APPLICATION // 02

OCR/OCV inspection of date codes, batch codes and barcodes

Date code inspection, batch code verification and barcode reading on cartons, bottles, cans, pouches and labels, whatever coder printed them.

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Request an assessment for this application

// SHORT ANSWER

OCR/OCV inspection is a camera check of the best-before or expiry date, the batch code and the barcode on every pack. OCR reads the characters; OCV checks that the text expected for the run is present, complete and legible. It works when the code lands in a predictable area with consistent contrast. Reading a barcode is not the same as grading its print quality. We confirm what is achievable on your own coded samples first.

// WHAT IT CHECKS

What an OCR/OCV inspection station checks

Four checks cover most coding faults, from OCR and OCV to barcode reading. Which you need, and how strict the limits are, is set at the sample test.

01 // OCR

Read the code (OCR)

Reads the printed characters so the code can be logged or passed to a traceability system.

NEEDS

Consistent font, size and print contrast

02 // OCV

Verify the expected text (OCV)

Date code verification and batch code verification: the printed code is compared with the string expected for the run.

NEEDS

The expected string for every run

03 // PRINT

Code print quality

Faint, broken or smeared characters, and codes printed outside their area.

NEEDS

Good and poor print samples to set limits

04 // BARCODE

Barcode and 2D code reading

Decodes barcodes and 2D codes such as DataMatrix and QR, with the camera or a fixed-mount barcode scanner (code reader), and checks the content matches the product: the core of a barcode inspection system.

SCOPE

Reading only, not print-quality grading

OCR vs OCV, and barcode reading vs barcode grading

CAPABILITY	QUESTION IT ANSWERS	WHAT YOU GET	FROM US
OCR	What is printed here?	The text as read, for logging or comparison.	Offered
OCV	Is the expected text printed and legible?	Pass or fail against the expected string.	Offered
Barcode reading	Does the code decode with the right content?	The decoded data, matched to the product.	Offered
Barcode grading	How good is the print, to a formal standard (ISO/IEC 15416 for linear codes, ISO/IEC 15415 for 2D codes)?	A quality grade from a dedicated, calibrated verifier.	Not offered

Coding technologies we check

Inkjet

Characters made of dots; ink spread changes their look, so we test codes

Thermal transfer

Ribbon print on film or labels; worn print heads leave white lines through

Laser

Marks the material or its coating; contrast depends on the material.

from your own coder.

characters.

We inspect the output of the coder you already run. We do not sell or service coders. Codes marked directly on parts, such as dot-peen or laser Data Matrix codes, are covered under **DPM code reading and traceability**. Codes read and matched against a data file before sorting are shown in the **envelope verification case**.

// IN YOUR WORDS

What operators report: date code rubbing off, wrong date, printer out of ink

Coding faults are reported by what went wrong on the pack. This is how the common reports map to what an OCR/OCV inspection station checks.

WHAT THE LINE REPORTS	WHAT A STATION CHECKS	WHERE IT STOPS
“Date code rubbing off”, “faded or smeared code”	Faint, broken and smeared characters at the camera position, against print limits set on your samples.	Rubbing that happens later, in the case or in distribution, is not visible at the station; that needs a rub test on the packaging.
“Wrong date code printed”, “one digit got switched”	OCV of every pack against the date and batch code expected for the run, taken from the recipe, coder or PLC.	If the expected value itself is wrong at source, the print and the expected value agree and the error passes.
“The printer ran out of ink”, “the print head jammed”	Missing and incomplete codes are rejected; several failures in a row raise an alarm or stop the line.	The station reports the symptom; coder maintenance is still needed.

WHAT THE LINE REPORTS	WHAT A STATION CHECKS	WHERE IT STOPS
“Codes smudge on chilled product”	Code legibility on the pack as it passes; lighting chosen for wet or shiny film.	Condensation can also blur the image itself, so it is tested on real chilled samples.
“The barcode does not scan at the retailer”	Barcode reading at line speed with a content check; codes that do not decode are rejected.	A pass at an in-line reader is not a verifier grade; for listing, GS1 South Africa tests to ISO/IEC 15416.
“The date on the unit differs from the outer carton”	The code on each unit is read and logged; matching to the case label is done at the carton station.	Both codes must be visible on the line; see carton and pallet verification.

// EXPIRY DATES

OCR inspection for expiry date checking

How a camera checks the expiry date on every pack, and the one input it cannot work without.

OCR inspection for expiry date checking reads the date printed on each pack and compares it with the date the line should be printing. A camera that only checks that some date is present will pass yesterday’s date, so the expected date must come from the PLC, MES or the product recipe, and it must change at every day or shift change.

