SmartMatliX

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

UTP VISION
VISUAL INSPECTION
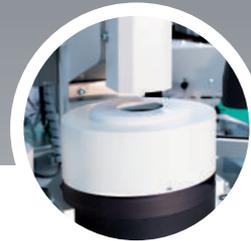
LOADING SYSTEM
1

DIMENSIONAL CAMERA
2

SURFACE CAMERAS
3

UNLOADING
4

POLYVIEW EXTERNAL LATERAL STATION
OPTIONAL

SmartMatliX is an automatic visual inspection machine with single rotary table for the dimensional and surface inspection of O-Rings and generic items made of rubber, plastic, PTFE and other materials. SmartMatliX has been designed for very high precision inspection of seals up to Ø 50 mm.

SmartMatliX is intended as a basic version of the MatliX series, having many operational characteristics in common and offering great value for money. **Artificial Intelligence software** can be added upon customer's request and can be installed remotely at anytime.

The feed system loads the parts onto a conveyor belt, then a motorized diverter transfers them onto a rotary glass table. From this point on, every single part is inspected for defects and dimensional accuracy by a series of dedicated vision inspection stations.

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.

LINUX

DATABASE INTEGRATION

STATISTICS REPORTS

COLOR VISION PATENTED

COLOR VISION TECHNOLOGY

Patented color technology for surface and lateral stations. Dual color illuminators for excellent detection of surface defects.

