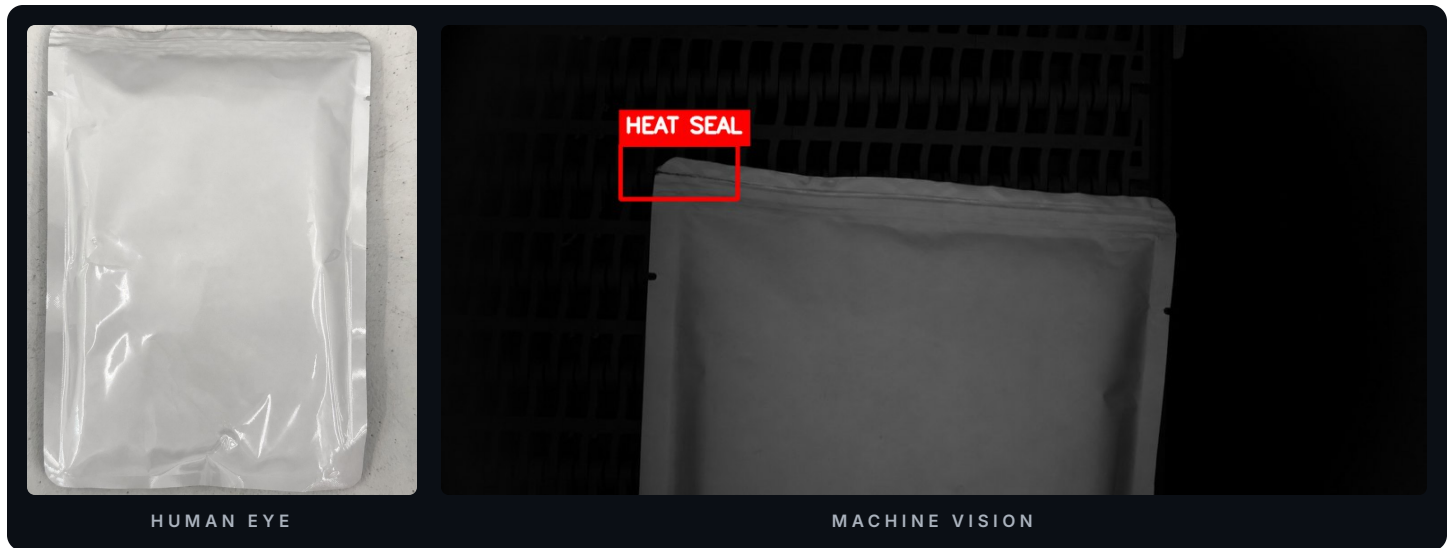




IAS OSPREY.

AUTOMATIC DEFECT INSPECTION, BUILT ONTO YOUR EXISTING LINE.

Every defect on this sheet can be caught by a person. Just not on every product, at full line speed, for a full shift, without drifting, with no sick days and no call ins. IAS Osprey is a defect inspection system built onto the packaging line you already run. It photographs every product, grades it with AI models trained on your own defects, and rejects bad product automatically at line speed. Every product gets a verdict, and every verdict is acted on.



■ A heat seal defect on a production pouch. Easy to miss on the bench at left. Unmistakable in the inline inspection frame at right.

±0.002 in

Registration accuracy at 500 ft/min

339 /min

Measured on one lane; rate depends on pouch size and spacing

0 silent escapes

A product with no verdict is rejected and counted, by design

9 defect classes

Demonstrated from physical samples; your classes are custom to your product

Every performance figure on this sheet is measured on the running machine, published in a component manufacturer's datasheet, or derived from those two with the derivation on file. None are estimates. Registration and trigger figures describe the controls chain. Mechanical conveyance error, meaning wheel slip, belt stretch and encoder runout, is not included and is qualified on your line, and inspection above 350 ft/min is qualified against installed optics and lighting.

THE SIGNAL CHAIN

Accuracy at line speed

Inspection only counts if the accuracy holds at full line speed. IAS Osprey holds it, so every product gets a verdict and every verdict lands on the product that earned it.

01

DETECT

Every product is picked up the moment it enters the inspection zone.

02

TRACK

The system follows each product down the line at full line speed.

03

IMAGE

Each product is photographed at exactly the right moment.

04

INSPECT

AI grades every image against the defect classes that matter for your product.

05

REJECT

Bad product is removed automatically, and every rejection is logged.

MEASURED ON A PACKAGING LINE

Performance at a glance

SPECIFICATION	VALUE
Inspection rate	339 products per minute measured on a single lane; rate depends on pouch and product size
Registration accuracy, controls chain	± 0.002 in at 500 ft/min
Camera trigger accuracy, controls chain	± 0.004 in at 500 ft/min
Imaging	Camera and optics selected per product being inspected; hardware triggered on position
AI inference	Anomaly detection, classification and segmentation, combined per application; models validated against held-out images
Coverage	Every product inspected or fail-safe rejected; overlapped product tracked and counted
Environment	Stainless construction and washdown rated enclosures available for sanitary areas
Line interface	Native EtherNet/IP verdict exchange with the line controller; fails safe on link loss
Built and supported	Panels from our UL 508A shop; lifecycle support under Osprey Assist, with data analytics dashboards for quick decision making

THE ENGINEERED PACKAGE

What every system includes

- **AI runtime.** Inference tuned to your line and defect classes.
- **On-machine image collector.** Capture and labeling by defect class and SKU.
- **Operator HMI.** Recipes, live defect imagery, counts and plain language faults.
- **PLC interface library.** Drop-in blocks for native EtherNet/IP verdict exchange.
- **Event and image logger.** Every verdict logged with its image and timestamps.
- **Hardware specified per application.** Camera, lighting and compute are selected for your product and defect classes.
- **Designed onto your line.** Inspection can mount over your existing conveyance, run on its own frame, or handle product another way, such as a robotic arm presenting product to the camera.

