TIVOX

Excellence in inspection
Trust in every product



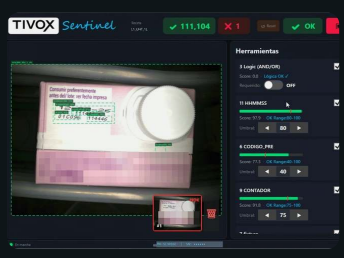
TIVOX SENTINEL PLUS

Every product, audited. Full traceability. Your line, under control.

The machine that inspects 100% of your output, warns you of excess waste, removes the faulty pack and tells you every morning how the line performed.

IN-LINE MACHINE VISION INSPECTION









Product brochure

For food, beverage and pharma

tivoxsolutions.com

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TIVOX SENTINEL PLUS

/ One system, from the camera to Monday's report

A pack with an unreadable date, a misplaced cap or an out-of-spec seal can end up on the shelf and become a complaint or a recall. Checking a sample by hand is not enough at the speed of a modern line.

TIVOX Sentinel PLUS inspects **every single pack** at the line's nominal speed, with smart industrial cameras and its own light tunnel. The faulty pack is removed at its point and stored with its photo and its reason.

And it goes beyond rejecting: it measures line efficiency (OEE), alerts your phone before the rejects arrive and drops the production report in your inbox every morning, written by AI from your plant's data.

100%
of packs inspected, not a sample

≥ 99%
detection rate committed on the defined defects

24,000
packs/hour: tested up to that speed

−93%
false-reject waste: from 0.13% to 0.009% at the highest-output plant

Real figures from customers in production, anonymised.



HOW IT WORKS

/ One cabinet next to the line. You connect just three things.



1. Status beacon: the line at a glance
2. Emergency stop and controls
3. Industrial touch screen with the PC inside the cabinet
4. Inspection tunnel: IP67 smart camera and its own LED lighting
5. Pneumatic rejector at the tunnel exit: removes the faulty pack at its point

YOU PROVIDE

230 V · compressed air · network cable

Designed not to stop

The verdict and the reject go from the camera to the rejector controller without passing through the PC: if the PC restarts, the line keeps inspecting and rejecting. Cameras reconnect on their own after a power cut and the system records the cause of every incident.

From pack to data, in five steps

Detect
A photocell signals every pack entering the tunnel.

Inspect
The camera photographs it under constant light and runs every check in the recipe at once.

Decide
The camera itself gives the OK or NOK verdict, instantly.

Reject
The rejector controller tracks every pack and removes the NOK at its point, confirming the reject.

Record
NOK photo, reason and counter on the spot; production figures for the cockpit and the reports.

WHAT IT INSPECTS

/ Several checks from a single camera, on every pack

Pack by pack, can by can, bottle by bottle: every check at once, at the line's nominal speed. Its own LED light tunnel: plant lighting makes no difference.

Date, batch and time

Deep-learning OCR: present, readable and with the expected text.

Right product

Every pack checked against the recipe's golden sample: no product mix-ups.

Cap and closure

Present and correctly placed.

Seal

Distance measured on every pack, with its statistics and Cpk per lane.

Flaps and shape

Open flaps, turned, shifted or deformed packs.

Straw and accessories

Presence and position of the straw or other pack accessories.

Depending on your product

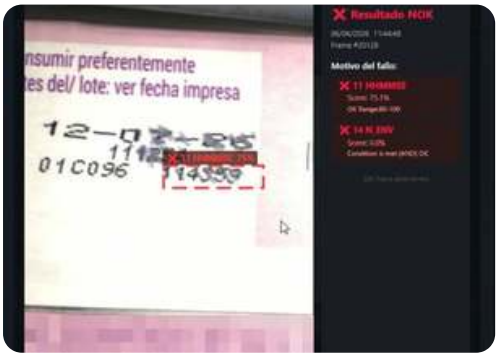
The camera also supports code reading (DataMatrix, barcodes), label checks, fill level and measurements. We tell you what can be detected in your case in the feasibility test, before any order. Counting units in multipacks or cases is not done by this machine: it is studied as an integration project, with a camera on the case packer.

