



Phoenix

AUTOMATIC VISUAL INSPECTION MACHINE
WITH SINGLE TABLE FOR O-RING AND
GENERIC PIECES

UTP VISION
VISUAL INSPECTION



LINUX



DATABASE
INTEGRATION



STATISTICS
REPORTS



COLOR VISION
PATENTED



ARTIFICIAL
INTELLIGENCE

PhoeniX is able to control the entire surface of a part through machine vision technology. It is ideal for high precision inspection of rubber gaskets, plastic and metal parts and other materials up to a maximum part size of \varnothing 50 mm.

The acquired images are transferred without any data loss to a PC managed by a Real Time OS, which handles both image processing and the interaction with the operator through a user-friendly interface. The system's stability is guaranteed even at extremely high inspection speeds.

After the images have been processed, pieces are sorted into three different collection areas depending on whether they are compliant, non-compliant or reworkable. Part changeover is quick thanks to the possibility of saving inspection parameters in each recipe.

ILLUMINATION

- Digital regulation of bright intensity for inside and outside surfaces
- Possibility to control piece with reflecting surface
- Good precision of dimensional and surface controls
- No decadence of bright intensity

LASER THRUBEAM SENSOR

Laser thrubeam sensor is able to measure with extreme accuracy the planarity of the piece scanning its profile. It's possible to measure the height of pieces only if they are perfectly planar. The elevated precision of measuring is achieved using algorithms of elaboration of the signal that allow to eliminate any imperfection of the rotating table during its oscillation.



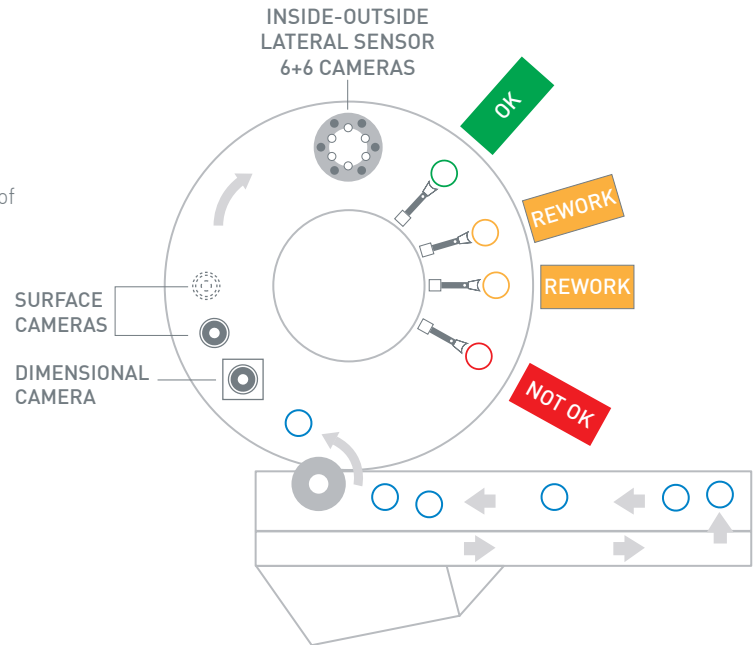
DIMENSIONAL STATION

Independent measurement sensor for dimensional control of circular pieces, with the following characteristics:

- Progressive scan high resolution B/W camera
- Nearly zero distortion bi-telecentric lenses
- Dedicated lighting system

Related control program features

- Measurement of the inner/outer diameter
- Measurement of the radial cross section
- Measurements of general lengths, angles, radii
- Flash defects inspection
- Nicks defects inspection
- Roundness inspection
- Center distance





CONTROL SOFTWARE

The software for analysis and control of components with complex shape allows the recognition of planar rotation of the piece. It also recognizes the top and bottom sides and independently processes images of the piece regardless of load position.

Control program

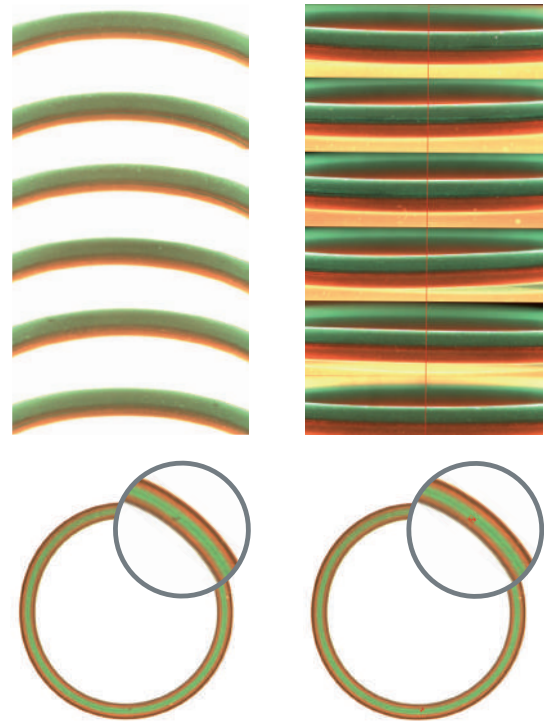
- Irregular profiles identification and related control with reference to the sample profile
- Control of the maximum and minimum height of holes and flash on linear and curvilinear profiles
- Definition of multiple calipers and control of their dimensions
- Control of the median and punctual variation of cord sections
- Simultaneous analysis of surface defectiveness in many inspection areas

