



FOREIGN OBJECT INSPECTION

HEUFT *eXaminer* XO



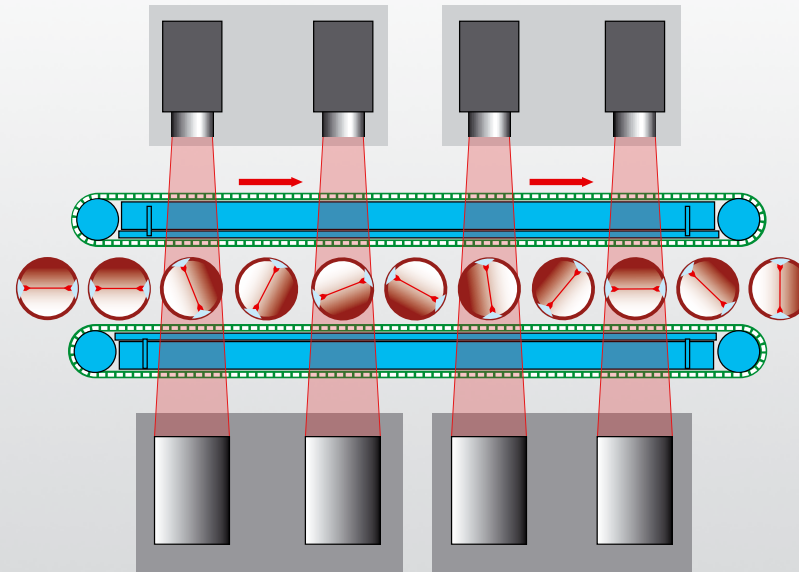
The revolutionary foreign object inspection for the non-returnable line!



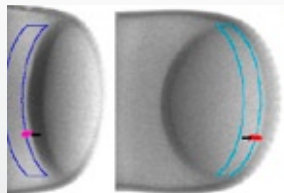
The drinks industry does not often use an empty bottle inspection before the filler along its non-returnable glass lines. It is generally assumed that the rinser cleans the containers 100%. However research along such filling lines has shown that an unexpected number of containers are contaminated with foreign objects such as glass splinters, foil and cardboard. This safety gap is filled by the HEUFT eXaminer XO by means of a revolutionary combination of an optical and a radiometric inspection.

The functions of the classic empty bottle inspector have been combined with those of a full bottle inspector after the closer, that is in the full container section. Solid foreign objects such as pieces of metal, stones, fill tubes and glass splinters, low-density sunken contaminants such as foil, paper, nutshells, insects or mould as well as chips and inclusions are detected in the complete base area using X-ray and high-performance camera technology. For this a servo-controlled belt drive aligns the container optimally at several inspection stations.

Additional detection modules have been integrated in order to identify low density foreign objects at the sidewall of the bottle. A combination of a bright field and a dark field detection even makes the detection of transparent and semitransparent foreign objects possible. The HEUFT eXaminer XO removes contaminated bottles from the production flow consistently using precise rejection systems.