Plants that search for an “expiry date checking machine” usually need this station rather than a separate machine: a smart camera or vision sensor with OCR, fitted after the coder, wired to the reject and the PLC. It checks presence, legibility and the content of the date; it does not grade print quality to a standard, and it does not

decide what the shelf life should be. More on [why wrong expiry dates still leave the line](#).

01

Read

OCR reads the expiry or best-before date on every pack straight after the coder, in the format your packs carry.

02

Compare

The read date is compared with the date the line should be printing, sent by the PLC, MES or the product recipe for this run.

03

Reject

A missing, unreadable or wrong date rejects the pack, and a run of failures stops the coder or the line before a whole batch is printed wrongly.

// LIMITS

Where code inspection stops

We agree these boundaries before a project starts, so nobody expects the camera to do what it cannot.

× Not covered by this station

- **Formal barcode grading.** Reading shows a code decodes with the right data; a formal print-quality grade needs a dedicated verifier.
- **Codes out of view.** Codes underneath, under a fold or on a freely rotating container cannot be read from one fixed view.
- **Wrong data at source.** If the recipe and the coder both hold the wrong date, they agree and the error passes.

✓ Works reliably when

- **The code lands in a predictable area.** Stable presentation keeps the code inside the camera's view.
- **Contrast is stable.** Shielded station lighting, chosen for shiny films or curved surfaces.
- **The expected string arrives automatically.** From the recipe, coder or PLC, not typed in at each changeover.

// SOUTH AFRICA

South African date and batch code rules (R146)

What must be printed on food packs, and why a readable batch code matters when something goes wrong.

These rules set what must be printed, not how it is checked; none of them requires a camera. An OCR/OCV station is one way to confirm, on every pack, that the code the rules require is there, correct and legible.

- **R146, regulation 11:** every container must be clearly marked with a batch number so that the batch is easily identifiable and traceable. R146 defines a batch as at most 24 hours of production under the same conditions.
- **R146, regulation 12:** the date marking must be clearly indicated and preceded by “best before”, “use by” or “sell by” (the only abbreviation allowed is “BB”); it may not be removed or altered; numeric dates are written day, month, year.

- **R146, regulation 7(1)(b):** required information must be clearly visible, easily legible and indelible.
- **Draft R3337 (April 2023, not in force):** proposes a batch code and a manufacturing date on every container, date formats with keys such as (DD/MM/YYYY), and dates permanently printed rather than applied as stickers. The draft would bring the date rules in six months after the final version is published, so coders and inspection recipes may need to change quickly if it is finalised.
- **Recall notification:** the product details the National Consumer Commission asks for include tracking information such as batch numbers. A legible, correct batch code on every pack is what lets a recall be limited to the affected batches.
- **GS1 South Africa:** tests barcodes to ISO/IEC 15416 and states that many retailers require its Barcode Test report as a step in listing a product. GS1 also aims for retailers to scan 2D barcodes, which can carry batch and expiry data, at the till by the end of 2027.

SOURCES FOR THIS SECTION

1. Regulations relating to the labelling and advertising of foodstuffs (R146, 2010), regulations 7, 11 and 12 (https://globalfoodlaws.georgetown.edu/wp-content/uploads/2021/12/South-Africa_2010.03.01._Regulations-Relating-To-the-Labelling-and-Advertising-of-Foodstuffs_No.-R.-146_EN.pdf) (gazette copy, read 2026-09-25)

