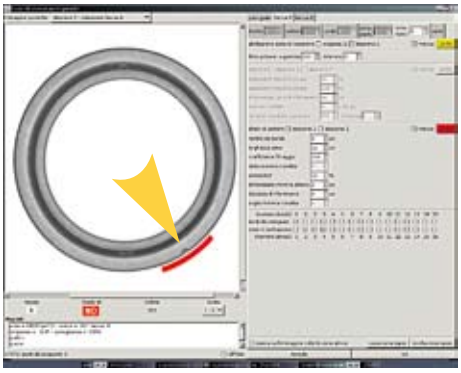
MATLIX

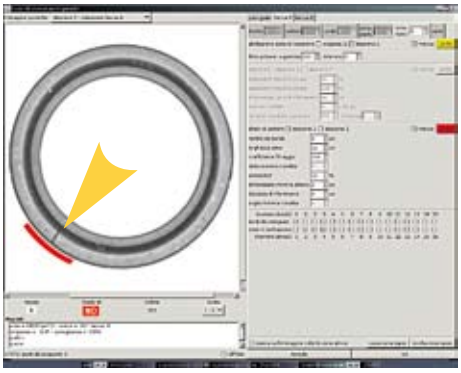
english version

UTP VISION

QUALITY VISION SYSTEMS

MATLIX





Visual inspection equipment for dimensional and of the surface defects control

Matlix is a simple visual inspection machine for the dimensional and surface control of circular and other shape components. Matlix is able to check the surface of the piece to identify main defects as cut, flash, lacking material, holes and halos, doble-mouldings, roundness, concentricity, etc...
The equipment is controlled by a PC managed by an operating system Real-Time (RTAI-Linux) that make both the elaborations on the images and the interaction with the operator through simple and intuitive windows interface.
The system Real-Time offers a good stability to the system and extremely elevated control speed.
The images are captured by digital industrial cameras and are transferred, without losses or interferences to the PC through connection Firewire.
The loading device delivers the pieces to check on a conveyor belt where a motorised diverter will move the parts onto the rotating table.
The machine can be employed for the control of high precision gaskets in rubber, PTFE, metal and other materials within the limits of the vision field.

Operational characteristics

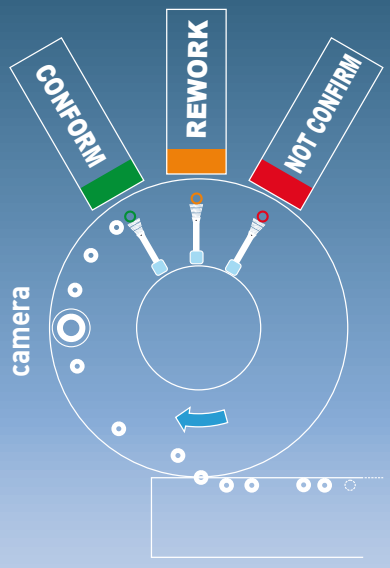
After thickness control through a barrage laser, the capture images and the following elaboration, the pieces are sorted in the different areas of accumulation depending on their pass/fail criteria or they can be reworked. You can view real time statistics and all production times, the number and the type of defects and the state of filling of the accumulation zones, it is possible to print and save the production reports with graphics and statistic data and to send them to a management system for subsequent processing. The statistic software elaborates the data and calculates the values of production capability (CPK), furnishing a feed-back on the production parameters.
Machine downtime is kept to a minimum by the ease of cleaning and component changing together with the storing of all configuration parameters.

Illumination

Illumination is double crown flash led:
- digital regulation of the bright intensity for inside and outside surfaces
- possibility to control piece reflection
- good precision of dimensional and surface control
- no loss of the bright intensity

Barrage laser

The barrage laser is able to measure with extreme accuracy the height and planarity of the piece scanning the pieces along all of its dimension.
The elevated precision of measure is achieved using algorithms of elaboration of the signal that allow to eliminate the imperfections of the rotating table oscillations.



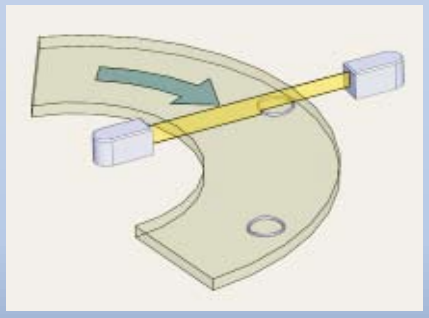
CONTROL'S SOFTWARE FOR COMPLEX SHAPE PIECES

The software for the interpretation and the control of components with complex shape allows the recognition of planar rotation of the pieces.
It also recognizes the top and bottom sides and independently process the image of the piece regardless of load position.

Control program
- identify of irregular profiles and relative control with reference to the basic profile
- control of the maximum and minimum height of holes and flash on linear and curvilinear profiles
- definition of multiple calibers and control of their dimensions
- control of the median and punctual variation of cord sections
- simultaneous analysis of the surface defectiveness in many inspection areas.

Optional: Control device of the external surface.

This system consist of six cameras and three levels of led lighting placed above, to the center and bottom of the piece. Allows you to detect defectiveness on the outside peripheral surface of pieces, anomalies related to the closed of the mould and production defects that frequently are locate in that area.
The control program allows to interpolate three different crowns of led in order to optimize the illumination of the component. Can be defined a maximum of 5 independent control areas. It manages the algorithm for the control of the top and bottom areas of mould closing and of course the colors tonality on every image.
Check the maximum variation of the basic profile of the piece.