X-ray inspection

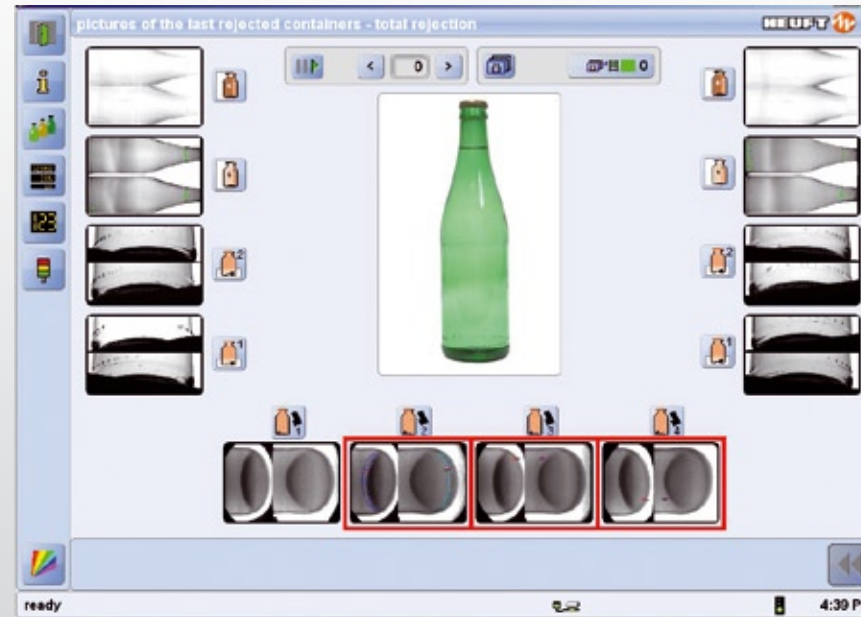


Specific rotation

The foreign object is aligned with its longest side transverse to the X-rays at least at one station due to the rotation in the belt drive. Even small foreign objects such as glass splinters and metal filings are reliably detected in this way.

Without blind spots

The container is X-rayed at an angle from the top and the bottom using two X-ray generators. „Blind“ spots in the base area are thus prevented.



Optical container inspection

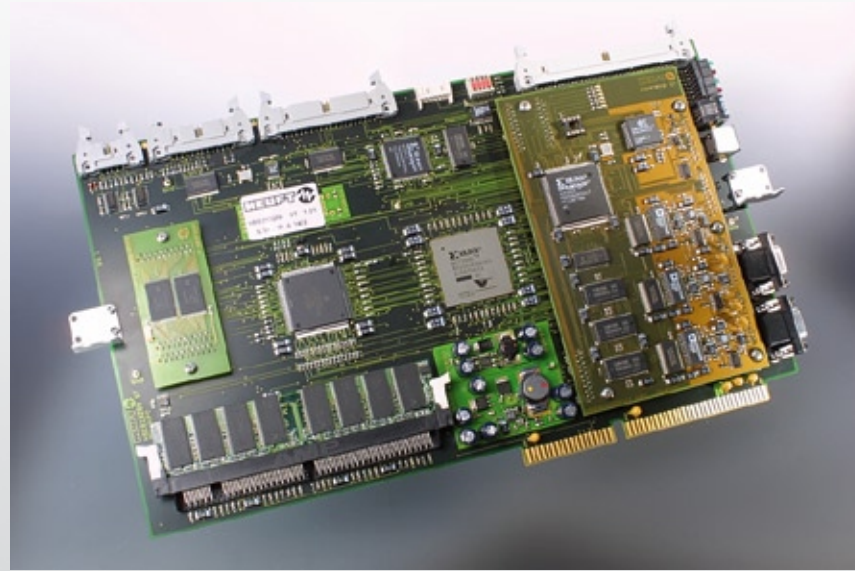


Two sidewall inspections which examine the container volume by means of a camera system are used to support the X-ray detection. Transparent and semitransparent faults such as foil, paper and insects etc. can be reliably detected by means of two different optical inspection procedures (bright / dark field detection).

The HEUFT eXaminer XO can be equipped with a specially developed detection technology in order to also identify sunken foreign objects and damage on the bottom of a bottle

which are hidden behind the edge of the base or the curved dome or covered by other material structures: cameras on both sides of the infeed take several high-resolution pictures of the base. At the same time LED strobes and mirror cabinets, which can be optimally positioned depending on the brand, ensure perfect illumination without shadows and reflections. On the one hand an extremely large viewing angle per picture is achieved because the cabinets can be lowered down a long way and the mirrors can be individually adjusted. On the other hand blurs,

distortions and dark areas are eliminated. The radiolucent conveyor chain in the HEUFT eXaminer XO is without edges and interfering recesses and so narrow that the bottom of the bottle juts out to the left and right of it in order to provide an unrestricted view. The servo-controlled belt drive turns the bottle so far that it can be inspected again in the same way from other angles of vision in the outfeed. The result: complete all-around coverage of the complete bottom of the bottle.



