



FALCON INSTRUMENTS S.r.l.

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Defect Detection System For Reading & Verifying Barcode, Data Matrix, OCV & OCR





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TECHNICAL SECTION

1 SCOPE OF SUPPLY

QualiPrint - Code Reader - is the innovative line of products dedicated to Bar Code, Data Matrix, OCV (verification of codes) and OCR analysis (reading of codes), for reading and/or verification of conformity and congruence of alphanumeric codes, of bar codes and datamatrix, printed as “variable fields” on a wide range of products.

Particularly with QualiPrint is possible to read and verify the correctness, for instance, of the code number of Your products, directly after the generation of the codes, and therefore to eliminate the problems connected with products with non legible data!

Optical Character Recognition and Verification (OCR/OCV) tools enable Vision Inspection Machine to read, verify, and inspect alphanumeric text in a variety of applications. From human-readable text to bar code data matching and serial code verification on labels and packaging, Vision Inspection Machine with OCR/OCV tools deliver the capabilities necessary for machine “literacy.”



OCR/OCV tools add reading capabilities to vision systems. OCV technology allows sensors to check if a character is present, while OCR technology actually reads a character string. Despite their similarities, OCR and OCV tools have distinct capabilities – while OCV technology can “check” a character string, OCR tools actually “read” a character string. OCV is used when an operator knows in advance what specific character string the sensor is looking for, and the task is to verify whether the correct string is present. In OCR applications the task is to read the characters that are present. OCR/OCV tools learn a collection of patterns during the initial setup process—one for each letter or number the Vision System should know. Each memorized pattern is assigned a specific keystroke from a keyboard. The collection of patterns is tied to a set of characters in a font library. When the OCR/OCV tools detect shapes in an image, they compare these shapes to those found in the font library. In the case of the OCR tool, each shape seen is compared against every pattern stored in the font library. If the new shape matches well enough with one of the patterns, the OCR tool knows which character to add to the output string. Through this deliberate, shape-by-shape comparative process, the OCR tool “reads” numbers and letters.



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OCR tools complete a deliberate, shape-by-shape comparative process, allowing them to “read” numbers and letters. The output of an OCR tool is an ASCII string.

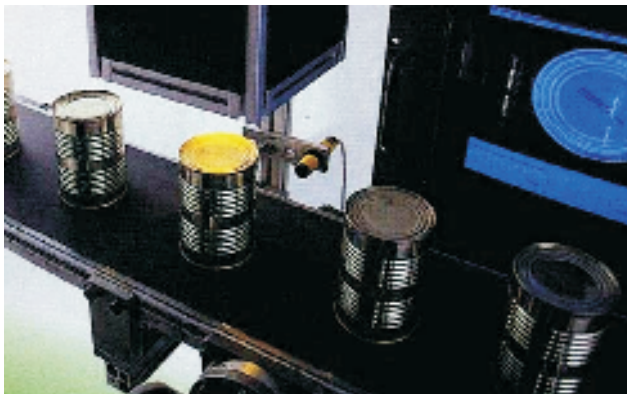
By contrast, OCV is optimised for speed. The tool knows ahead of time what the character string should be, so it does not waste time comparing each shape it sees to all the patterns stored in the font library. For example, if the string should read “91108,” the first shape seen in run-time is compared only to the 9’s stored in the font library. The second shape is compared only to the 1’s, and so on. If all of the shapes match the expected string, the inspection passes. If not, it fails. The output of the OCV tool is a simple, binary Match or No Match.

A high-intensity area light creates optimal contrast for a vision sensor with OCR/OCV reading capabilities. The Vision Inspection System can quickly read the 2D bar code and optical characters to accurately sort and route packages.

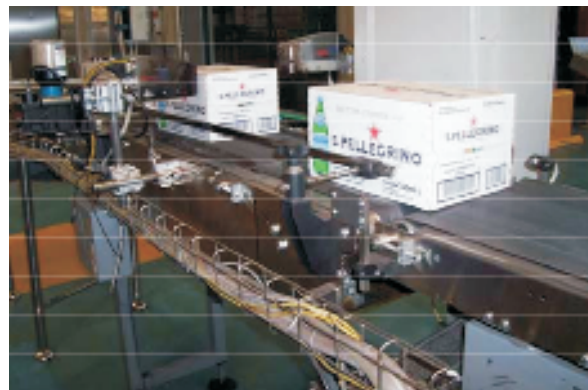


While these two technologies perform different functions, they are available in a single package with an easy training process for building an extensive character library. String tools expand recognition and verification capabilities by comparing decoded character strings from multiple tools, and text strings can be simply transmitted using common industrial protocols—allowing enhanced communications.

Photos of some Our applications



OCV Code reading on can



OCV Code reading on box



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OCR Code reading on plastic bottles



OCR Code reading on CD CD-ROM

2 BASIC DATAS PROVIDED BY CUSTOMER

Type of product: pectlæs of codes 1 or 2, OCR/OCV printing on label
Maximum Productivity: Speed = over500 pcs/min.



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3 NAME OF THE SYSTEM PROPOSED

“QualiPrint L – Advanced Reading Technology ”

4 WORKING PRINCIPLE OF THE SYSTEM

This kind of solution is designed to acquire the image of the label with the code, during the printing process.

The QualiPrint L Vision System can be installed in the printing line as a standalone unit (the one proposed): in this case it's very important to define the possibility of one right position of our cameras, near the printing machine. In particular the acquire unit will need to be installed in the product path, in a position where the product is stable from vibrations or rotations, usually the best location is in correspondence of a the printing unit.

After that it will be able to scan any possible format of JOB placing specific control recipes on each of it.

For every code that must be checked, the System:

- Separates each code string
 - Searches for the code string inside the inspection area of the label or ticket;
 - Separates each character (or logos) in the located code string;
 - Verifies each character by comparing it to the reference model (OCV) or associates it to the most similar one in the font library (OCR)
 - Read the 1-d code (Bar Code) or 2-d code (data matrix)
 - Verifies absence of scratch and hole in a “cover” area, preliminary defined by the operator.
- If one or more characters are not recognized, a reject signal is activated.

Example of controls on a single ticket:

The following scheme represents a detail of the areas controlled on each label or ticket and the specific control algorithm applied for each field :



System Performance (acquisition unit) :

The QualiPrint L system proposed will implement one high speed monochrome cameras with a 800X600 pixel resolution at a 60 frame/sec (60 images for second) rate.



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One camera (800X600 pixel) with professional lens;
Frame for connecting the System to Customer process;
- Backup CD ROM.

Software, duly dedicated to the application, in English language.

User Manuals in English language.