Optional: software of control and 3D camera

The software for the interpretation and the control of the particular pieces of complex shape interfaced with a 3D camera allow the three-dimensional image reconstruction of the piece independently from the loading position.

Control program
- control of variations of the piece shape allowing the identification of anomalies compared to the original.

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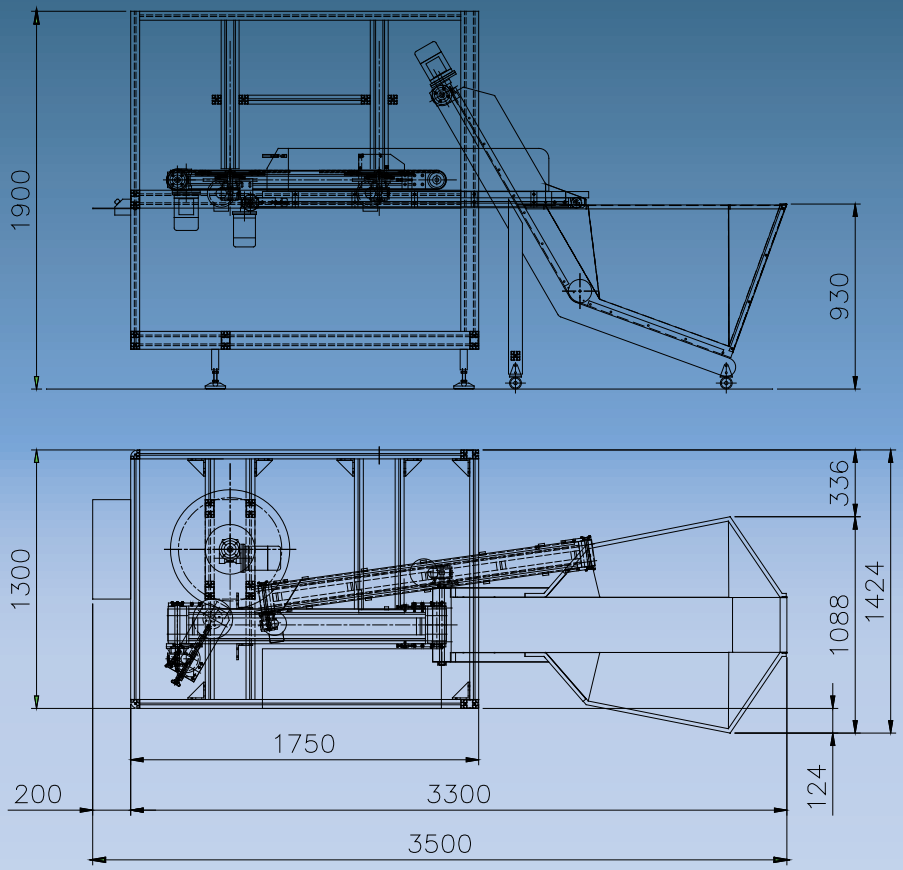

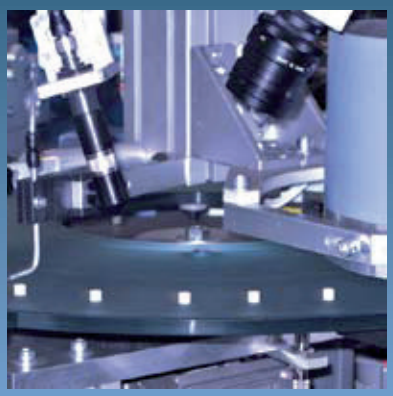

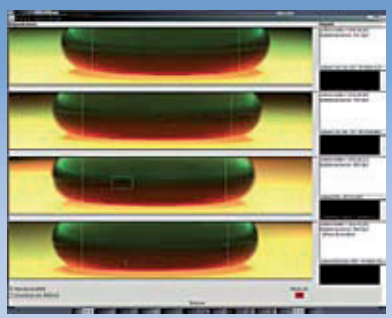

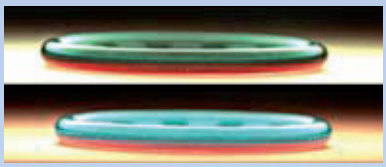

GENERAL CHARACTERISTCS

Type of pieces	generic pieces of any colour
Material	rubber, plastic, PFTE and metallic materials
Min outs. diam.	4 mm
Max outs. diam.	60 mm
Min thickness	0,9 mm
Max thickness	9 mm (20 mm without laser control)
Control speed	from 2 pcs/s to12 pcs/s (from 7.200 pcs/h to 43.200 pcs/h depending on size and material)

LASER FOR FLATNESS MEASUREMENT

Max thickness:	9 mm
Resolution:	0.01 mm
Measurement accuracy:	±0.03 mm

DIMENSIONS

Dimension up to:	70 mm
Measurement accuracy:	±0.008 mm

TOP AND BOTTOM SURFACES

Dimension up to:	20 mm	40 mm	60 mm
Resolution mm/pixel:	0.026	0.052	0.078
Min. size detectable defect (tone difference at least 30 points in adjacency):	0.052x0,052 mm	0.104 x0,104 mm	0.156x0,156 mm

PERIPHERAL SURFACES

Dimension up to:	20 mm	40 mm	60 mm
Resolution mm/pixel:	0.020	0.039	0.059
Min. size detectable defect (tone difference at least 30 points in adjacency):	0.040x0,040 mm	0.078 x0,078 mm	0.108x0,108 mm

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