shows whether glue has been applied correctly - the right amount, in the right place and at the right temperature.

A connected alarm system gives line operators early warning of any deviation in the glue application, picking up small issues before they become big ones.

Rolled out across
multiple packing
lines over two years



Results:

Our HotSpot solution has been rolled out across five lines over two years - both new and retrofitted. It has been so successful that it is now being fitted as standard with every new line, with automated reject lines to further prevent downtime.

Bring us your vision 4.0 challenge

What is your biggest vision inspection challenge right now?

- Do you know how much each minute of downtime costs your business?
- What steps are you planning to make your production more sustainable?
- Which manual processes would you like to automate?

If you are looking to introduce quality checks or automate your current inspection system, Bytronic is able to assist. Speak to the team to see how machine vision and deep learning can transform your manufacturing processes.

Bytronic Automation's engineers design and implement machine vision, packaging inspection, fire prevention, robot guidance and production monitoring systems.

We specialise in integrating systems for major corporate customers and have built our excellent reputation on extensive knowledge and experience in the fields of machine vision, test and measurement, automation and process control.

Our extensive experience in systems integration projects across diverse industry sectors has enabled us to develop a range of partnerships that help manufacturers improve their processes and ultimately – increase their profitability.

manufacturing
solutions with
vision

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