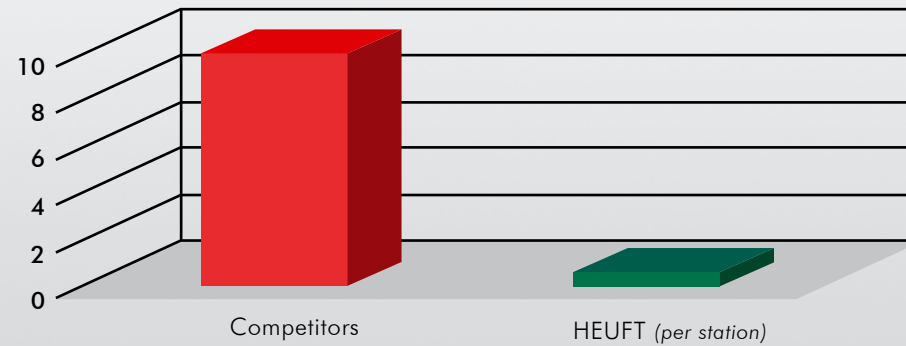
The HEUFT *reflex* image processing card

The HEUFT *reflex* image processing system



Combining two camera pictures in real time can only be achieved by using extremely powerful image processing technology. The calculating speeds of image processors available on the market are quickly exhausted in this connection and can only meet these requirements at low production outputs. These basic processing steps

can be carried out in a very short time on a hardware level by using the HEUFT *reflex* image processing card which has been specially developed for such tasks. This leaves more time for the software controlled picture analysis. The result is a level of accuracy which is unparalleled on the market.



Average current intensity [mA]

X-ray strobe

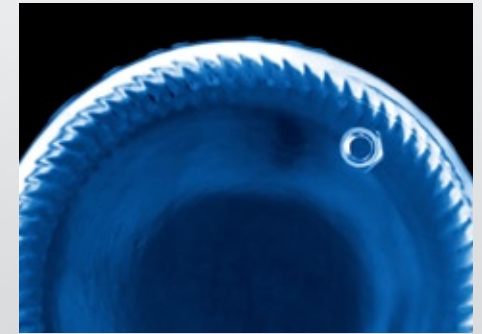
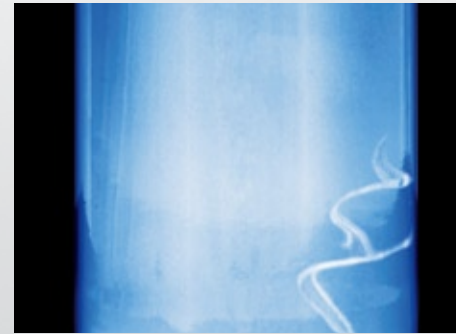
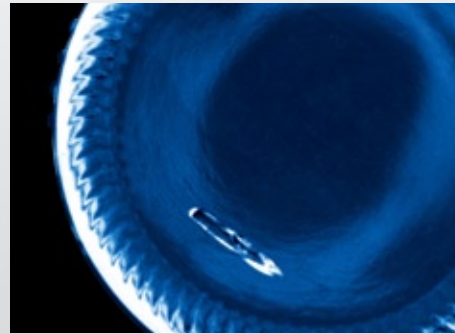
Compared to systems with permanent radiation sources the radiation exposure as regards the HEUFT eXaminer XO is considerably reduced. The amount of radiation is lowered by magnitudes due to the use of X-ray strobes.

This means that the product is subjected to considerably less exposure and

therefore complies with the increased demands of the consumer.

Furthermore the components of the inspection device are subjected to less wear and tear because they are only activated when a product actually has to be X-rayed.

In addition the low amount of radiated power means less space is required. All the necessary protection devices are integrated in the device and therefore ensure small installation dimensions.



