

Checkmat

Inspection systems for fillers
and cappers



All-around check for maximum safety and performance

Is the fill level in the bottle okay? Is the cap position straight? Does the safety ring justify its name? The Checkmat inspection systems give you a clear answer to each of these questions. For example, by exactly checking the fill level of different types of containers and bottle caps from all sides.

Who is the ideal team partner for the Checkmat inspector? The KRONES filler management solutions. They monitor and record important production data providing you with valuable knowledge about the best optimisation.

At a glance

- Full-container inspection unit
 - Fill level inspection unit with high-frequency, infrared camera, gamma or x-ray technology
 - Cap and safety ring detection unit with sensor and camera technology*
- Filler management
 - Production management
 - Quality management
 - Safety management
- Automatic or manual adjustment of the rail as well as the inspection unit height

Benefits to you

- Maximum product quality and safety thanks to continuous container inspection
- Increased line efficiency thanks to automatic detection and rejection of faulty material

* Prerequisite:

Cap blower for the removal of water drips from the cap and the support ledge.



Fill level inspection unit: high-frequency

Standard values	
+/- 4 mm at 99 percent	Underfills and overfills

Technical features

- 1 sensor for underfill and overflow inspection (Checkmat K707)
- Display of analog measured values
- Output of up to 72,000 containers per hour

Range of applications

- Suitable for slightly foaming and non-foaming products
- Not suitable for
 - metallised labels or foiling
 - metallised containers
 - oils or products containing oil
 - beverages with an alcohol content of more than 50 percent



Benefits to you

- No registration rights required
- Operation without any radiation protection officer



Fill level inspection unit: Infrared

Standard values	
+/- 2 mm at 99 percent	Underfills and overfills

Technical features

- 1 sensor for underfill and overflow inspection
- Display of analog measured values
- Output of up to 72,000 containers per hour

Range of applications

- Suitable for
 - slightly* foaming and non-foaming products
 - label-free zones
- Not suitable for containers with imprints or embossing at the height of the fill level

* Clear transition between liquid and foam



Benefits to you

- No registration rights required
- Operation without any radiation protection officer



Fill level inspection unit: camera

Standard values	
+/- 1 mm at 99 percent	Underfills and overfills

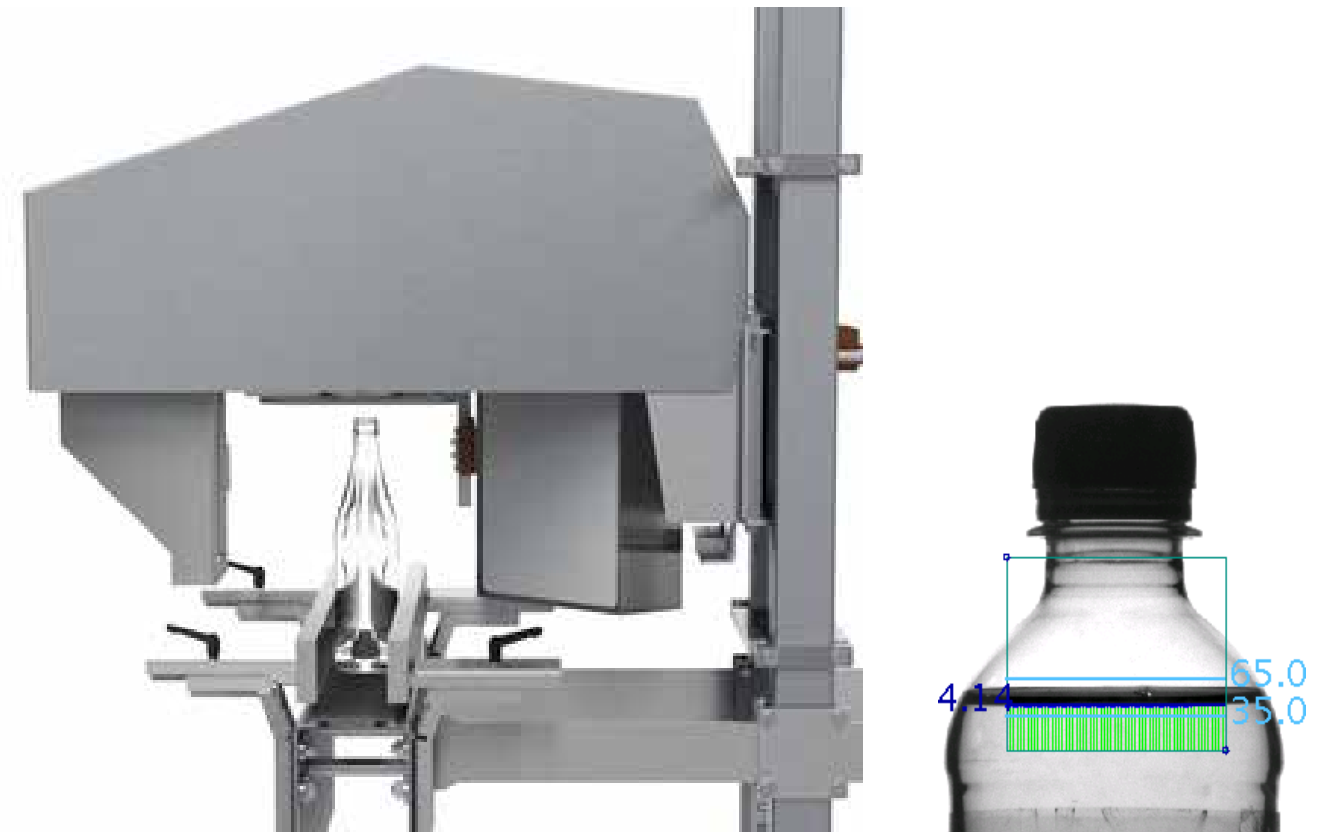
Technical features

- 1 camera for underfill and overfill inspection
- Display of analog measured values
- Output of up to 72,000 containers per hour

