



Linatronic 735

Smart and reliable inspection of empty containers



The latest generation of thoroughness

Whether it be material damage, contamination or the most minuscule particles of residual caustic: nothing can hide from the Linatronic. With its highly sensitive inspection modules it sees through each individual container – and only lets fault-free items pass through. Proof of its high precision sorting ability is not least apparent in its minimum false rejection rate of 0.3 percent. How is this possible? Through the standard use of DART 4.0, the latest generation of KRONES inspection software.

At a glance

- Inspection of empty containers
- Suitable for glass, aluminium and PET containers
- Modules for all-surface bottle inspection:
 - Foreign-bottle and scuffing detection
 - Side wall inspection with thread or lateral neck finish inspection
 - Sealing surface inspection
 - Base inspection
 - Infrared residual liquid detection with inner side-wall inspection
 - Detection of external chipping on the container base
 - Rust detection at lateral neck finish
 - High-frequency residual caustic detection







What's new?

- 3-in-1 inspection:
 - No more separate modules required for lateral neck finish and thread inspection
 - For the side wall inspection unit can inspect them too if required
- Test bottle program with 2D code
- Intuitive help assistant for setting up new container types
- Reduction of the conveyor supports at the infeed and discharge
 - Enhanced hygienic design
 - Improved accessibility to the hall floor, glass fragment container, etc.





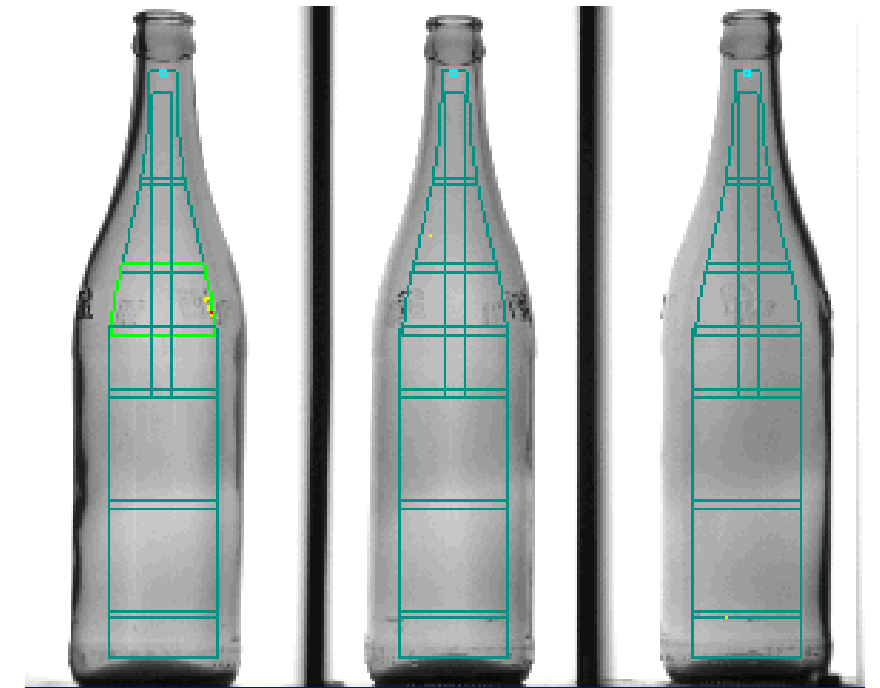
Foreign-bottle and scuffing detection

Technology used	P.E. sensor	Camera
		
Detects the following on the container	<ul style="list-style-type: none"> – Height 	<ul style="list-style-type: none"> – Height – Diameter – Contour – Colour – Scuffing
Advantages	<ul style="list-style-type: none"> – Reliably sorts out foreign containers – Prevents machine stops and increases the efficiency of the line 	<ul style="list-style-type: none"> – Reliably sorts out foreign containers – Prevents machine stops and increases the efficiency of the line – Does not require any mechanical adjustment work – Is easy to clean – Automatically sorts out the bottle pool with its scuffing detection unit



