

STRATEC LG

Modularly Constructed Inspection System to Optimize the Returned Empties Handling



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EMPTYES MANAGEMENT

- Unpackability inspection
- Bottle sorting regarding
 - height, colour and shape
- Foreign bottles detection:
 - glass/PET detection
 - swing tops
 - neck ring detection
- Residual cap detection
- Crate sorting regarding colour, logo, crate cells and crate format
- Grip holder inspection
- Control of sorting unpicker and rejection systems



SYSTEM STRUCTURE

Operating, Control and Processing Unit STRATEC PC-4000

- PC-based operation and processing system with graphical user interface and Touch-Screen operation
- Statistical and graphical presentation of the production details and system configuration
- Monitoring of all relevant data including rejection trend analysis with the possibility to present all the camera's pictures on the display
- Access to the user interface via individual passwords as numerical code
- Different access levels for different users

production data

Datum	P.ID	T.S.ID	Zeit	P.beginn	P.ende	Typ	TypName	Total Production	Good Production	Total Rj
15.08.2005	11	200	10:46:00	09:47:00	10:46:00	1	(1) Export 20x0,5l	2303	1674	
15.08.2005	11	201	10:46:05	09:47:00	10:46:00	1	(1) Export 20x0,5l	2310	1674	
15.08.2005	11	202	10:46:10	09:47:00	10:46:00	1	(1) Export 20x0,5l	2313	1674	
15.08.2005	11	203	10:46:15	09:47:00	10:46:00	1	(1) Export 20x0,5l	2318	1674	
15.08.2005	11	204	10:46:20	09:47:00	10:46:00	1	(1) Export 20x0,5l	2322	1674	
15.08.2005	11	205	10:46:25	09:47:00	10:46:00	1	(1) Export 20x0,5l	2327	1674	
15.08.2005	11	206	10:46:30	09:47:00	10:46:00	1	(1) Export 20x0,5l	2332	1674	

production counter

Production Time	Average Output	Actual Output	Reject 1	Rej
58	2360	3510	629	

Total Production 2498 **Production Time** 1 h 3 min

Legend:

- OK - NOT present
- OK - present
- Fault - NOT present
- Fault - present

result

control result

Total: Fault

Time: Fault 1, 2, 4, 5, 6, 7, 8, 1...

Crates: Fault

Crates Colour: Fault

Bottle Movement (Case): OK

Gap (Lightness): OK

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SYSTEM STRUCTURE

Sensor Bridge SENSOR TECHNOLOGY

- Ultrasonic sensors for bottle height detection
- Light sensor for gap inspection
- Optical sensors for residual cap detection

The single sensors are furnished with a quick fixture to simplify the adaptation of the sensor positions in case of format change-over.

In case of frequent format changes we recommend the expansion with additional sensors, so that a change-over is possible without dislocating the sensors.

Sensor Bridge IMAGE PROCESSING Basic module

A CCD-Firewire-Camera inspects the crate from top down. The picture recording occurs in different steps (stripe picture) and is assembled to a complete picture by a special software in the processing module. The lighting occurs from below (recommended) or from above.

Depending on the software version this configuration can detect the colour of the bottle, swing tops and neck ring.

PROCESSING SOFTWARE

Each single sensor/camera sends crude data to the analysing PC. Out of these data the processing software calculates the individual characteristics (height, colour, format, cap) for each position in the crate. Depending on the adjusted values there is a result for each position and the crate is handled accordingly (controlling of the sorter packer, detection). The calculated data are statistically recorded and monitored on the user interface. Optionally the data can be transmitted via network to an external PC.

GLASS/PET- DETECTION

Optionally the Glass/PET detection occurs by image processing with polarisation technique (please note: lighting is required from the bottom) or by x-ray technology (gas in the PET crate).



CCD-Firewire-Camera
and sensors in
one sensor bridge

CRATE SORTING DEVICE

Depending on the requirements the system can be equipped with sensor technology (crate colour detection) or with lateral camera inspection bridge (logo sorting).

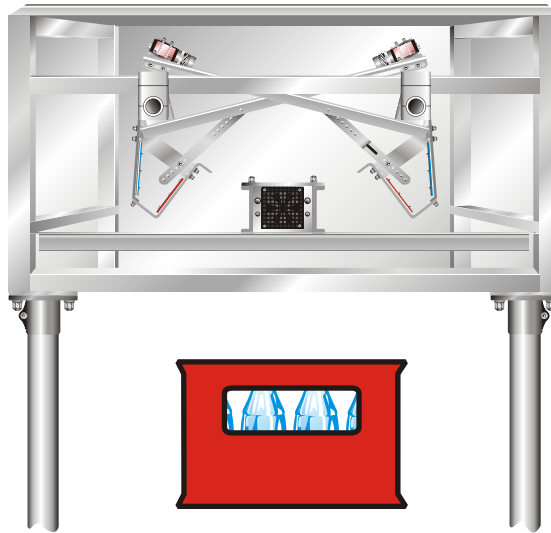
STRATEC LG properties of the system

- Increases efficiency by reducing downtimes
- Discharges crates which cannot be unpacked
- Discharges extremely inhomogeneous crates to the manual sorting lines
- Yields a transparent picture of the empty bottles received
- Modular design
- Inspection properties can be adapted to meet future requirements
- Structured assessment of the empty bottles
- Easy to operate
- Requires little maintenance
- Easy to install

ADDITIONAL MODULE

FORMAT DETECTION

With special optics and reflector systems it is possible to generate a lateral view of the bottle format. Special software algorithms search for the collected bottle formats and compare them with the already saved data. Combined with the other bottle features (height, colour) each single bottle in the crate can be identified separately.



OVERVIEW OF FUNCTIONS

Functions	Modules	Optical Sensors	Ultra-sound	CCD camera	Colour sensor	X-ray techn.
A A	Detection of objects between rows of bottles					
N B	Inverted bottles					
P I	Lying / crushed / outstanding bottles					
A L	Caps and covers					
C I	Bottles height					
K T	Residual cap detection					
Y	Bottles height					
	Bottles colour					
B S	Glass/PET- detection in the crate					
O O	Majority detection					
R R	Control of sorting packer					
T T	Twisted caps					
L I	Bottle outline detection					
E N	Cap type detection					
G G	Neck ring detection					
C S	Grip holder detection					
R O	Crate colour detection					
A R	Logo detection					
T T	Crate cell structure					
E I	Crate format					
N N						

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TECHNICAL DATA

Power supply:	230 V / 50 Hz
Ambient temperature:	5 - 45 °C
Control unit dimensions (WxHxD):	730 x 1960 x 430 mm
Sensor bridge dimensions basic (WxHxD):	1050 x 1200 x 700 mm
Sensor bridge dimensions additional module (WxHxD):	1050 x 1200 x 1000 mm
Conveyor speed:	max. 1,0 m/sec
Crate width for transverse transport:	max. 410mm
Distance between crates:	min. 60mm
Direction of crate travel:	longitudinal/transverse
Detection system:	CCD color camera ultra sound sensors optical