Range of applications

- Suitable for:
 - transparent containers
 - slightly* foaming and non-foaming products
 - label-free zones
- Not suitable for containers with imprints or embossing at the height of the fill level

* Clear transition between liquid and foam



Benefits to you

- No registration rights required
- Operation without any radiation protection officer



Fill level inspection unit: gamma

Standard values

+/- 2 mm at 99 percent	Underfills and overfills
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Technical features

- 2 sensors for underfill and overflow inspection
- Automatic gamma source shut-off when machine has stopped
- Output of up to 120,000 containers per hour

Range of applications

Suitable for slightly* foaming and non-foaming products

Requirements

- Application requirements
- Radiation protection officer



Benefits to you

- Suitable for glass container and PET containers as well as cans

* With consistent foam behaviour



Fill level inspection: X-ray

Standard values

+/- 1.5 mm at 99 percent	Underfills and overfills
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Technical features

- 2 sensors for underfill and overfill inspection
- Automatic gamma source shut-off when machine has stopped
- Output of up to 120,000 containers per hour

Range of applications

Suitable for slightly* foaming and non-foaming products

Requirements

- Application requirements
- Radiation protection officer



Benefits to you

- Precise results – regardless of the product and the label
- Suitable for glass container and PET containers as well as cans

* With consistent foam behaviour



Cap inspection unit for crowns and plastic screw caps



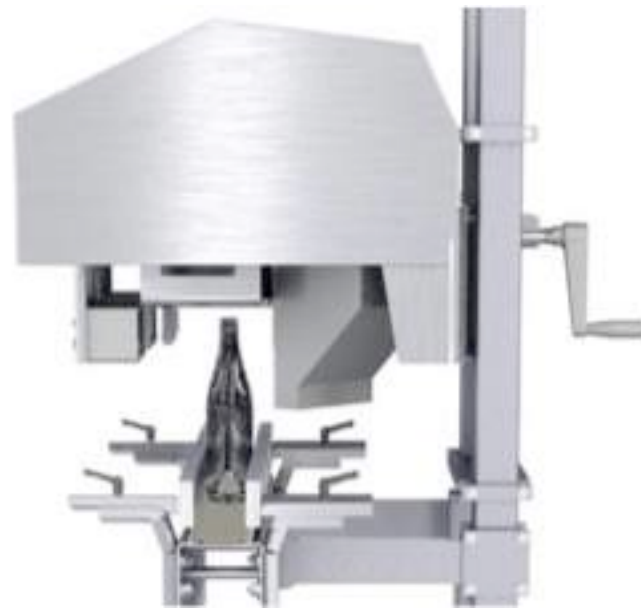
Technical features

- 1 unit
- 1 sensor
- Output of up to 72,000 containers per hour

Inspection of the caps for	Inspection range: 360°
– Presence	



Cap inspection unit for crowns

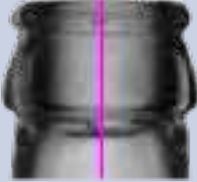


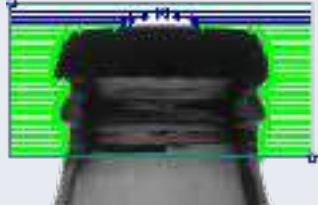


Technical features

- 1 unit
- 2 cameras with an inspection range of 240°/360°
- LED lighting
- Output of up to 72,000 containers per hour

Requirements

No water drops on the caps

Inspection of the caps for	Inspection range: 360°
– Presence	
– Slanted position	
Inspection of the caps for	Inspection range: 240°
– Damage > 90°	
– Diameter	



Cap inspection unit for crowns







Technical features

- 1 unit
- 1 camera with an inspection range of 360°
- LED lighting
- Output of up to 72,000 containers per hour

Requirements

No water drops on the caps

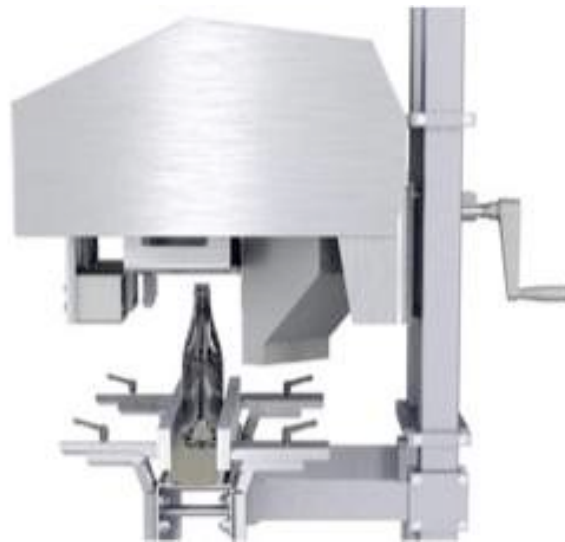
Inspection of the caps for	Inspection range: 360°
– Colour and logo	
– Correct cap (product mix-up)	
– Position of the printed image	
– Damaged printed image	