Side wall inspection with 360° view

Technology used	<ul style="list-style-type: none"> – Two modules with one camera each – 90° container rotation between the modules – A total of six views per container ➤ Result: 360° inspection of each container
Detects the following on the side wall	<ul style="list-style-type: none"> – Non-transparent contamination – Semi-transparent contamination – Bottle cracks
Advantages	<ul style="list-style-type: none"> – Reliable inspection – Cost-efficient system



Note:

The 3-1 inspection option is only possible with the 720° variant (see next slide)



Side wall inspection with 720° view

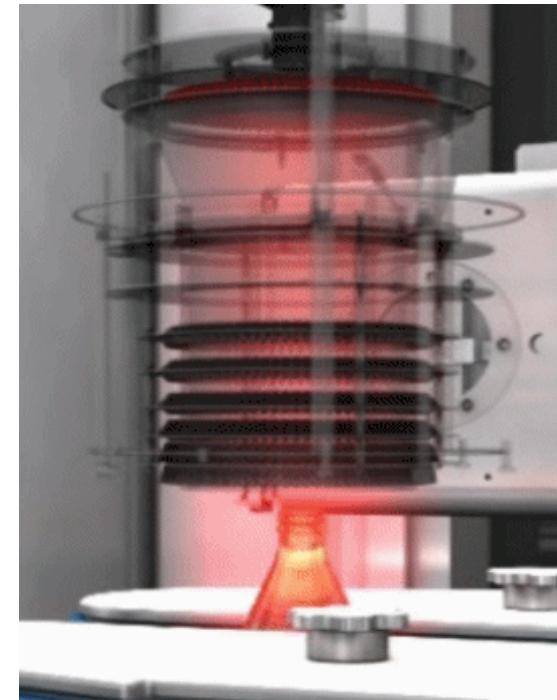
Technology used	<ul style="list-style-type: none"> – Two modules with two cameras each – 90° container rotation between the modules – A total of eight views per container ➤ Result: an up to 720° inspection of each container 	
Detects the following on the side wall	<ul style="list-style-type: none"> – Non-transparent contamination – Semi-transparent contamination – Bottle cracks 	
Additionally detects the following as a 3-1 inspection module	<ul style="list-style-type: none"> – On the lateral neck finish – On the thread 	<ul style="list-style-type: none"> – Non-transparent contamination – Vertical cracks – Chips below the neck finish – Damage – Roughness
Advantages	<ul style="list-style-type: none"> – Maximum reliability thanks to the redundant inspection system – Optimum inspection of transparent containers with scuffing or engraving – Three functions in only one module and thus low total cost of ownership 	





Sealing surface inspection

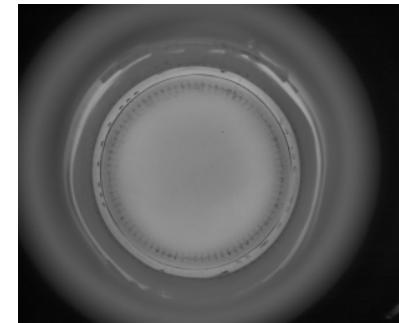
Technology used	<ul style="list-style-type: none"> – Camera – Dualflash – lights up the neck finish once from above and once from the side for two camera images
Detects the following in the neck finish area of glass bottles	<ul style="list-style-type: none"> – Damage – Contamination – Overpressed neck finish
Detects the following in the neck finish area of PET containers	<ul style="list-style-type: none"> – Damage on neck finish and neck ring – Contamination






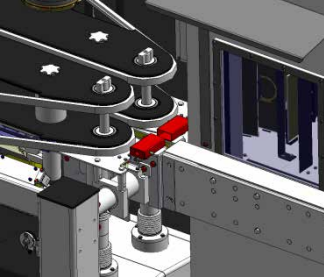
Base inspection unit

<p>Technology used</p>	<ul style="list-style-type: none"> – Camera
<p>Detects the following in the base of glass bottles</p>	<ul style="list-style-type: none"> – Non-transparent contamination – Semi-transparent contamination – Polarising films – Damage – Glass splinters
<p>Detects the following in the base of PET containers</p>	<ul style="list-style-type: none"> – Non-transparent contamination – Semi-transparent contamination – Stress cracks







