



- ▶ Color camera inspection
- ▶ Automatic tracking of mould position
- ▶ Easy definition of new formats
- ▶ Shape and position of shells may be freely defined
- ▶ Automatic parameters tune-up
- ▶ Detects white chocolate in white moulds
- ▶ Works reliably with transparent moulds

**Shell Inspector** is an advanced industrial vision system that detects and excludes from the production flow all the moulds still containing chocolate products or part of them.

It can be easily installed on new or existing chocolate moulding lines.

This is the final solution to the problem of depositing chocolate in an already filled shell, reducing products out of tolerance, line dirtying and plant stops (for example due to the cleaning of frozen cone). All this guarantees a fast return of investment.

Custom and sophisticated algorithms working on color images can recognize very little differences between empty mould and products. This makes the system reliable also in applications commonly considered very difficult, for example with transparent moulds or with white chocolate on white moulds.

**Shell Inspector** unique feature among similar systems is the ease of use and configuration.

Final customers, in fact, can set up a new mould format (recipe) in minutes, without any software knowledge, just following an easy step by step procedure. Shells shape and position may be selected from a built-in list or freely defined by the customer.

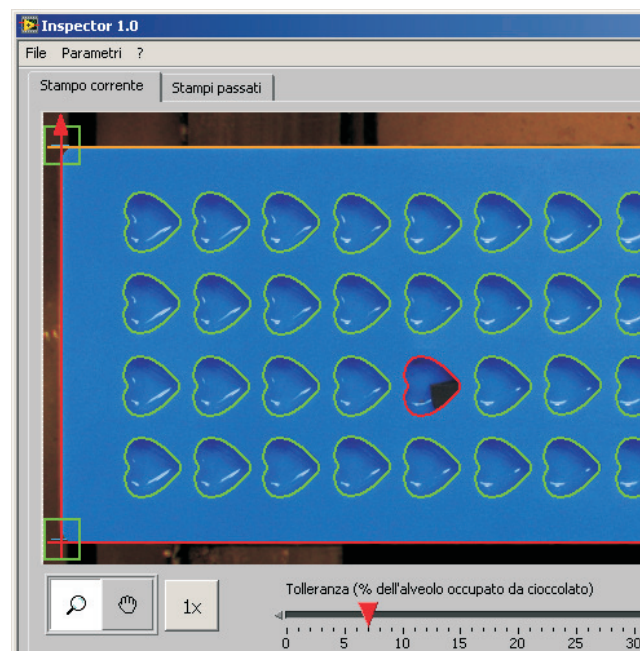
Working parameters are set up automatically by the system, placing under the camera an empty mould and then a mould full of products,

without any other adjustment.

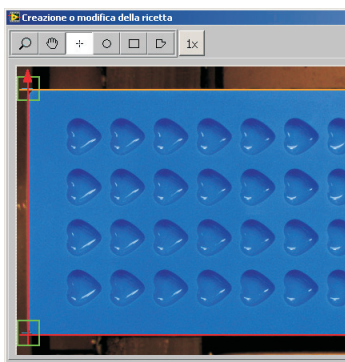
This makes **Shell Inspector** particularly suitable for lines with several different formats, since customer can save all the costs for software upgrades or change parts for traditional mechanical product detectors.

Changeovers requires just the time to select the recipe, without any tuning.

**Shell Inspector** design uses standard spare parts, which can be easily found on the market. For example, many producers supply cameras with standard GigE interface, while illuminators are simple fluorescent lamps.



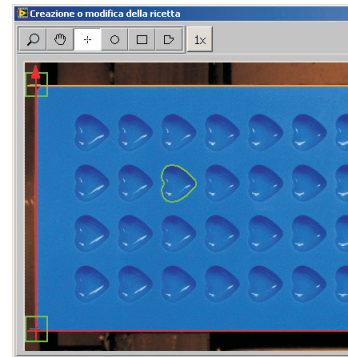
## How to set up a new mould format (recipe)



**1 Mould tracking** - One click of the mouse for each mould corner. The software defines a coordinate system which tracks the mould, compensating for its displacement from the nominal position.

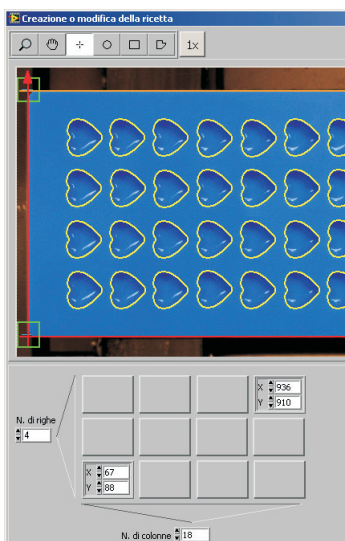
**2**

**Shell shape** - Common shapes (circle, ellipse, square, rectangle) are ready to lay down on the mould image. Uncommon shapes may be freely drawn moving the mouse along a shell contour.



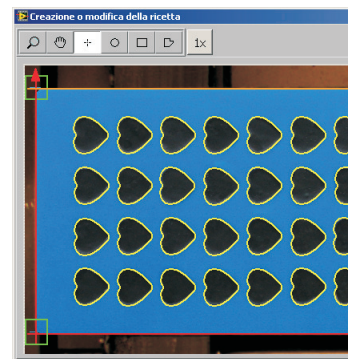
**3**

**Shell matrix** - Setting the number of rows and columns, the shell previously defined is replicated on the whole mould. Different kinds of matrix are available, and also an arbitrary shell disposition. If necessary, some shells can be disabled.



**4**

**Automatic parameters tuning** - Placing under the camera an empty mould and then a mould full of products, the system calculates by itself the best parameters to detect chocolate. The new format setup is now complete and the system is ready to work.



<b>Shells shape</b>	Square, rectangle, circle, ellipse, freely defined
<b>Shells disposition</b>	matrix, staggered rows, staggered columns, freely defined
<b>Inspection resolution</b>	0.5 mm
<b>Moulds movement</b>	continuous or intermittent
<b>Mould position tolerance</b>	+/- 20 mm
<b>Inspection time</b>	0.15 seconds
<b>Hardware components</b>	Color GigE camera Fanless industrial PC, solid state disk Touch screen LCD 17"
<b>Plant interface</b>	Digital input output (also for recipe selection) Socket TCP/IP communication
<b>Illuminators</b>	Fluorescent lamps
<b>Dimensions</b>	Mould length + 200 mm Mould width + 100 mm Height 1200 mm
<b>Protection degree</b>	IP 65 (touch screen operator side)