CONTROL SOFTWARE

The UTPVision software is universal and is installed by default on all visual inspection machines. Equipped with an application that allows remote operator management, the software equips each UTPVision machine with the same technology and the same potential: from SmartMatliX to BigX, from ScrappiX to LoringX, a single software and the same tools. In addition, it comes with a guarantee of future updates: the machine will always be upgradeable to the latest software version, including all the latest developments.
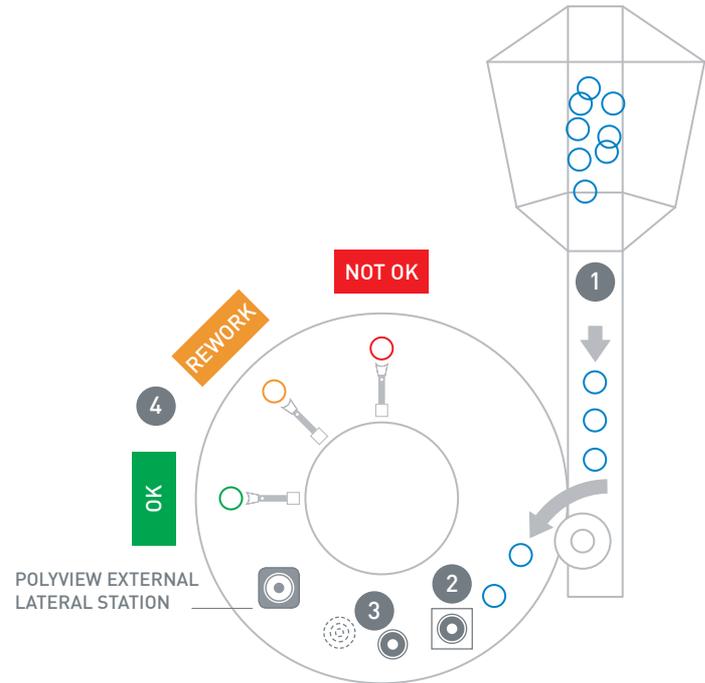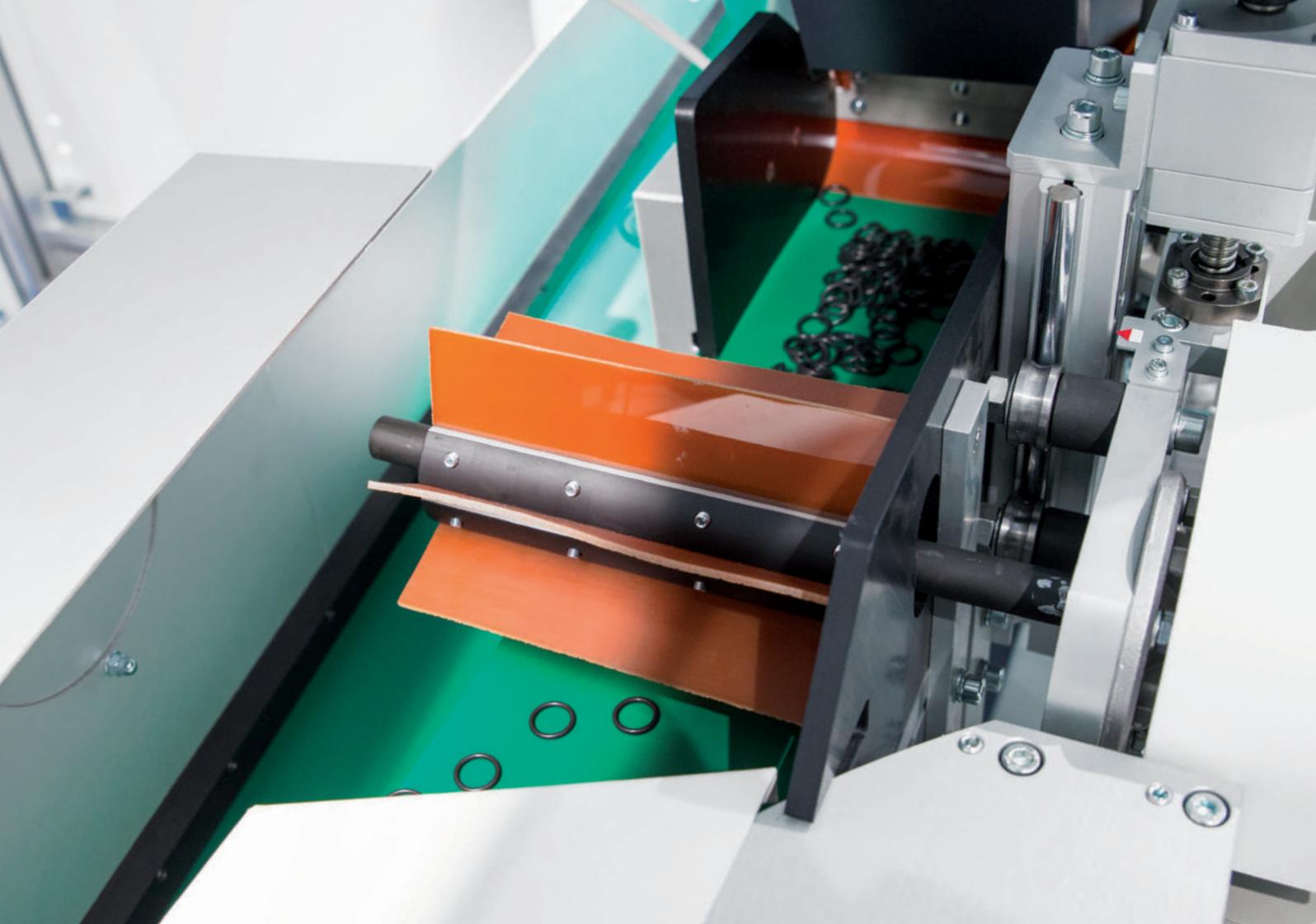

NOT OK

REWORK

OK

1

2

3

4

POLYVIEW EXTERNAL LATERAL STATION

DIMENSIONAL STATION

Pure dimensional station with calibration report according to the principles of ISO IEC 17025 concerning the adequacy of the technical procedures, the competency of the personnel and the measurement traceability, according to requirements of IATF 16949.

O-RING ASSISTANT

Application for simple machine setup and automatic tool parameterization. Just set the description and size of the O-Ring and the machine is ready to start the production.

ADDITIONAL TOOLS

The machine is equipped with a complete set of tools for the management of pieces of any shape (not just O-Rings). It is possible to use calipers and rulers, define surface control areas of any shape, use advanced calculation tools, recognize flash on edges of any profile, etc.