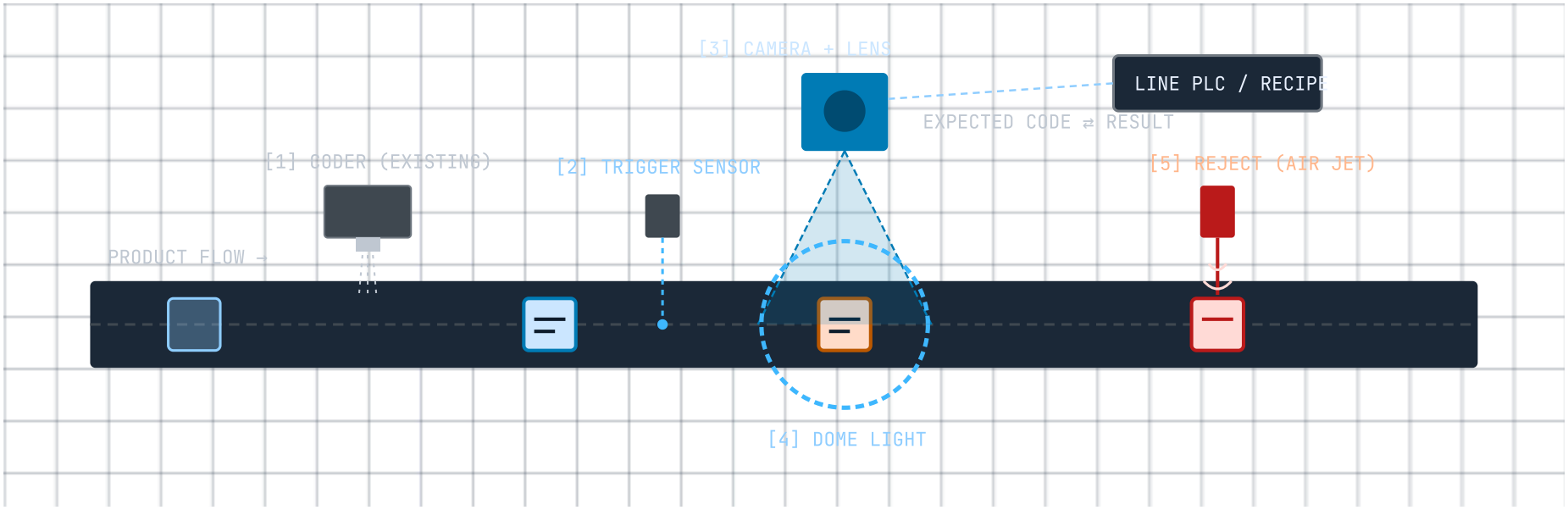
2. Draft labelling regulations R3337 (21 April 2023), regulations 7, 8 and 77 – draft, not in force (https://www.health.gov.za/wp-content/uploads/2023/05/R3337-Draft-Labelling-Regulations-21-April-2023-sc-compressed-1.pdf) (Department of Health, read 2026-09-25)
3. GS1 South Africa: barcode verification service (https://gs1za.org/solutions/barcode-verification-service/) (read 2026-09-25)
4. GS1 South Africa: 2D barcodes in retail (https://gs1za.org/2d-in-retail/) (read 2026-09-25)
5. dtic / National Consumer Commission: product recall presentation (recall notification content) (https://www.ftc.gov/system/files/attachments/eleventh-annual-african-consumer-protection-dialogue-conference-protecting-consumers-during-pandemic/mange_dti_south_africa_d2s2_product_recall_presentation.pdf) (read 2026-09-25)

// STATION LAYOUT

How a code inspection station is laid out

Plan view of a typical station after the coder. The real layout follows the site survey.

[Schematic] PLAN VIEW · NOT TO SCALE



[1] Coder: your existing inkjet, thermal transfer or laser coder.

[2] Trigger sensor: tells the station a pack has arrived.

[3] Camera: images the code area; resolution is chosen from the smallest character detail.

[4] Dome light: even light that reduces glare on film and curved packs.

[5] Reject: removes failed packs; the PLC tracks each one and supplies the expected code.

// PASS AND REJECT [Illustrative examples]

What a pass and a reject look like

Illustrations of three common outcomes, not images from a real line. How faint a character may be before it fails is agreed with you during the sample test.

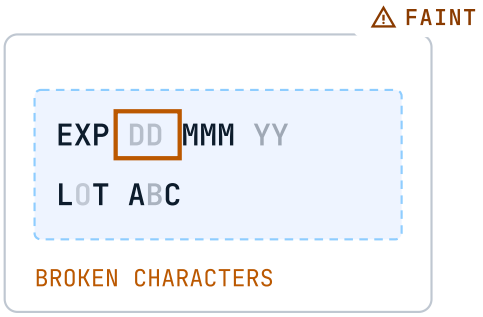


EXAMPLE // CARTON END

Code correct

Date and lot code are complete and legible, and match the expected text for the run.

OCV: MATCH ACTION: PASS



EXAMPLE // INKJET ON FILM

Characters broken

Some characters are faint or missing dots, below the agreed print limit.

PRINT: ✗ BELOW LIMIT ACTION: REJECT



EXAMPLE // BOTTLE LABEL

Wrong lot code

The lot code does not match the run: the typical fault when the coder was not updated at changeover.

OCV: ✗ WRONG CODE ACTION: REJECT / ALARM

// LINE INTERFACE

What we need to know about your line

These conditions decide the station design. None of them has a fixed answer; each is confirmed on site or during the sample test.

