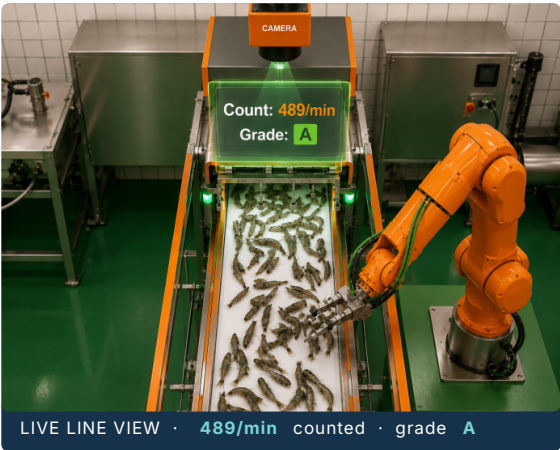


TECHNICAL BRIEF · SHRIMP PROCESSING

Shrimp Grading Using Robotic Arm and Computer Vision

Automated grade verification and defect detection on the production line — from a camera above the grader you already run.



THE MEASUREMENT GAP

Mechanical graders separate product by physical dimension. Grade — and therefore price per kilogram — is set by **count per pound**. The two measurements diverge with moisture, soaking uptake and product form.

Every carton shipped one grade below its true grade is margin given away silently. Every carton one grade above becomes a buyer claim. Neither is measured today.



36%
OF SURFACE
Grade 8+ · reject risk



7%
OF SURFACE
Grade 1-3 · light

Fig. 1 — Melanosis detection on real shrimp. CIE Lab colour threshold; detected black-spot regions outlined in red. The production system adds learned severity grading on top of this method.

WHAT OUR SYSTEM CAN DETECT

DEFECT	VISION	NOTE
Count / size out of grade	Yes	Per-object sizing and count per pound — the core case
Melanosis (black spot)	Yes	Severity on a 0-10 scale, per pack
Black gill / black head	Yes	Localised discolouration at gill and head
Discolouration	Yes	Colour deviation from buyer specification
Attached shell, shell in PUD	Yes	Shell fragments on peeled product
Dropping / loose head	Yes	Head separation on head-on product
Deep cut / broken / damaged	Yes	Shape and edge-break detection
Dehydration / freeze burn	Yes	Surface whitening and texture change

DEFECT	VISION	NOTE
Clumping (IQF)	Yes	Pieces frozen together
Vein not removed	Partly	Only where the vein shows on the surface
Soft shell	Partly	An appearance cue, not a definitive test
Foreign matter	Partly	Surface only; sub-surface requires X-ray
Bad smell / odour	No	Not a visual property
Decomposition (early)	No	Only advanced stages reach the surface
Antibiotic / microbial residue	No	Requires a laboratory assay, not imaging

We state the limits plainly. Surface vision does not replace X-ray, metal detection or laboratory testing — it covers a different failure set.

No modification to your grader. No downtime. No hardware at your end.

Send us ten minutes of footage from your grading table. We will return an analysis of what is detectable on your line, free of charge.

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