Cap inspection and safety ring detection unit for plastic screw caps

Technical features

- 1 unit
- 2 cameras with an inspection range of 240°/360°
- LED lighting
- Output of up to 72,000 containers per hour

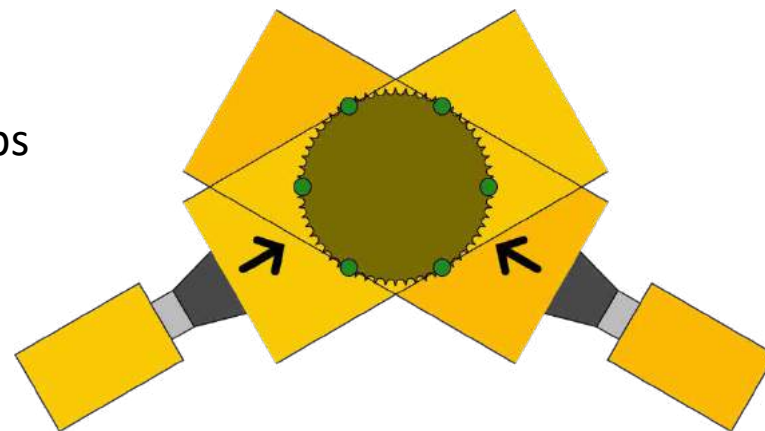







Range of applications

Suitable for non-transparent caps

Requirements

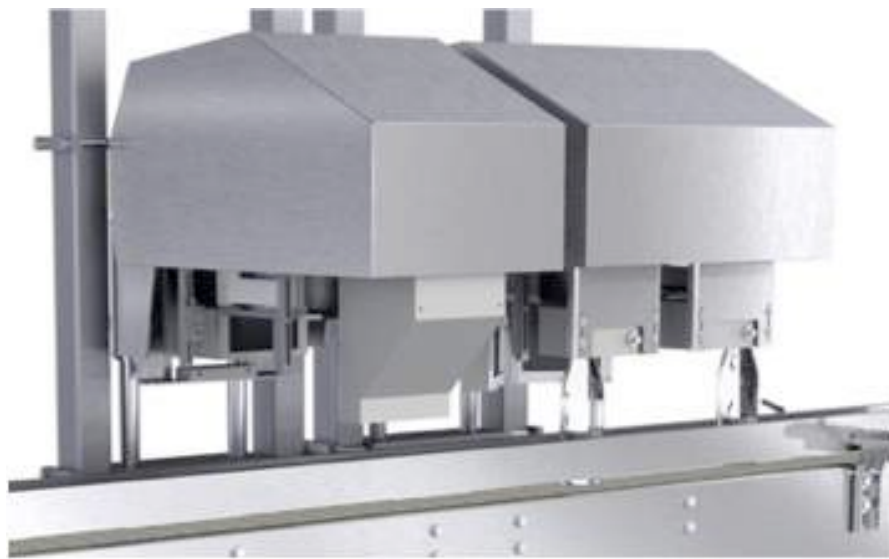
No water drops on the caps



Inspection of the caps for	Inspection range: 360°
– Presence	
– Height	
Inspection of the caps for	Inspection range: 240°
– Slanted cap > 120° of the circumference	
Inspection of the safety rings for	Inspection range: 240°
– Damage > 120° of the circumference	
– Jammed ranges > 120° of the circumference	
– Broken perforation > 120° of the circumference, gap > 1mm	



Cap inspection and safety ring detection unit for plastic screw caps



Technical features

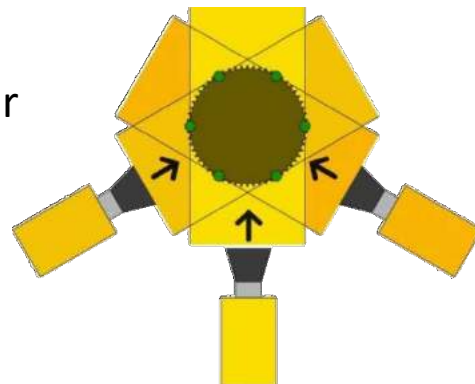
- 1 unit
- 3 cameras with an inspection range of 360°
- LED lighting
- Output of up to 72,000 containers per hour