Formats

Cartons and briks · bottles · cans · each format with its recipe

What the camera removes

Unreadable date, cap or product out of pattern, out-of-spec seal. Each one with its photo and its reason.







THE MACHINE

/ Turnkey, built for your line

A compact unit installed on your existing conveyor or with its own section, straight or curved. The only condition: there must always be a gap between one pack and the next.



Front


Side: product path



With curved conveyor

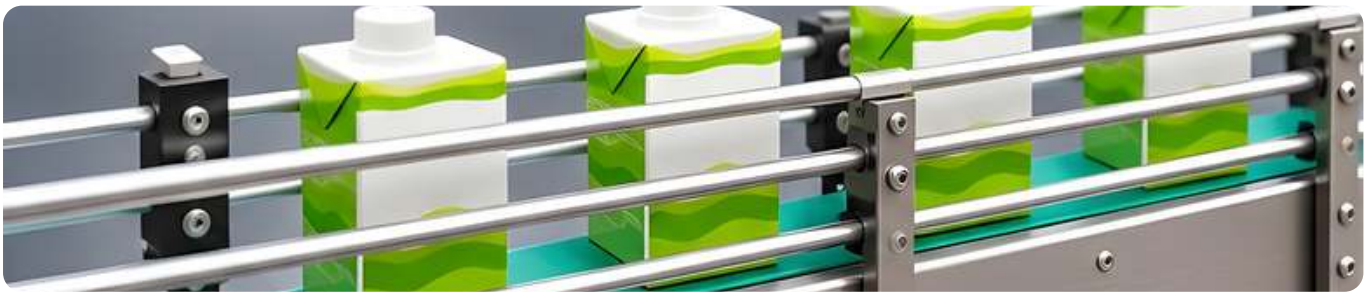

Inspection tunnel with built-in lighting

Main features

- Up to 4 cameras per licence, per line or on a central PC
- Inspection tunnel with its own LED lighting
- Pneumatic rejector tracking every pack
- Integrated industrial PC and touch screen
- Status beacon and emergency stop
- Recipes per format: changeover in seconds

Your benefits

- 100% of output inspected, not a sample
- Fewer false rejects: less good product thrown away
- Proof of every reject, ready for IFS, BRCGS and customer audits
- A single supplier: design, programming, installation and service



TECHNICAL DATA

/ TIVOX Sentinel PLUS

Technical data	
Technology	Machine vision with smart industrial cameras; scoring, measurement, logic and deep-learning OCR tools
Cameras	1 to 4 per Sentinel licence, IP67, optics chosen for each application
Architecture	Individual (one PC per line) or centralised (up to 4 cameras on a central PC): each line managed and operated separately, data collected together
Lighting	Inspection tunnel with its own high-frequency LED lighting
Trigger	Photocell per pack
Speed	Tested up to 24,000 packs/hour; speed depends on the number and type of inference tools. Real cases: 3-line code OCR at 16,000 packs/hour; straw presence at 24,000 packs/hour
OK/NOK decision	In the camera itself, on every pack
Rejection	Pneumatic rejector driven by an industrial controller that tracks every pack and confirms the reject
Format change	By recipe, from the screen: about 9 seconds, without stopping the other cameras
Screen	Industrial touch screen, fanless PC built into the cabinet
Screen languages	Spanish and English, switchable on the fly
Users	Operator, Maintenance and Administrator (two-factor); read-only access on the web
Traceability	CSV log of every pack that passes along the line, per camera, day and recipe (configurable), and a photo of every NOK (retention configurable up to 10 years)
Connections	230 V, compressed air and Ethernet network
Connectivity	Connected so we can follow the equipment's life and performance; outbound encrypted HTTPS only (nobody gets into your equipment)
Lead time	45 to 60 working days from order, EXW (ex works)

Final configuration (cameras, optics, materials and dimensions) based on the study of each line.

Purchase model

Perpetual licence

One-off investment: machine, installation and Sentinel PLUS licence. It inspects, rejects and keeps the photos and the raw data, for good.