Residual liquid detection unit

Technology used	Infrared	High-frequency
		
Detects the following on the container	Water and other residual liquids at a level of 3 mm above the centre of the base	<ul style="list-style-type: none"> – Water and other residual liquids at a level of 3 mm above the centre of the base – The most minimal quantities of caustic soda
Advantages		Maximum product safety





Inner side-wall and thread inspection

Technology used	Camera
	
<p>Detects the following on the inner side wall</p>	<p>Protruding semi-transparent and non-transparent contamination from a size of 1 mm (depending on the shape and quality of the container)</p>

Technology used	Camera
	
<p>Detects the following on the thread</p>	<ul style="list-style-type: none"> – Damage to the top edge of the thread – Interruptions – Roughness – Non-transparent contamination



Rust detection or detection of chips on the container base

Technology used	Camera	Technology used	<ul style="list-style-type: none"> – Camera – Lighting from below
			
Detects the following in the neck finish area	<ul style="list-style-type: none"> – Rust deposits – Mortar splashes 	Detects the following on the container base	<ul style="list-style-type: none"> – Damage



DART 4.0: The latest generation of inspection software

The cleverer the software, the more effective the inspector. To ensure that the Linatronic can take full advantage of its technical potential, it is equipped with DART 4.0 software as standard. The newest version of the KRONES software DART (Distributed Architecture for Real Time) has a self-explanatory structure, is easy to operate and, with a false rejection rate of 0.3 percent, is extremely precise.

Cameras

- New generation of matrix cameras with CMOS sensor*

Hardware

- Saving of all important production data
- EtherCAT (Ethernet for Control Automation Technology) real-time compatible bus system



* "CMOS" stands for "Complementary Metal-Oxide Semiconductor". The technology enables the integration of additional functions in the sensor chip, e.g. exposure monitoring or analog-digital conversion.



Test container program

Is the inspector working as precisely as it should? The test container program provides a clear answer to this question. For the method of operation of the individual inspection units is put to the test using test containers containing faults.

Technology used

- Multifunctional test containers
- Reflective strips with 2D code

Principle of operation

- The program is called up automatically after a specified number of containers or time
- All of the results are saved automatically with the date and time



The screenshot displays the 'Test container programme' interface. At the top, a yellow banner indicates 'Stop circuit, electronic components overridden'. The status bar shows 'Result Testbehälterprogramm 1'. Below this, there are input fields for 'Programme call no.: 1', 'Test no.: 1', 'Fed since call: 8', and 'Next call: 33000'. A second row of fields shows 'Maximum, test containers: 4', 'Detected, test container: 4', 'Fed since 1st test container: 0', and 'Next call (time): 00:00:00'. The main area contains two tables with columns for 'Group', 'Designation', 'Standard', and 'Result'. The first table lists various bottle components, all with a result of '-2'. The second table lists 'HF_Lauge IR_Restflüssigkeit', 'HF_caustic', and 'IR residual liquid', also with a result of '-2'. The bottom navigation bar includes icons for Production, Functions, Statistics, Type, and Messages.

Group	Designation	Standard	Result
1	Boden Mündung Gewinde Wand_1 Wand_2...	-2	-2
	Base	-2	-2
	Neck finish	-2	-2
	Thread	-2	-2
	Side wall 1	-2	-2
	Side wall 2	-2	-2
	Sidewall_3	-2	-2
	Sidewall_4	-2	-2
2	HF_Lauge IR_Restflüssigkeit	-2	-2
	HF_caustic	-2	-2
	IR residual liquid	-2	-2

Advantages

- Regularly checking the inspection performance guarantees highly dependable production.



Safety management

Password protection

- Production is started once an authorised person logs on
- Identification using transponder technology
- Password protection with automatic log-out function

Data backup

To ensure continuous traceability the following production data is saved automatically:

- Production data
- Parameter changes
- Malfunctions
- Results of the test container program

Trend statistics

You can follow what is currently going on in and around the inspection at any time on the touch-screen. The displayed data includes the following:

- Changes in the container pool
- Deviations in ambient conditions, e.g. dirt on the protective glass covers
- Rejection rate – the user is also automatically warned or the machine stopped if the deviation is too great





Operation and maintenance

These settings are made automatically so that the type change-over can be performed quickly and correctly.