DEPLOYMENT ENGINEERED PER APPLICATION Compute and hosting for the runtime are specified to your line, your plant standards and your security requirements during feasibility and validation.



PUBLISHED AND DERIVED, WORST CASE

Accuracy against line speed

LINE SPEED	REGISTRATION ERROR	TRIGGER ERROR
100 ft/min	0.00118 in	0.00156 in
200 ft/min	0.00136 in	0.00212 in
300 ft/min	0.00154 in	0.00268 in
400 ft/min	0.00172 in	0.00324 in
500 ft/min	0.00190 in	0.00380 in
750 ft/min	0.00235 in	0.00520 in
1000 ft/min	0.00280 in	0.00660 in

Registration error stays under three thousandths of an inch at every speed in the table, including 1000 ft/min. Error grows with speed. Figures above 350 ft/min describe controls capability only. Inspection at those speeds is qualified against the installed optics and lighting before it is quoted.

VALIDATED ON REAL PRODUCT

Measured on a customer's production line

A food producer brought IAS in for seal inspection on a flexible pouch line. Confirmed defect examples were scarce when training began, so IAS built the training data the models needed: 6,700+ inspection camera images, over 4,000 reviewed annotations and about 80 model training iterations.

- **80,000+ images captured on the customer's line at production speed**, with two cameras acquiring simultaneously, separate from the training set above, with no missed triggers and no dropped verdicts: the full round trip from registration sensor to camera to inference to the PLC verdict.
- **The primary seal defect model deployed at 99.1% measured precision**, validated against held-out images the model never trained on, with under 1% of good product falsely rejected at the production confidence threshold. Escape rates are measured per application and delivered in your validation report. The vision runtime passed 362 automated tests before it ran on the line.
- **No honest vendor promises 100% detection**. These results are one application; catch rates are quoted per application, after a paid feasibility study and production validation. Never from a brochure.

THROUGHPUT

Line speed follows from pouch size and pitch

PRODUCT PITCH	FT/MIN	M/MIN	PRODUCTS/MIN
4 in	113	34.4	339
8 in	226	68.9	339
12 in	339	103.3	339

THE AI CORE

How the AI runs in production

- **Multiple inference methods per product**. Anomaly detection, defect classification and segmentation, combined per application, and every deployed model is validated against held-out images first.
- **Fail-safe by design**. No verdict, a missed capture or a broken model all resolve the same way: the product is rejected. Anything the system cannot account for is alarmed and counted, never passed quietly.
- **Every product inspected, measured at 339 per minute on a single lane**, including overlapped and shingled product.
- **Every verdict is logged** with its image, timestamps and reject reason, in an audit catalog built for reconciliation.
- **It learns your product**. On-machine collection captures production frames with their verdict, image and SKU. Models retrain on your product, not a stock dataset.
- **Built to be run by operators**. Recipe by SKU, on screen tolerance tuning, live defect imagery and a plain language fault list with first-out capture.

MEASURED, PUBLISHED, OR DERIVED None are modeled. The full engineering derivation behind every figure on this sheet is available on request, and detailed validation reports are delivered as part of every feasibility and validation phase.

YOUR DATA AND YOUR NETWORK

- **Your images and defect data remain yours**, used for one purpose: building and supporting your models. They are never used for another customer's system.
- **An NDA is standard before feasibility begins**, and image transfer, storage and retention are agreed in the project scope.
- **Remote access happens only by the method your IT approves**, and the runtime can operate without a plant-external connection where the application requires it.

THE DEMONSTRATION SET

Defect samples through the inspection camera

Real physical defect samples. To show the difference, we photographed each one two ways for this demonstration: on the bench as an operator sees it, and through the inline inspection camera.



◆ Seal Alignment

A crooked seal that reads as glare on the bench is unambiguous against the dark field of the inspection frame.



◆ Delamination

Layer separation at the seal edge, clear in the inspection frame.



◆ Edge Cut

A sliced edge the eye reads as a wrinkle in the film.



◆ Puncture

Two punctures on one pouch, both visible in the inspection frame.

SEAL ALIGNMENT

HEAT SEAL

SEAL POSITION

SONIC SEAL

EDGE CUT

PUNCTURE

DELAMINATION

ABRASION

FOLD

The classes are not fixed: models are trained on the defects your line actually produces. The demonstration set is packaging; the approach is not. Any visual defect a person can see is a candidate, from seal and closure integrity to surface damage, contamination, label and print faults and assembly errors. The engineered imaging chain makes the defect visible; the model turns it into a verdict at line speed. Side by side frames show the same physical defect sample through a bench camera and the inline inspection camera.

THE HARDWARE



◆ CAMERA FIXTURE

The mobile camera fixture from a pouch line application. Every Osprey is engineered to its application.



◆ OPERATOR STATION

Stainless washdown operator station from the IAS UL 508A panel shop.

WHERE TO START

If your operators can see the defect, but conventional machine vision cannot reliably detect it, show it to IAS. The fit review is free and takes 30 to 60 minutes. Call 812-213-0557 or write info@ias-in.com.