



**ANTARES**VISION

# GIS GLASS INSPECTION SYSTEM



# GIS

## GLASS INSPECTION SYSTEM

The Glass Inspection System is a software suite designed for the visual inspection of open containers coming from a glass tube or from moulded glass. This includes products such as vials, cartridges, syringes, ampoules, and bottles.

GIS is an accurate and reliable software developed in the context of the severe standards of the pharmaceutical production. Sophisticated analysis algorithms enable the identification of all possible defects by performing dimensional and cosmetic inspections for a total conformity control of the containers.

Typical measurements are external and internal diameters of the mouth, dimensions of the neck and body, eccentricity, ovality. The system works on front or axial views verifying the compliance of the glass objects with the set tolerances.

Cosmetic controls include presence of cracks, bubbles or impurities as well as planarity of the mouth and forming of the bottom.

GIS ensures high-speed inline inspections with a throughput up to 12.000 products/hours on a wide range of glass containers with diameters going from 50 to 200mm.

Glass Inspection System is not affected by glass color temperature variations or product layout.



## FEATURES AND BENEFITS

### A VERSATILE SOFTWARE

THE GLASS INSPECTION WORKS WITH:

- a) Any kind of glass container:
    - vials
    - cartridges
    - syringes
    - ampoules
    - bottles
  - b) Containers with a large dimension range
    - from  $\varnothing 50$  mm to  $\varnothing 200$  mm
  - c) any glass color
    - transparent
    - amberglass
    - dark colored glass (as green or blue)
- Stable to temperature variations to minimize false rejects
  - Wizard menu for new formats or modification of current format
  - Easy and quick format changeover
  - Advanced statistical analyses with detailed reject typology to help detecting the upstream production process criticalities
  - Charts Viewer application to monitor the temporal progression of the measurements detected by the system during production process based on tolerance thresholds.

### PERFORMED CONTROLS

DIMENSIONS AND MEASURES

- Inner and external diameter of the container mouth
- Dimensions and spoking of the neck
- Dimensions of the body
- Spoking of the bottom
- Feed-back to the forming machine via TCP IP

COSMETIC MEASURES

- Cracks in the body, neck and mouth
- Planarity of the mouth
- Forming of the bottom
- Presence of bubbles, stains or impurities in the glass
- Presence and integrity of the screen printing

### SMART AND EFFICIENT

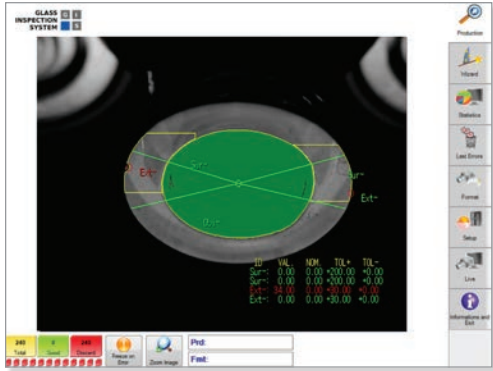
- High throughput (up to 300 vials/minute) and high reliability for a faster return of investment
- Identification of cracks down to 0,2 mm length on the container surface

### ADVANCED HMI

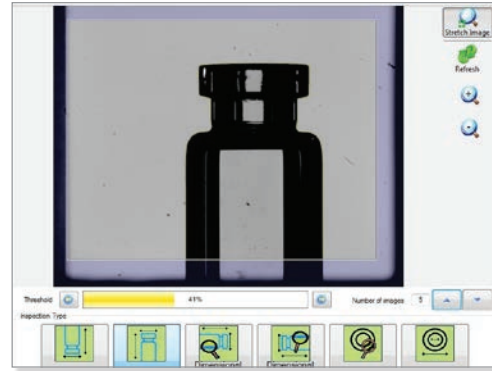
- Single touch-screen display to control all machine functions:
  - / check of all cameras
  - / machine status
  - / programming of formats
  - / diagnostics
- Industrial 15" PC Windows OS based
- Easy and user-friendly graphical user interface

### FEEDBACK ON QUALITY AND STATISTICS

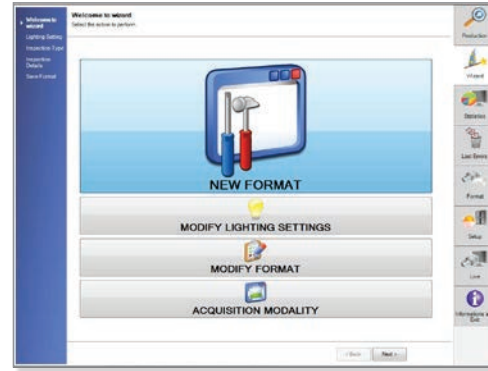
- Using the GIS not only minimizes the risk of putting non-conforming products on the market but also gathers a great deal of data on the variety of defects at inlet.
- These data are then used to implement changes to the upstream production phases upstream to eliminate them, sparking a virtuous circle that can only benefit safety and production costs.