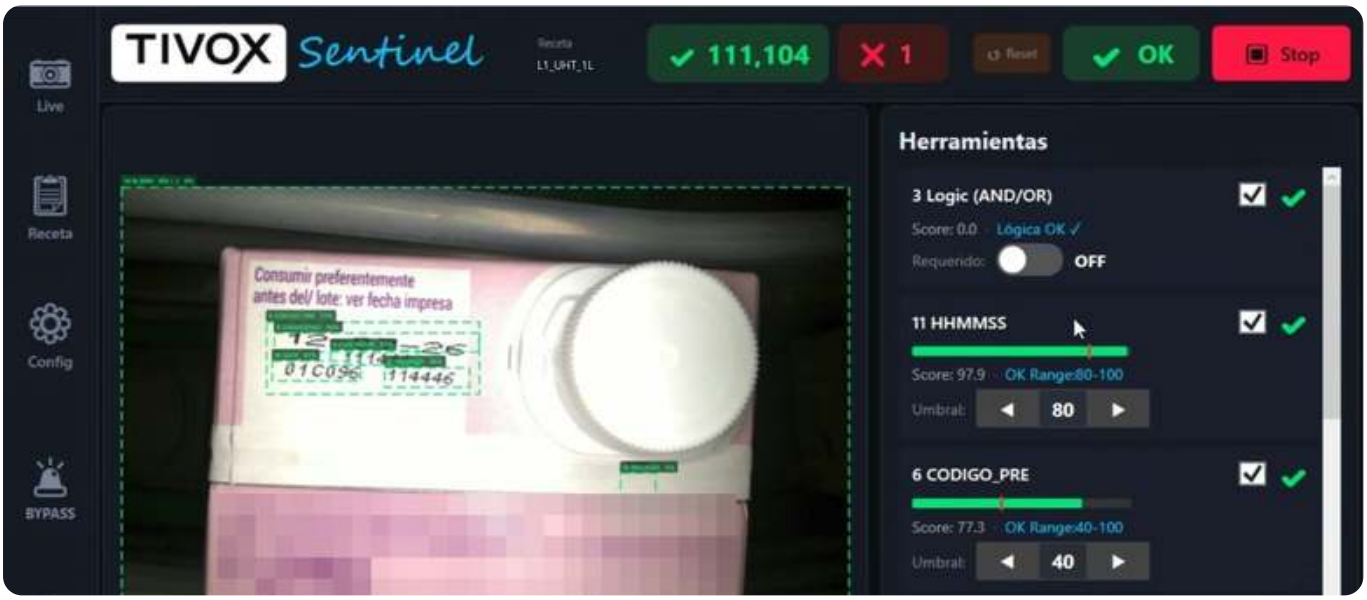
SaaS subscription (optional)

Monthly: cockpit, automatic AI reports, alerts, updates and connected service. If you cancel, the machine keeps inspecting with the installed version.

THE PLANT-FLOOR SCREEN

/ Designed for the operator, right at the line

The live image from each camera, the OK and NOK counters and the status of every check, on a single screen.



Main screen in production

Photo of every NOK
With a red box on what failed, date, camera, recipe and reason. The original photo is never altered.

Safe thresholds
Adjusted from the screen and synchronised with the camera. Every change is logged: who, when, before and after.

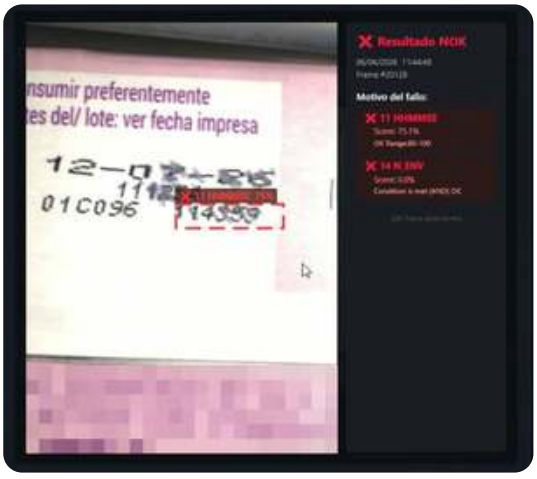
Recipes
One format, one recipe. Changeover from the screen, in seconds.