Range of applications




Suitable for non-transparent caps

Requirements

No water drops on the caps

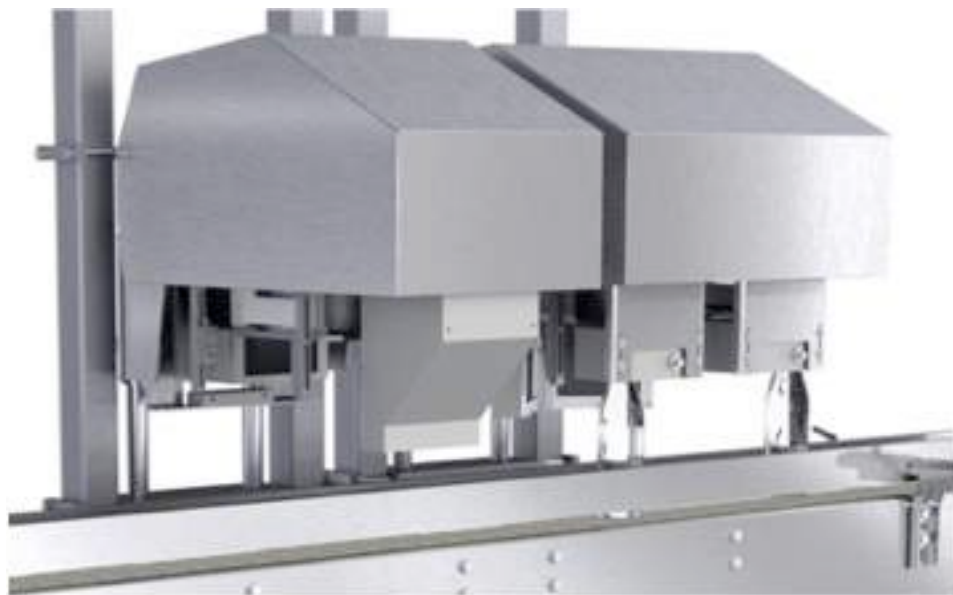


Inspection of the caps for	Inspection range: 360°
– Presence	
– Height	
– Slanted cap > 70° of the circumference	

Inspection of the safety rings for	Inspection range: 360°
– Damage > 70° of the circumference	
– Jammed ranges > 70° of the circumference	
– Broken perforation > 70° of the circumference	
– Gaps > 1 mm	

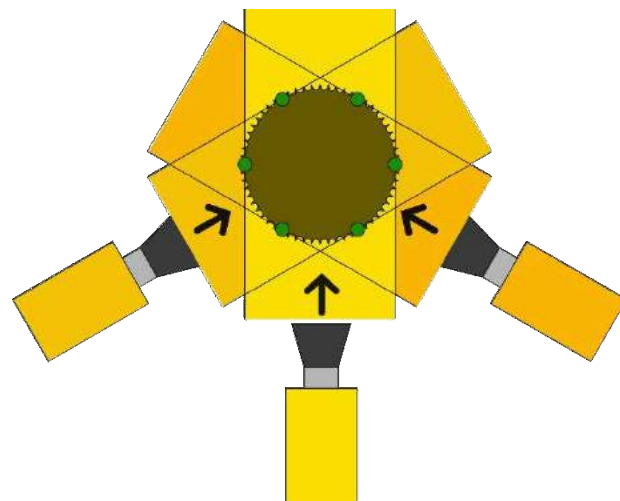


Cap inspection and safety ring detection for aluminium screw caps



Technical features

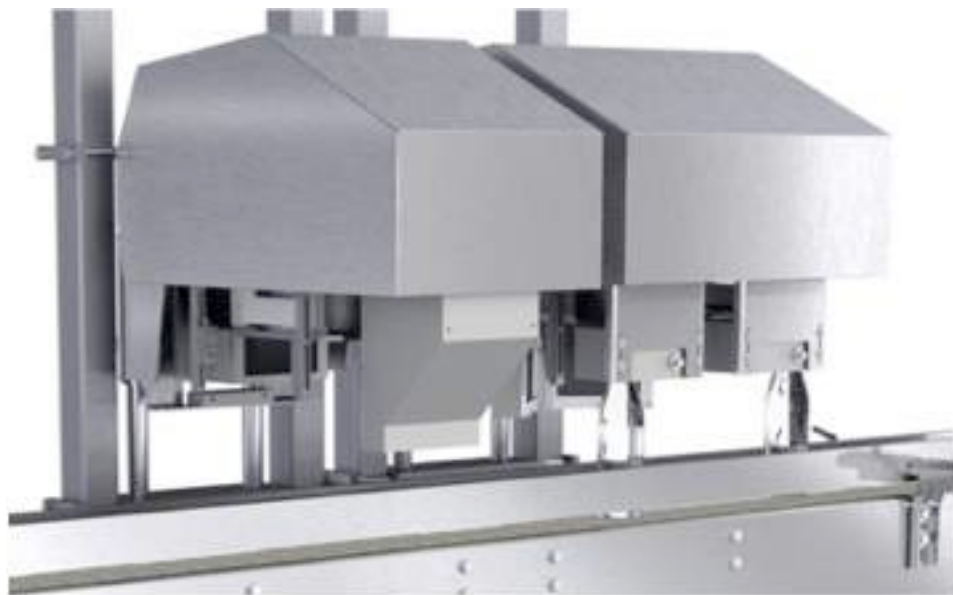
- 2 units
- 3 cameras with an inspection range of 360°
- LED lighting
- Output of up to 72,000 containers per hour



Inspection of the caps for	Inspection range: 360°
– Presence	
– Cap height (reform area)	
– Slanted label position	
– Damage > 60°	
– Incorrectly rolled-on cap (crimp fault)	
– Incorrectly rolled-on cap (missing weak groove)	
– No roll-on (missing thread)	

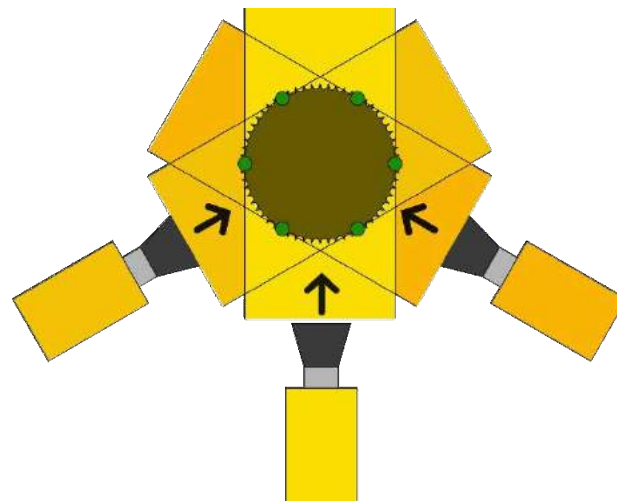




Cap and thread inspection unit for aluminium screw caps



Technical features

- 2 units
- 3 cameras with an inspection range of 360°
- LED lighting
- Output of up to 72,000 containers per hour