CONDITION	WHAT WE NEED TO KNOW	WHY IT MATTERS	CONFIRMED DURING

CONDITION	WHAT WE NEED TO KNOW	WHY IT MATTERS	CONFIRMED DURING
Coder and model	Coder type and model, and whether it can send out the printed string.	Decides lighting and whether the expected string can come from the coder.	Site survey
Expected data source	Where the correct date and batch code are held: recipe, coder, PLC or a production system.	OCV needs to know what should be printed for every run.	Design review
Code position and material	Where the code sits, and the material and colour underneath.	Sets camera angle, lighting and the number of views.	Sample test
Line speed and spacing	Packs per minute and the gap between them.	Sets exposure and trigger method.	Site survey
PLC and reject	PLC make and model, spare I/O or network ports, existing reject.	Decides how results and the expected string are exchanged, and whether read results are logged.	Design review

// ACCEPTANCE

How the station is accepted

False rejects and missed defects pull against each other. We define both, and how they are measured, before FAT and SAT.

01 02 03

False reject rate

The share of correctly coded packs rejected, measured on agreed good samples at line speed. The acceptable level is agreed per project.

Missed defect rate

The share of wrong, missing or illegible codes that pass, measured with seeded faulty codes. The target is set with you.

Changeover handling

A test that the expected string updates at every product or date change.

// BEFORE WE START

What to prepare for the sample test

We check codes from your own coder before proposing a station. We confirm quantities and shipping with you first.

Sample preparation guide

Good samples

Packs coded on the production coder, covering each material and code position.

Defective samples

Faint, smeared, incomplete and wrong codes, clearly marked.

Code specification

Date and batch code format, example strings, and the barcode types used.

Line information

Coder and PLC models, line speed, and where the expected data is held.

// FAQ

Code inspection questions

What is the difference between OCR and OCV?

OCR reads the characters and reports what is printed. OCV starts from the text that should be printed and checks that it is there, complete and legible. For date and batch codes, OCV is usually the right check, because the line already knows what the code should say.

How can expiry dates and batch codes be verified on a bottling line?

A camera after the coder images each code. The station receives the expected date and batch code from the recipe, coder or PLC, compares it with the print, and has the PLC reject any bottle whose code is wrong, missing or illegible.

Is barcode reading the same as barcode quality verification?

No. Reading confirms that a code decodes and its content is right. Verification, or grading, measures print quality against a formal standard with a dedicated verifier. We offer reading, not formal grading.

What is a DataMatrix code?

A DataMatrix is a square 2D code made of dark and light cells. It holds far more data than a linear barcode in a small area, so it is used for serial numbers, batch and expiry data, and direct part marks. GS1 DataMatrix is the version that carries GS1 data such as the GTIN, batch and expiry date.

What are the barcode grading standards?

Print quality of linear barcodes is graded to ISO/IEC 15416 and of 2D codes such as DataMatrix and QR to ISO/IEC 15415; direct part marks use ISO/IEC 29158. GS1 sets the minimum grade each application needs. Grading needs a dedicated, calibrated verifier; an in-line reader confirms the code decodes with the right content.

How often should date codes be checked on the line?

Manual checks are usually done at set intervals, at start-up and at every changeover. A camera checks every pack in between, so a code that goes wrong between two manual checks is caught on the first bad pack instead of at the next check.

Which software runs the inspection?

We build stations on HIKROBOT VisionMaster, whose OCR HIKROBOT describes as deep-learning based, with code reading covering 1D and 2D codes (vendor-stated). We build on it as an independent integrator; this website does not claim any official HIKROBOT partnership or distributor status.

RELATED:
Choosing a HIKROBOT code reader → Inspection checklists → Barcode verification and grading →
Product recalls in South Africa → Label & print inspection → Fill level, cap & seal → Carton & pallet verification →
DPM code reading → Food & beverage lines → Agro-processing bag codes → Inspection technology → Preparing samples →
Cost & budget guide →

LINE SOLUTIONS USING THIS:
Can ends and dents → Juice box straws → Dairy cups → Bread bag closures → Meat tray labels → Wine labels →
Sachets and pouches → Staple food bags → Fruit export cartons → Folder gluers → Paint tins → Cement bags →

Pipe and cable print → Tyre codes →

COMMON IN THESE INDUSTRIES:

Food & beverage → Agro-processing → Plastics & packaging → Building materials → Metal components →

TYPICALLY BUILT WITH:

Vision sensor (HIKROBOT SC1000–SC3000) → Area scan cameras with a vision controller → Fixed code reader (HIKROBOT ID series) →

SOURCES

1. HIKROBOT VisionMaster product page (OCR and code reading) (https://www.hikrobotics.com/en/machinevision/visionmaster/) (vendor page, checked 2026-09-24)

// CODE INSPECTION

Request an assessment for this application

Tell us which codes you print and where the correct values are held, and send good and bad samples. We will tell you what a station can check.

Start application assessment