Users and permissions
Each level sees and changes only what it should, with encrypted PIN and two-factor login for the administrator.

Useful alarms
NOK bursts, measurement trends, camera down, "not inspecting", disk full.

Controlled modes
Bypass with a warning if it runs too long, and a test mode to validate without skewing the counters.

TIVI, AI assistant
Ask your line the way you'd ask your shift supervisor: it answers with real production data.



Detail of a NOK with its reasons



Threshold adjusted from the screen

SAAS SUBSCRIPTION

/ Your line's cockpit, on your computer and your phone

A production web app with secure access from any browser or phone in the plant: what is happening now and why output is being lost.



Live line cockpit: every machine, its status and what is holding the line back (demo data)

Live OEE cockpit

The whole line with its machines and the status of each one: OEE per ISO 22400-2, which machine is holding the line back right now and output against target.

NOK gallery

Every reject photo, filterable by reason, date and recipe.

AI virtual analyst

Reads the week's data and explains where output is lost and what to check first.

All cameras on one screen

Viewer for the control room or the quality office, with several lines at once.

Weekly and daily analysis

Reject and stoppage Paretos, MTTR and MTBF, cleanings and format changes.

Stoppage management

Categorised stoppages and line logbook: every lost minute, with its cause.

Alerts to your phone

Email and Telegram: NOK streaks, camera stopped, bypass, with the photo. Two lists: operational alerts and management reports.

What each option includes

	Licence	+ SaaS
Inspection, rejection and counters	✓	✓
NOK photos and raw data (CSV)	✓	✓
Recipes, thresholds and change audit	✓	✓
OEE cockpit and production web app	—	✓
Automatic AI reports	—	✓
Email and Telegram alerts	—	✓
TIVI assistant	—	✓
Updates and connected service	—	✓

AUTOMATIC REPORTS

/ In your inbox every morning, with nobody preparing them

Daily

Every morning: hourly output, rejects, OEE, stoppages, timeline per machine, the AI comment and photos of the main rejects.

Weekly

On Mondays, as PDF: trends, reject and stoppage Paretos, efficiency killers per machine and the virtual analyst's review.

Monthly

On the 1st: how the month went, where output is lost and the process capability (Cp/Cpk) of every measurement.

Per shift

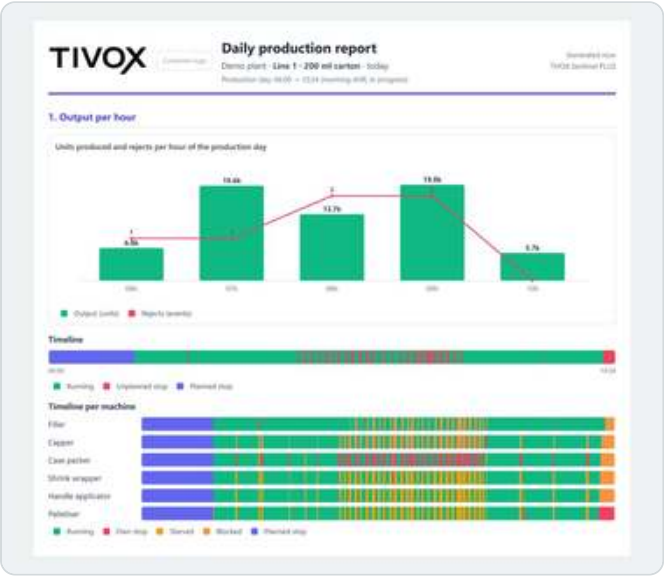
If wanted, one page at the end of each shift.