Inspection of the thread for	Inspection range: 360°
<ul style="list-style-type: none"> – Damage (weak thread) 	
Inspection of the safety rings for	Inspection range: 360°
<ul style="list-style-type: none"> – Broken perforation – Gaps > 1.3 mm, depending on the container colour 	



Cap inspection unit in the Capcade sorting elevator



Cap inspection unit

Plastic cap, flat cap, Super Shorty

Cap colour: Red, green, yellow, white, translucent, dark caps, e.g. in blue, brown or black

Detection of:

- ✓ Ovality (no sport caps)
- ✓ Tear-off ring included, broken or protruding in/out
- ✓ Position of the cap (inverted)
- ✓ Incorrect inside-base colour (inlet or cap)
- ✓ Seal film/liner/seal included inside the cap
- ✓ Seal film/liner/seal damaged in plastic flat caps
- ✓ Cap height (optional)

Technical features

- 1 camera
- LED lighting
- Cap inspection unit camera integrated in the sorting elevator

Customer benefits:

- Clear and straightforward operation
- Increase in effectiveness
- No vacuum conveyor needed, no energy consumption
- Self-learning function



Filler management

Production management

- Monitoring of the rinsing and filling valves and capping heads
- Assignment of the filling valves and capping heads
- Detection of consecutive faults
- Creation of type and trend statistics
- Creation of output histograms

Quality management

- Air content rejection
- Dating/coding management
- Service rejection
- Vent tube detection
- Broken bottle detection system



Benefits to you

- Increased line performance
- Quicker malfunction analysis
- Complete protocols



Production management

Creation of type statistics

KRONES K731-810 Test container program is active 16:24:56 11-12-2012 User: Krones [02 Helles Bier 0,5l]

Checkmat > Statistics > Type statistics >

Total statistics | **Type statistics** | Performance diagram | Monthly statistics

Type production: 678859 Speed: 38000 C/h

Good production: 675338 (99.48%) Rejection: 3521 (0.52%)

Reject. channel: 3518 (100.00%)

Shoulder label	Details	3	0.09%
Body label	Details	113	3.21%
Underfill	Details	7	0.20%
Overfill	Details	0	0.00%
Body label, quality	Details	0	0.00%
Body label, print	Details	0	0.00%
Body label, identiy	Details	0	0.00%
Back label, quality	Details	0	0.00%
Back label bar code	Details	0	0.00%
Back label date	Details	0	0.00%
Cap	Details	0	0.00%

Buttons: Showhide inspection units, Delete fault mark

Bottom bar: Production, Functions, Statistics, Type, Equipment Controller, Service mode

Assignment of the rinsing and filling valves and capping heads

KRONES K731-810 Monitoring of a CAN camera is deactivated: Label detection unit 16:25:41 11-12-2012 User: Krones [02 Helles Bier 0,5l]

Checkmat > Statistics > Filling valve statistics >

Performance diagram | Monthly statistics | Weekly statistics | **Filling valve/capping head statistics**

Type production: 679335 Speed: 38000 C/h

Good production: 675814 (99.48%) Rejection: 3521 (0.52%)

Select inspection: **Faulty fill**

Filling valve/capping he...	12	5	0	0	0	0	0	0	0
Last filling value	393.00	394.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Last fill valve/cap.head f...	12	12	12	0	0	0	0	0	0
Fill./cap.st. no. last stop	0	0	0	0	0	0	0	0	0