- Conveyor belt distance
- Distance between the top and bottom conveyor belt
- Camera position

Professional assistance around the clock

Remote maintenance is performed on the Linatronic via the GRS (Global Remote Service) remote service platform. If required, a KRONES inspection expert accesses the machine via a safe internet connection in order to, for example,

- optimise the inspection units.
- set up new container types.
- train the production/operator staff.





Conveyor belts and additional packages

Conveyor belts

- Do not absorb water or foam
- Are resilient to glass
- Have microbiological safety
- Can be changed over quickly and easily

Additional packages

Would you like to adapt your Linatronic to precisely suit your production requirements? No problem - thanks to a complete range of extra equipment options

- Thread detection
- 2D code test bottle program
- ACL sorter
- Mineral ring detection
- Help assistant
- Datalyser IS analysis software





Rejection systems

The KRONES rejection system conveys containers found to be faulty reliably and easily from the production flow. You can choose from a number of different systems depending on the application and line layout.



Varioglide

- Electrical rejection unit
- Suitable for empty PET and glass containers
- The containers are rejected onto a rejection table or conveyors running parallel to one another
- Container sortation possible
- Energy-saving operation without compressed-air consumption
- Up to 72,000 containers per hour



Ecopush

- Electrical rejection unit
- Suitable for empty glass bottles
- The bottles are rejected onto a rejection table, into a collecting bin or on parallel conveyors
- Bottle sorting possible
- Energy-saving operation without compressed-air consumption
- Low noise level
- No maintenance work needed
- Up to 100,000 containers per hour
- Optionally with two pushing speeds





Benefits to you

Long-life conveyor belts

Particular care was taken when selecting the surface of the conveyor belts. It is more resilient to glass and prevents the absorption of lubricants and liquids.

Quick type change-over

The automatic adjustment of conveyors and the camera position ensure that the Linatronic is adjusted to new container types within just a few minutes.

Safety for you and your products

The Linatronic protects your consumers against unpleasant surprises. For its inspection modules scrutinise every container and detect even the smallest defects or irregularities.

Economic operation

Inspection modules capable of multitasking, energy-saving components and a false rejection rate of just 0.3 percent prove that it is also possible to create maximum production reliability with a low total cost of ownership.

Immediate round-the-clock assistance

With the GRS remote service platform your machine is directly linked with the KRONES service department: If you require assistance, an inspection expert from KRONES simply accesses the Linatronic online and immediately performs the task in hand – without having to travel to your company, at any time of the day or night.

Hygienic construction

Smooth surfaces and a reduced number of machine supports ensure that a low amount of dirt clings to them and the machine is easy to clean.



Certified ecological efficiency: Machines with enviro certification

At KRONES, the blue enviro certification stands for excellent ecological efficiency. Products that bear the enviro label have proven in an objective test procedure that they efficiently use energy and media, and that they produce in an environmentally friendly way. The requirements are defined by the EME standard that has been developed by the TÜV SÜD (technical inspection authority) for assessing production plants. The enviro test procedure has also been certified by TÜV SÜD as an independent expert. Therefore, you can be sure that an enviro label stands for ecological efficiency.

That is why the Linatronic enviro offers:

Energy efficiency

- Complete drive systems with energy-efficient PM drives
- All rejection units are operated solely electrically without additional compressed-air consumption

Media efficiency

- Detection unit for compressed-air leaks
- Omission of cooling air through the optimised control of lighting units and the use of the most up-to-date LEDs
- Minimised consumption of cleaning agents thanks to the hygienic design





Everything from a single source

Trainings at the KRONES Academy – trained personnel will increase your line efficiency

The multifaceted training offered by the KRONES Academy ranges from operation, servicing and maintenance to management training. We will gladly also create your individual training program.

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**