Specifications

Detection accuracy

- faults with dimensions of 4 mm x 4 mm x 4 mm are detected in the body area with the bright field and the dark field detection
- 10 mm x 2 mm x 2 mm faults on the base are detected as faults with a reliability of at least 98% and rejected the false rejection rate (number of containers without an identifiable fault in relation to the total number of containers produced) is less than 0.2%
- a glass splinter with dimensions of 6 mm x 2 mm x 2 mm is identified as a fault with a reliability of at least 98% and rejected - the false rejection rate is less than 0.1%

The exact specifications using original sample containers can be determined for individual containers upon request.



Your cost advantages with HEUFT



We do everything in order to combine the very highest quality with fair prices:

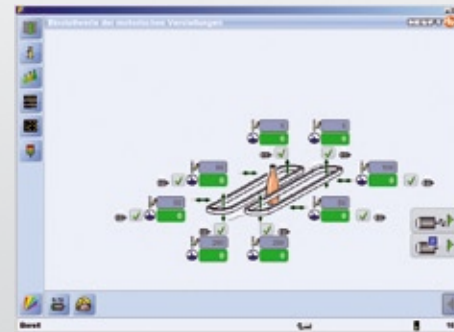
- high development achievement so that the devices are optimally geared to the task
- series production due to the modular design of the HEUFT *SPECTRUM* series
- easy integration into existing lines
- advantageous spare parts storage
- shorter downtimes
- fast changeover times
- no change parts necessary
- fast trouble shooting
- short maintenance times
- cost-cutting due to reduced downtimes and ensuring the production flow
- robust and stable components
- increased service life
- low wear and tear
- low failure rates
- the HEUFT *TeleService* cost savings - the service technician must not be specially called out
- an investment is considerably less than the costs involved due to loss of image caused by faulty products



Networking



- integrated Ethernet interfaces as well as TCP/IP access to all networks
- connection capability to a preconfigured DDE interface and SQL database
- the HEUFT *PILOT* graphical user surface with a comprehensible menu structure for easy operating
- operation possible either via jog shuttle or touchscreen on the TFT screen at the device or via a network
- automatic transfer of counter readings or fault messages by SMS to a mobile phone or by e-mail if required
- firewall protected connection to the remote service by Ethernet – the HEUFT *TeleService* can access the line directly and rectify faults at short notice by means of remote diagnosis if the customer wishes



Device operation and the HEUFT PILOT



- multilingual, simply arranged, comprehensible menu structure with extensive help boxes and complete online user's manual - the user interface can be supplied in any language / graphic characters if required
- password-protected operator levels which can be freely adjusted to suit the tasks of the operating staff, the quality assurance department etc.
- easy identification of spare parts with online and offline spare parts list with photographs and exploded views - the order can be sent from the device either to an internal purchasing department or directly to HEUFT
- the operator receives all the information during a brand changeover regarding the necessary steps in order to exclude possible operating errors
- clear fault messages with service notes and support in order to avoid downtimes

The HEUFT *flip*The HEUFT *DELTA-K*The HEUFT *DELTA-FW*

The HEUFT *rejector*

The following rejection systems can be integrated into the HEUFT eXaminer XO foreign object inspection:

The HEUFT *flip*

- single-segment, high-speed rejector for cylindrical containers
- particularly smooth transversal acceleration of the containers
- very compact construction

The HEUFT *DELTA-FW*

- reliable upright rejection due to a virtual follow-on multi-segment rejection curve
- specially suitable for heavy containers

The HEUFT *DELTA-K*

- multi-segment rejector as a virtual follow-on guide rail

- the upright rejection of shaped containers by means of single point guidance.