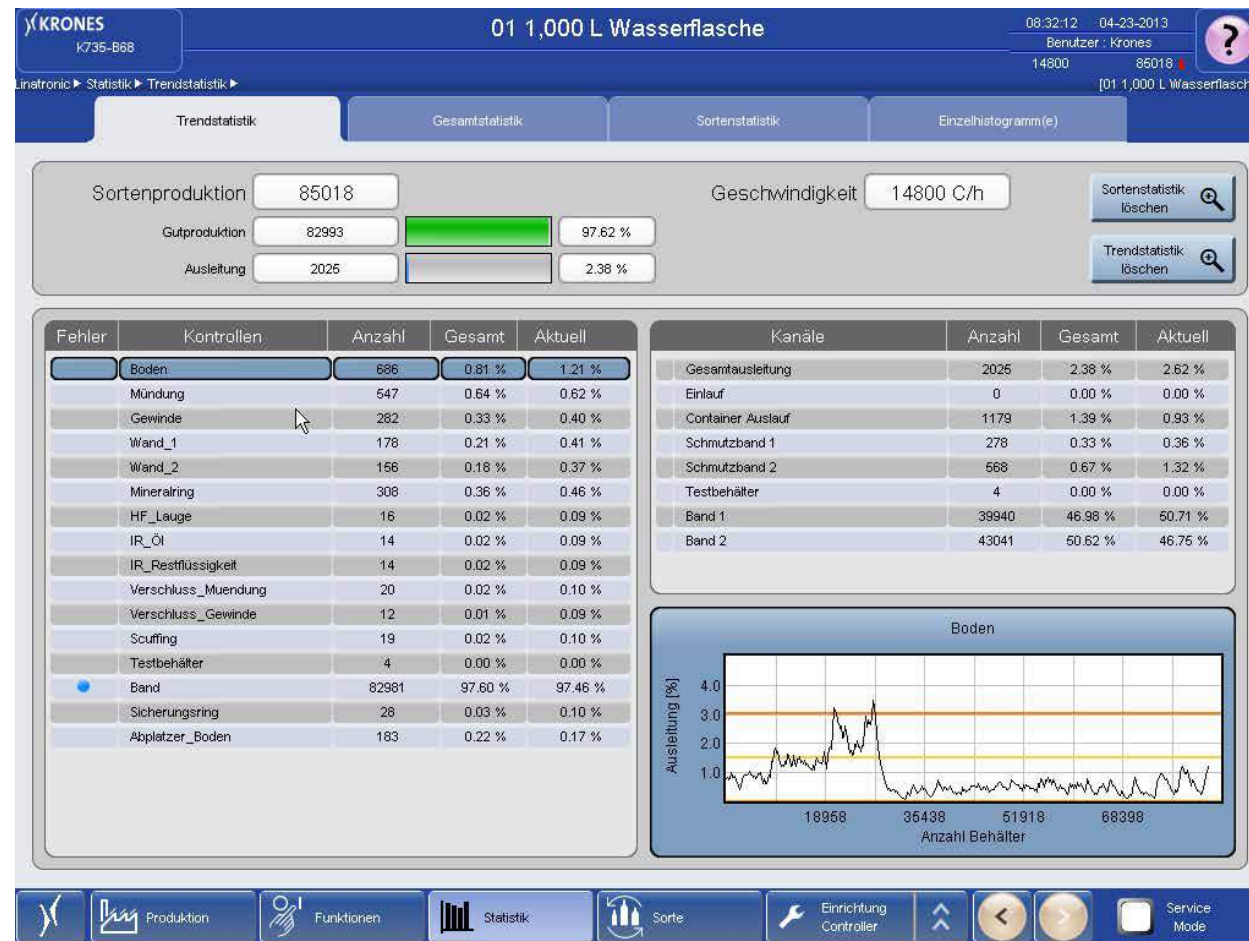
Buttons: Delete type statistics, Faulty fill Delete

Bottom bar: Production, Functions, Statistics, Type, Equipment Controller, Service mode