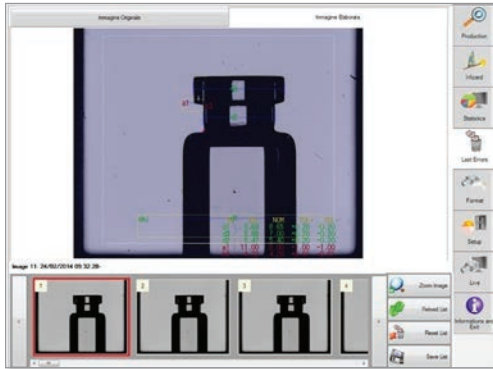
MAIN PRODUCTION PAGE



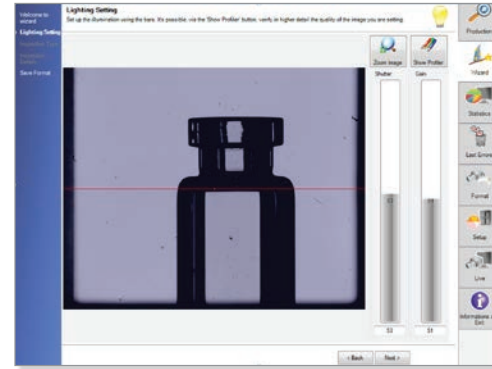
SETTING OF THE DIFFERENT INSPECTIONS (DIMENSIONAL/COSMETIC)



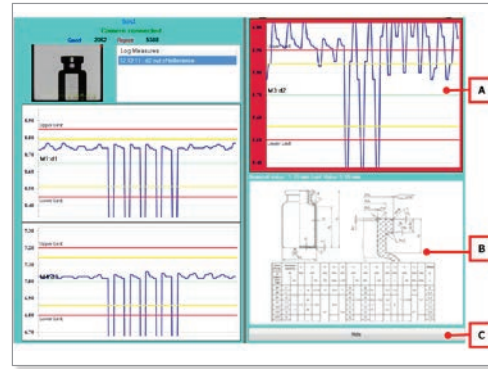
WIZARD MENU FOR NEW FORMATS OR MODIFICATION OF CURRENT FORMAT



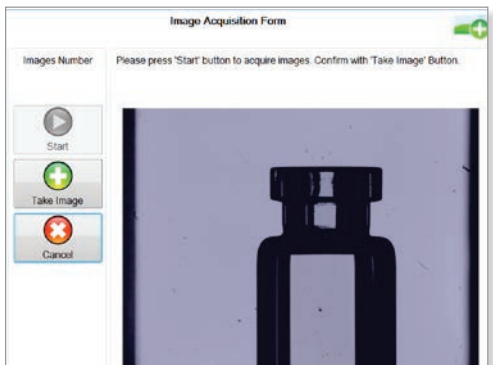
LAST FOUND ERRORS LIST WITH DETAILED ERROR TYPE



AUTOMATIC LIGHTING SET-UP



CHARTS VIEWER APPLICATION



LEARNING PROCEDURE WITH PRODUCT VISUAL ACQUISITION



STATISTICS WITH REJECT CAUSE



Cosmetic control allows the quality of the glass to be checked and recognises the presence of bubbles, lines or breakages.

## TECHNICAL CHARACTERISTICS

### HARDWARE AND OPTICS FEATURES

Camera type	Smartcamera Gigabit Ethernet
Resolution	Up to 1600 x 1200 pixels
Inspection area	Up to 270 x 360mm
Analyzer	On board
Lighting	Cold white light, high power LEDs
Led duration	Over 30.000 hours
Image quality optimization	Through dedicated HW and SW
Direct / Backlight strobo lighting	Optional
Telecentric optics	Optional
Thermal protection cover	Optional
Alarms on signal	Digital outputs

### SOFTWARE FEATURES

Self-learning procedure (wizard)	Yes
Light auto-adjustment and compensation	Yes
Automatic threshold tuning from last errors	Yes
Image errors storage (for automatic threshold adjusting and visual analysis)	Optional
Multi-language platform	Yes
Available languages	English, French, Italian, German, Spanish, other languages available on request

### HMI

Display	Stand alone PC with touch screen display
Hardware full integration of HMI in machine	Optional

### SECURITY AND VALIDATION

User login levels	Configurable, up to 5 levels
FDA 21 CFR part 11 compliant	Yes
Development according to GAMP 5 rules	Yes

### REMOTE ASSISTANCE

Remote support through network connection	Yes
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### AVAILABLE CONTROL TOOLS

	Measurement of external diameter		Measurement of vertical distance between a point and a reference (e.g. between the basis and the shoulder of a bottle).
	Measurement of angle		Internal diameter measurement control (in axial view)
	Measurement of eccentricity		Object presence
	Radius tool		Cosmetic control of body for breakages or defects
	Measurement of quality of horizontal cut		Measurement of minimum diameter of the thread
	Measurement of horizontal distance		Measurement of maximum diameter of the thread
	Measurement of vertical distance		Measurement of circular ovalisation (in axial view)
	Measurement of vertical level from bottom to top		Illuminator control
	Measurement of vertical level from top to bottom		Cosmetic control of mouth for the presence of breakages or flaws (axial view)
	Cosmetic control for circular flaws in the mouth		Cosmetic control for circular flaws on the outside of mouth
	Cosmetic control for mouth thickness		Measurement of thread pitch