The HEUFT *mono*

- single-segment, high-speed rejector for cylindrical containers
- very compact construction
- suitable for steady containers





HEUFT eXaminer XL



HEUFT eXaminer XA



HEUFT InLine

Other HEUFT products

The following products can be used alternatively for similar tasks:

The HEUFT eXaminer XL

- foreign object detection especially for the drinks industry
- optimised for the detection of small glass splinters
- up to 72,000 bottles per hour

The HEUFT eXaminer XA

- low radiation rates
- the detection of foreign objects even on curved container bases
- an optimal detection by using the HEUFT *reflex* image processing technology

The HEUFT floater

- optical detection of floating foreign objects in transparent liquids

The HEUFT InLine

- empty bottle inspection
- a varied range of modules for the inspection of containers before they are filled





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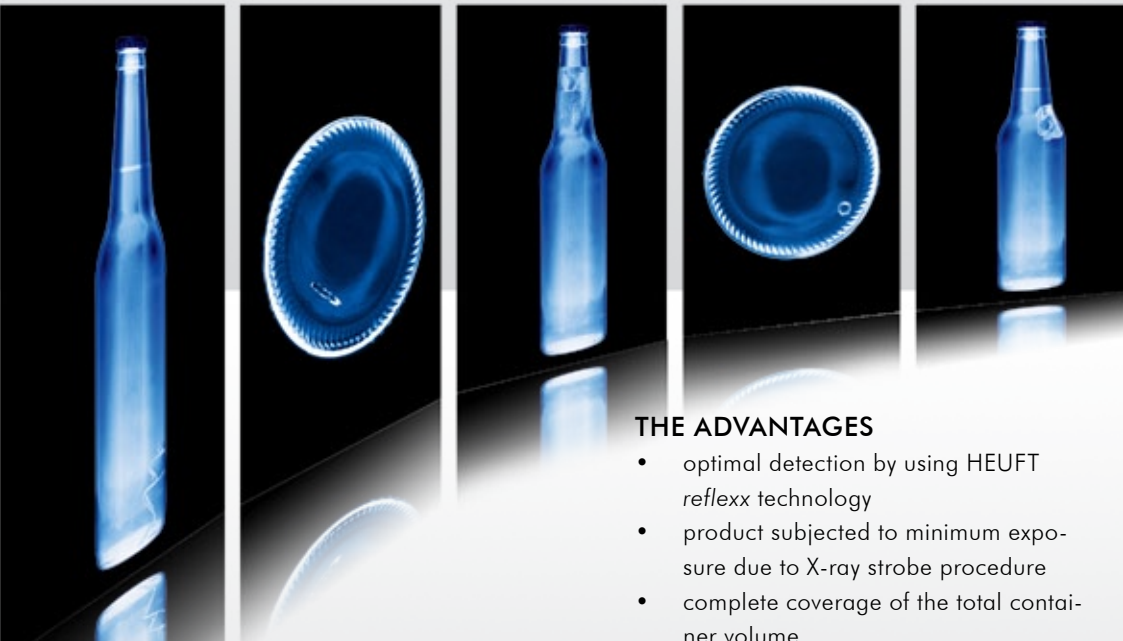
The HEUFT *eXaminer XO* foreign object inspection for drinks in non-returnable glass bottles

A unique combination of optical and radiometric measuring techniques for filled closed containers
[more] *