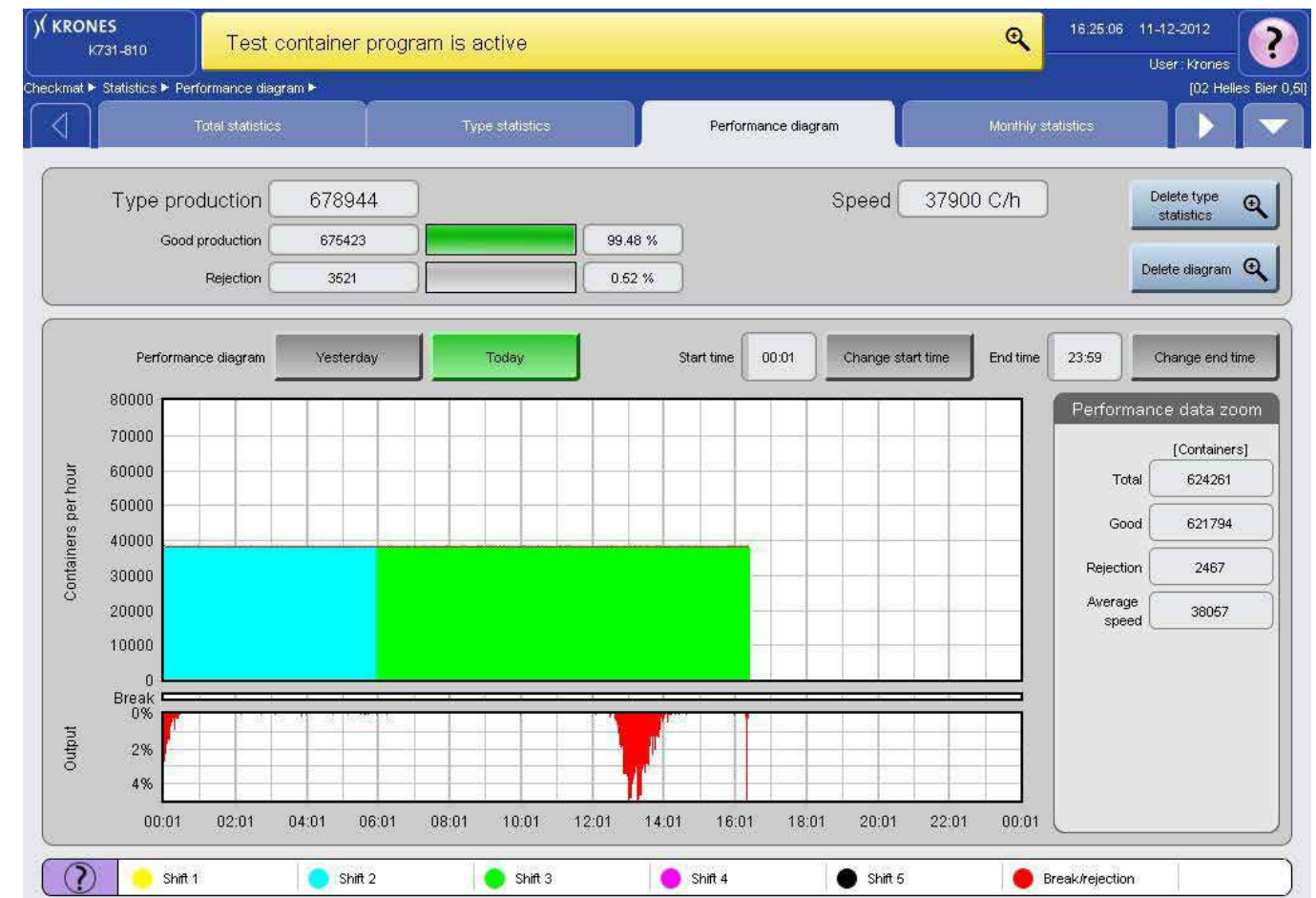


Production management

Creation of a type and trend statistics



Creation of a performance diagram structured by day, week and month





Quality management

Dating/coding management

Coding of

- Injection unit
- Rinsing valve
- Filling valve
- Capping head

Service rejection

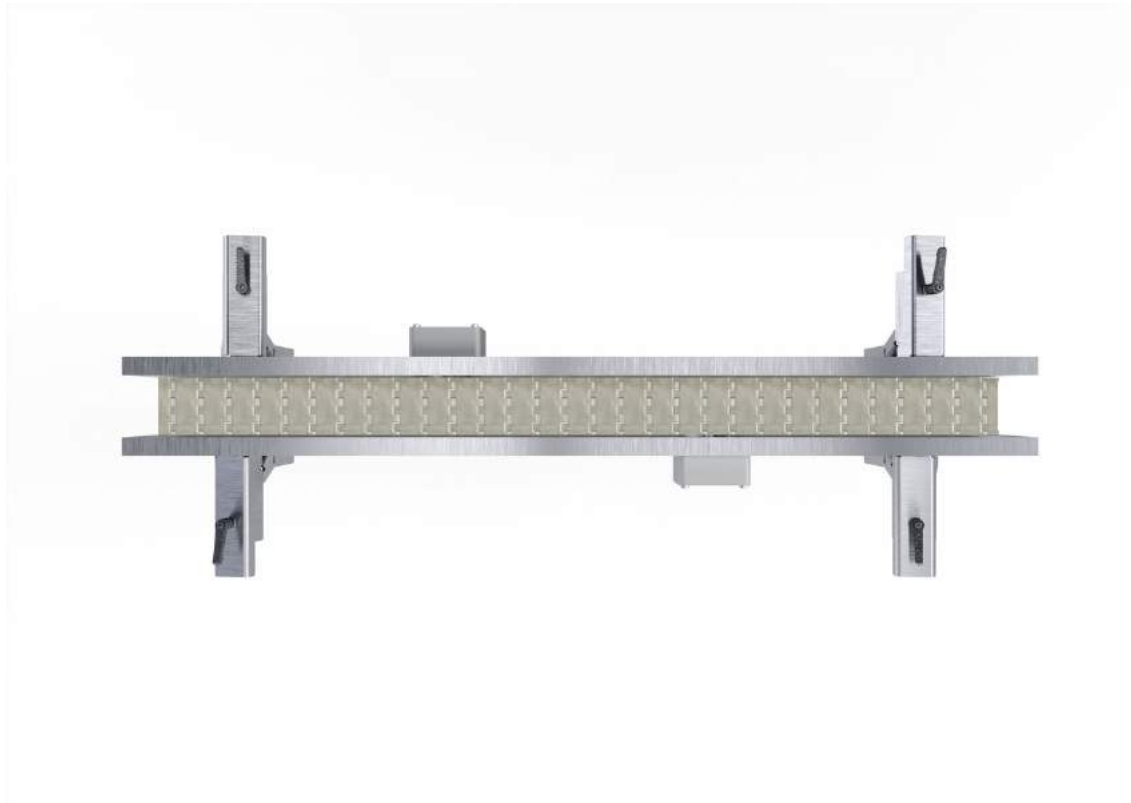
- Monitoring of the production quality
- Number of units and revolutions freely selectable