OPTIONAL CONTROL DEVICE OF EXTERNAL AND INTERNAL SURFACES

This system consists of two stations (**internal side and external side**) with **6+6** progressive 2 Mpixel color scan cameras, with framing of the outside and inside of the piece every 60°. Each camera has a very low distortion lens. In addition, the system is characterized by 2 levels of colored LED lighting arranged above and below the piece. The system allows to optimize the illumination of the piece thanks to the **independent regulation** of the illuminators with pulsed light. The control program allows to detect defects on the external and internal edge of a piece and anomalies related to the mold closure and production defects that frequently occur in that area.

Two stations: internal and external lateral surface

- 6+6 color camera
- Framing every 60°



SPECIFICATIONS

TECHNICAL SPECIFICATIONS	50
Material	rubber, plastic, PTFE, metal
Color	any color
Min. Outside Diameter (mm)	4
Max. Outside Diameter (mm)	50
Min. thickness (mm)	0.9
Max. thickness (mm)	9 / 25
Productivity	up to 10 pcs/s (36,000 pcs/h) depending on the typology and material of article
Loading system	bulk feeder 300 L

PLANARITY STATION	50
Height measuring range (mm)	9
Dimensional resolution (mm)	0.001
Accuracy of measurement (mm)	±0.015
Repeatability of measurement (±2σ) (mm)	±0.025

VERTICAL DIMENSIONAL STATION	50
Camera	B/W
Field of view (mm)	Ø 54
Generic pieces max. height (mm)	5
O-Ring max. height (mm)	10
Dimensional resolution (mm)	0.001
Optical resolution (mm/px)	0.035
MPE inside diameter (mm)	0.009
MPE outside diameter (mm)	0.009

UPPER SUPERFICIAL STATION	50
Camera	full color
Number of lenses	4
Focus adjustment	motorized

LOWER SUPERFICIAL STATION	50
Camera	full color
Number of lenses	4
Focus adjustments	motorized

OPTIONALS

DIFFERENTIAL LASER STATION	50
Measuring range (mm)	25
Resolution (mm)	0.001
Accuracy of measurement (mm)	±0.003
Repeatability of measurement (±2σ) (mm)	±0.005
Minimum internal diameter (mm)	10

PLANARITY STATION 25MM	50
Height measuring range (mm)	25
Dimensional resolution (mm)	0.001
Accuracy of measurement (mm)	±0.018
Repeatability of measurement (±2σ) (mm)	±0.030

HORIZONTAL DIMENSIONAL STATION	50
Camera	B/W
Field of view (mm)	semi-ellipse with major axis 64 and minor axis 50
Dimensional resolution (mm)	0.001
Optical resolution (mm/px)	0.045
MPE height measure (mm)	0.010 mm

SQUEEZER STATION	50
Camera	B/W
Field of view (mm)	32x25
Max. Outside Diameter(mm)	20
Min. Outside Diameter (mm)	4
Min. thickness (mm)	1
Max. thickness (mm)	5
Dimensional resolution (mm)	0.001
Optical resolution (mm/px)	0.020
Min. detectable defect size(mm)	0.060x0.060
Max. production in 1 shots mode	6 pcs/s
Max. production in 3 shots mode	3 pcs/s
Max. production in 10 shots mode	1 pcs/s

LATERAL STATION ON SQUEEZER	50
Camera	full color
Width of field of view for each camera (mm)	25
Optical resolution (mm/px)	0.016
Minimum detectable defect size (mm)	0.050x0.050

INTERNAL LATERAL STATION	50
Camera	full color
Width of field of view for each camera (mm)	25
Optical resolution (mm/px)	0.016
Minimum detectable defect size (mm)	0.050x0.050

EXTERNAL LATERAL STATION	50
Camera	full color
Width of field of view for each camera (mm)	29
Optical resolution (mm/px)	0.018
Minimum detectable defect size (mm)	0.055x0.055

DEVICES
Heater on bulk feeder
Metal detector sensor
Antistatic bars
ABC Station (Automatic Blowing Checker)
DTC (Dirty Table Checker)
Laminar flow cabinet
Manual cleaning machine control
Rotating warehouse
Packaging machine
Z conveyor belt

The technical data and images contained herein are indicative only. UTPVision reserves the right to modify its products at any time without prior notice.



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