Per lane

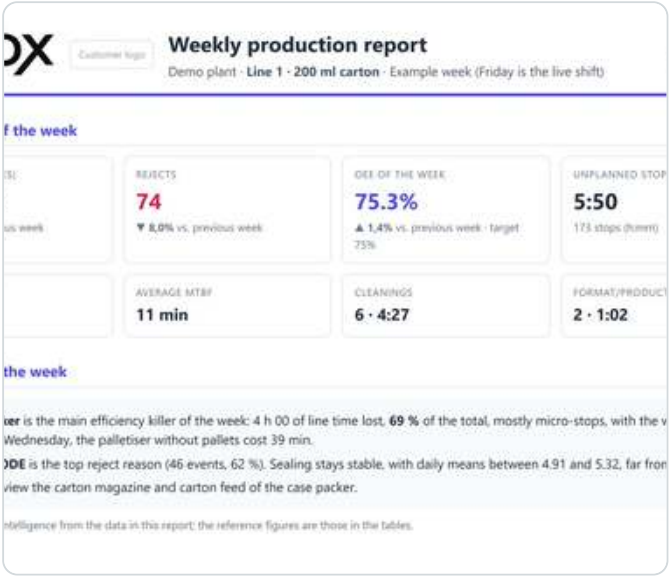
Seal statistics lane by lane: Gaussian curve, mean, spread and Cpk. It warns of drift before the first reject.

Thresholds

On demand: each recipe's limits and their change history, for quality and audits.



Daily report: hourly output and timeline



Weekly report: analysis written by AI

TIVOX Customer logo

Daily production report

Demo plant · **Line 1 · 200 ml carton** · today

Production day: 06:00 → 10:24 (morning shift, in progress)

Generated now
TIVOX Sentinel PLUS

1. Efficiency killers: losses per machine

Each minute of line time lost is charged to the machine that caused the stop; machines that were only blocked or starved because of another one do not count.

Machine	Line min.	%	Cum. %	Stops	Micro-stops	Own min.	Packs lost
Case packer	27 min	81%	81%	0 · 0 s	35 · 50 min	50 min	10,987
Palletiser	6 min	16%	98%	1 · 9 min	1 · 29 s	9 min	2,220
Capper	33 s	2%	99%	0 · 0 s	2 · 1 min	1 min	220

Losses per machine, hour by hour

Real reports from a demonstration line.

CONNECTED SERVICE AND SECURITY

/ We watch over your installation so you don't have to

With the subscription, every installation reports its status to TIVOX. If something is wrong, we know before you call us.



Live map of the connected service: every line at a glance

Continuous monitoring

Status of every camera and line in real time, with an alert if it stops inspecting or if waste spikes.

Safe updates

Tested first, installed with your approval and with automatic rollback.

Configuration backup

Every night, encrypted: recipes and parameters restored in minutes.

Remote support

Assistance without travel, with your permission for every session.

Inventory and health

Model, serial number and firmware of every camera; status of the rejector and the alerts.

Your data stays in your plant

- The connection always goes out from your plant: nothing listens on your equipment and nobody gets in
- Encrypted communication (HTTPS), with its own key per installation and signed updates
- No photos, recipes, IP addresses or passwords leave the plant: only status and production figures
- Recipes, configuration and data belong to the customer
- Role-based access, two-factor login for the administrator and a log of who changed what

RESULTS

/ In production today

Milk, broth and juice lines.

0.009%
false-reject waste at the highest-output plant (previously 0.13%)

250,000
packs a day on average at that plant

99.98%
of packs right first time

2.29 – 2.65
seal Cpk per lane on a day of 241,218 pieces

Real data from customers in production, anonymised.



HOW WE WORK

/ From the first sample to the system in production

01
Photos and samples
Your good and bad packs

02
Feasibility test
Remote and free of charge

03
Firm quote
Clear scope, exclusions and lead times

04
Pre-programming
On our test rig

05
Installation
On site, at real line speed

06
Signed SAT
Defect matrix and start of warranty

45–60
working days from order, EXW

Remote
feasibility test, with your photos, videos or samples

≥ 99%
detection committed on the defined defects



YOUR NEXT STEP

Send us your packs.
We'll tell you what we can detect.

Remote feasibility test, free of charge: you send us photos, videos or samples of your good and bad packs and we tell you whether the defect can be detected and how. Travel to your plant is not included.

TIVOX

Excellence in inspection
Trust in every product

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CONTACT

Specifications may change without notice. The final configuration is set in each project's quotation. Machine images are illustrative.