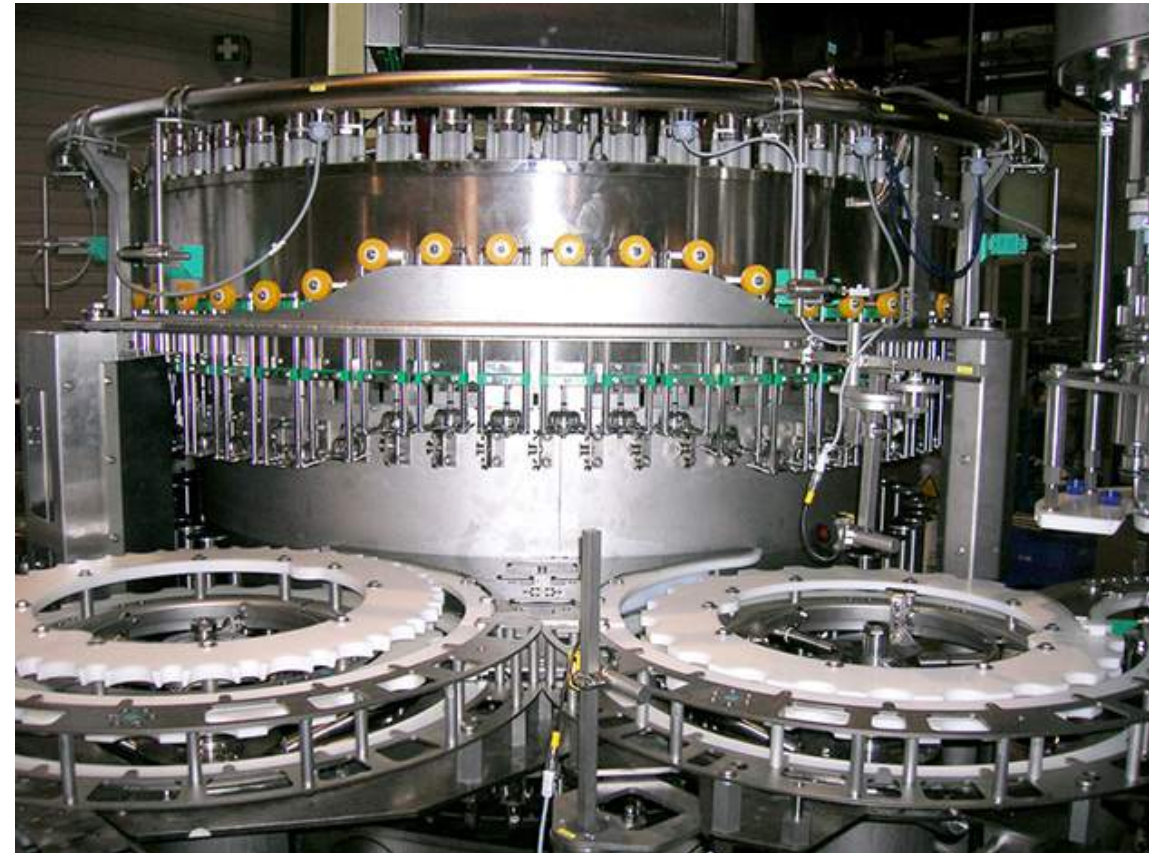


Quality management

Vent tube detection unit with 2 sensors



Broken bottle detection system





Safety management

Password protection with transponder

- Logon of an authorised person prior to the start of production
- Permanent password protection with automatic log-out function
- Logon via uniform transponder technology, e. g. filler, labeller, etc.



Rejection monitoring

- Monitoring of the rejection unit





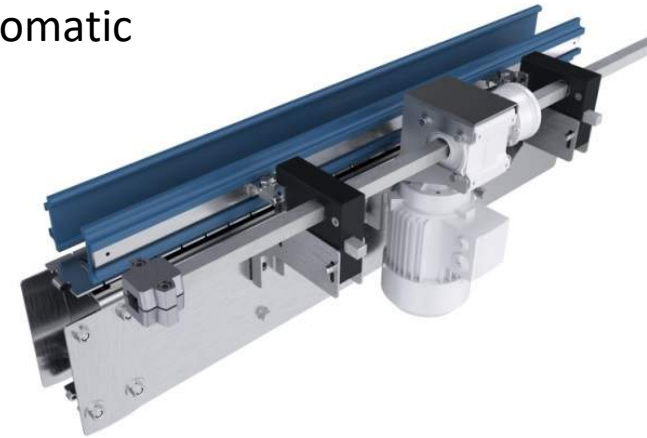
Height adjustment system of the inspection units and rail adjustment system

Height adjustment system of the inspection units

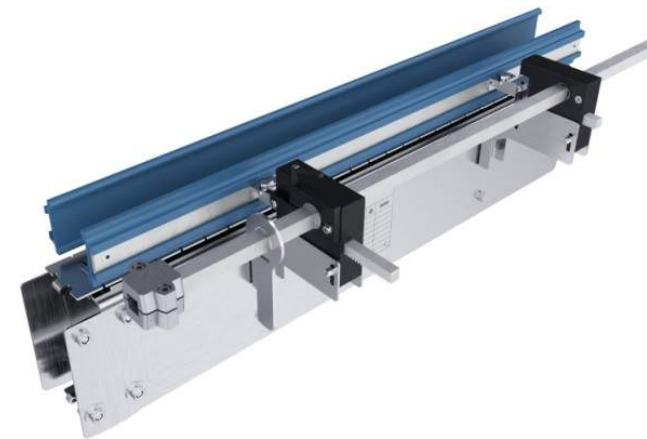
- Automatic or manual

Rail adjustment

- Automatic



- Manual





Everything from a single source

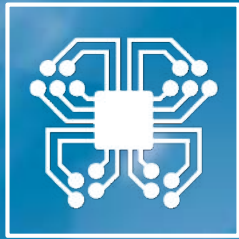
Training sessions at the KRONES Academy – trained personnel increases your line efficiency

The versatile training offer ranges from operation, servicing and maintenance to management training. We will gladly also establish your individual training programme.

KRONES Lifecycle Service – partner for performance

Also after having purchased a new machine, KRONES will take care of your line; the LCS experts are always ready to consult you and translate your goals and wishes into optimal LCS solutions.





Digitalisation



Process
technology



Bottling and
packaging equipment



Intralogistics



Lifecycle
Service

We do more.

 **KRONES**