The detection of solid foreign objects using an X-ray inspection
[more] *

360° base inspection - even of transparent foreign objects
[more] *

Optical base and sidewall inspections
[more] *

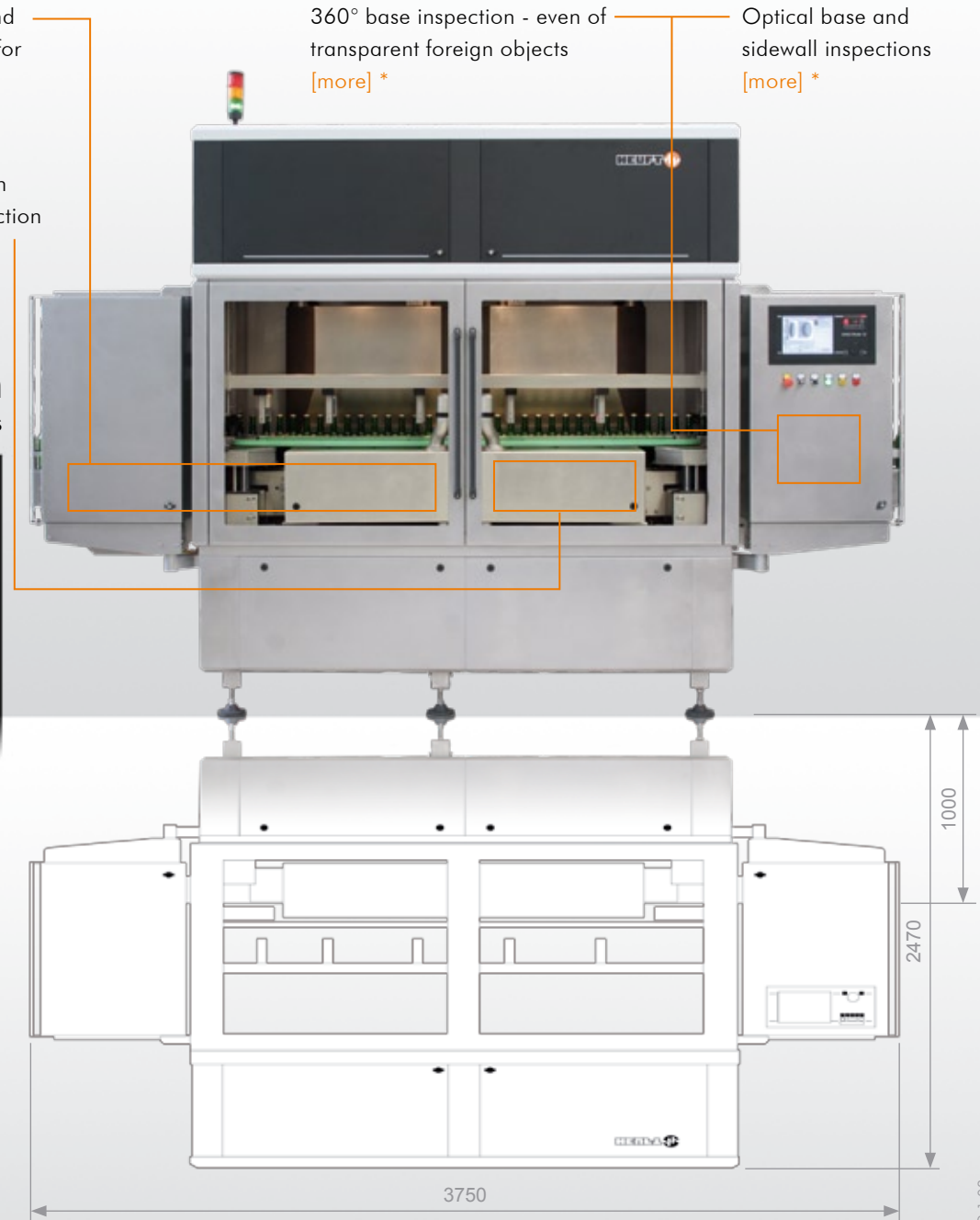


FUNCTIONS

- the detection of solid foreign objects such as glass and metal
- the identification of low density foreign objects such as transparent and semitransparent foil, paper, insects, nutshells and mould
[more] *

THE ADVANTAGES

- optimal detection by using HEUFT *reflexx* technology
- product subjected to minimum exposure due to X-ray strobe procedure
- complete coverage of the total container volume
- ideal container alignment by means of a specially developed belt drive
- automatic function monitoring by means of tools such as a standardised test bottle log, reject verification and message stack
- up to 72,000 bottles per hour
[more] *



* [more] detailed information on www.heuft.com/xo