INTRINSICALLY SAFE

The machine is supplied with CE marking, the noise during processing is less than 70dB, all lasers are Class I and the illuminators have EXEMPT degree risk (verified according to EN 62471: 2010).

RECIPES AND REPORTS

It's possible to save a production recipe for a given item in order to reload it if necessary. The machine will be ready to produce the same item in seconds. At the end of the production, a report can be saved which contains all the production data (general production statistics divided by station, graphs of the dimensional measurements with statistical indexes, Cp and Cpk, etc ...) which can be exported in any format, adaptable with a customizable style sheet. It's also possible to save a collection of images from the various stations for subsequent processing and validation of the recipe.

OTHER CHARACTERISTICS

• Real-time data export via ODBC or Modbus.
• Compatible with **MaviX**.
• Remote teleservice via **Teamviewer**.

OPTIONAL
ARTIFICIAL INTELLIGENCE SOFTWARE (AIS)

What makes UTPVision's inspection machines unique is the innovative Artificial Intelligence software (AIs), which twists the traditional image processing methods based on manually set thresholds.

With AIs, the operator just needs to collect a series of significant samples that well represent the range of defects to be found. Thanks to the SVL (SuperVised Learning) procedure, the machine can be quickly trained to discriminate and classify defects according to the user's needs.

This new approach based on Artificial Intelligence has been proven more efficient because it is independent of the environment and process variables that require continuous threshold adjustments.

With AIs the machine is able to identify "objects" (with defined shapes) and / or surface defects (with undefined shapes) just by looking at sample images.

SPECIFICATIONS

TECHNICAL SPECIFICATIONS	35	50
Material	rubber, plastic, PTFE, metal	
Color	any color	
Min. Outside Diameter (mm)	3	3
Max. Outside Diameter (mm)	35	50
Min. Thickness (mm)	0.9	0.9
Max. Thickness (mm)	5	5
Productivity	up to 10 pcs/s (36,000 pcs/h) depending on the typology and material of article	
Loading system	Bulk feeder 130L	

PLANARITY STATION	35	50
Height measuring range (mm)	9	9
Dimensional resolution (mm)	0.001	0.001
Accuracy of measurement (mm)	±0.015	±0.015
Repeatability of measurement (±2σ) (mm)	±0.025	±0.025

VERTICAL DIMENSIONAL STATION	35	50
Camera	B/W	B/W
Field of view (mm)	Ø39	Ø54
Generic pieces maximum height (mm)	1	5
O-Ring max. height (mm)	2	10
Dimensional resolution (mm)	0.001	0.001
Optical resolution (mm/px)	0.025	0.035
MPE inside diameter (mm)	8 µm	9 µm
MPE outside diameter (mm)	7 µm	9 µm

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

UPPER SURFACE STATION	35	50
Camera	full color	full color
Field of view (mm)	48x40	66x55
Dimensional resolution (mm)	0.001	0.001
Optical resolution (mm/px)	0.019	0.027
Minimum detectable defect size (mm)	0.058x0.058 mm	0.081x0.081

LOWER SURFACE STATION	35	50
Camera	full color	full color
Field of view (mm)	48x40	66x55
Dimensional resolution (mm)	0.001	0.001
Optical resolution (mm/px)	0.019	0.027
Minimum detectable defect size (mm)	0.058x0.058	0.081x0.081

OPTIONALS

POLYVIEW EXTERNAL LATERAL STATION	35	50
Camera	B/W	-
Number of views	8 every 45° along the perimeter	-
Max. external diameter (mm)	35 mm	-
Width FOV for each view (mm/px)	25	-
Optical resolution (mm/px)	0.04	-
Minimum detectable defect size (mm)	0.12x0.12	-

DEVICES	
Artificial Intelligence Tool	Rotating warehouse
Bulk feeder 300L	Packaging machine
Antistatic bar	Z conveyor belt
Laminar flow cabinet	