



**FOREIGN OBJECT INSPECTION**

**HEUFT *eXaminer* XA**



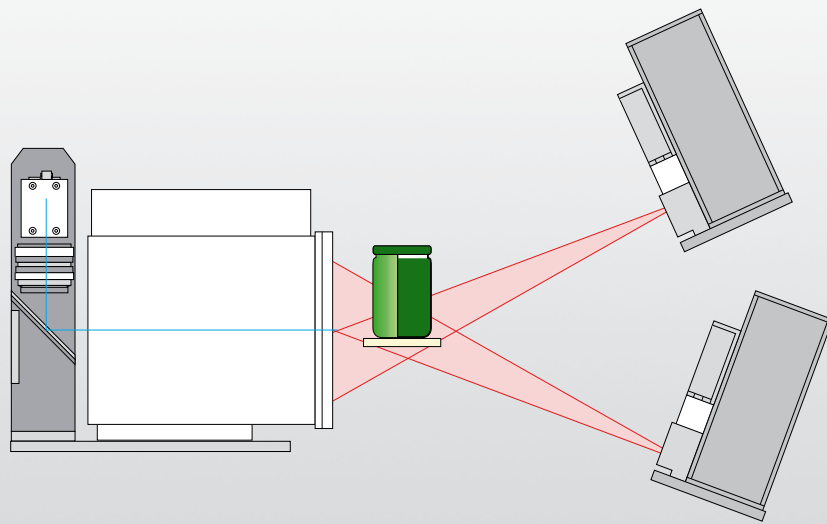
## The universal foreign object inspector!



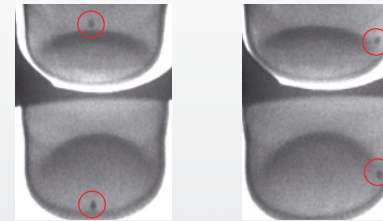
It is of vital importance to detect foreign objects which have entered a product so that they cannot be detrimental to the consumer or the manufacturer. The compact HEUFT eXaminer XA identifies such foreign objects even in non-transparent products. Pieces of glass caused by breakage or manufacturing faults can enter the container when glass containers are being filled. Metal foreign

objects or stones can be transported in the product to be filled and remain in the container during the filling process as a result depending on the product. These foreign objects can be detected by the HEUFT eXaminer XA by means of X-ray technology and the downstream image processing system and the faulty containers reliably rejected. The device is most suitable for retrofitting existing

filling lines due to its compact design and very low radiation levels. All the necessary protection devices have been integrated into the device. The HEUFT eXaminer XA is suitable for the inspection of liquid, paste-like as well as powdery and firm products in commercially available containers made of glass, metal, plastic and cardboard.

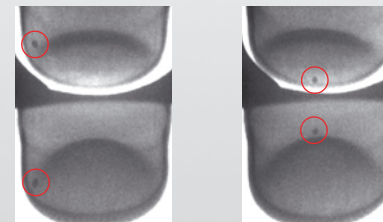


Foreign object



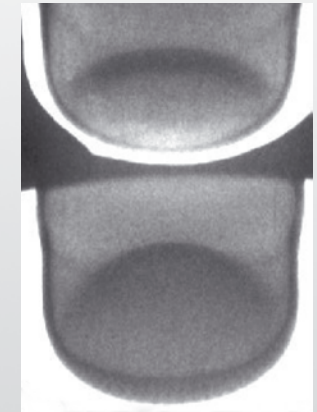
At the front

On the right



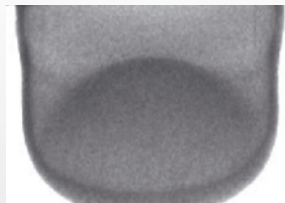
On the left

At the back



Camera picture of a good container

### Base inspection



#### Compact design - „no blind spots!“

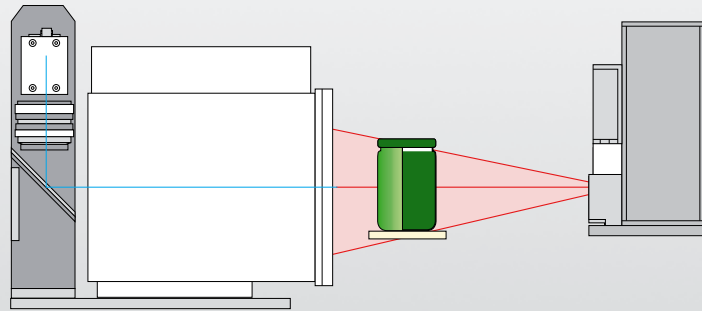
Heavy foreign objects sink to the container base. A precise inspection in this area is difficult due to the frequently curved bases. This task is solved in a convincing way by the HEUFT eXaminer XA.

The lower area of the container is X-rayed at an angle from the top and

the bottom using two X-ray generators. Blind spots are thus prevented.

The pictures of the two views are evaluated together. The software which has been specially developed for this purpose links the picture information from the two picture areas. This procedure increases the accuracy of the inspection enormously.

In addition the vertical arrangement of the X-ray generators makes a very compact construction of the inspection possible and contributes considerably to the small dimensions of the HEUFT eXaminer XA.



Foreign object



Foreign object



Foreign object



Foreign object



Camera picture of a good container

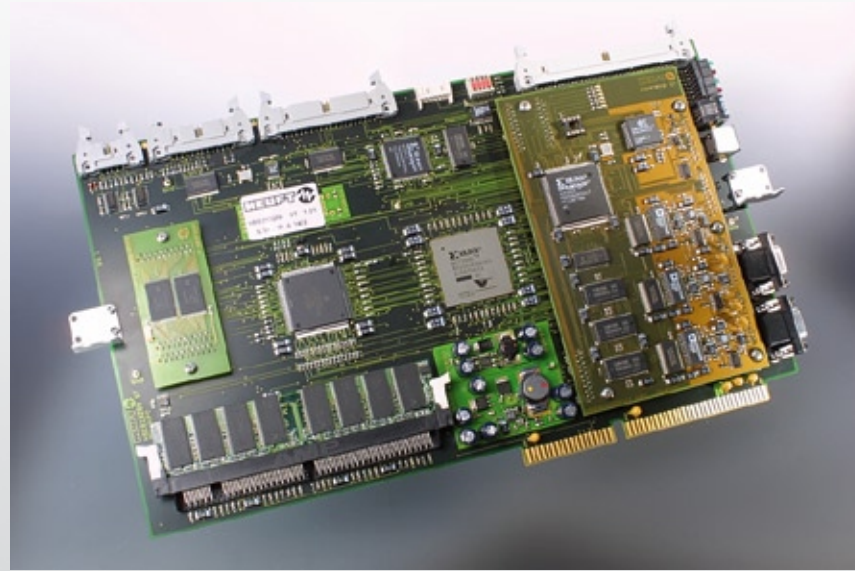
## Sidewall inspection



Foreign objects sink slowly to the bottom or not at all in paste-like or very thick products depending on their specific gravity and shape.

The sidewall inspection is used in this case as an extension of the base detection. Either one or two inspection modules are used depending on the height of the container.

Areas where the transition between the headspace and the product or the glass thickness at the edge make the inspection difficult can be exactly examined with the evaluation software developed by HEUFT for this task.



The HEUFT *reflex* image processing card

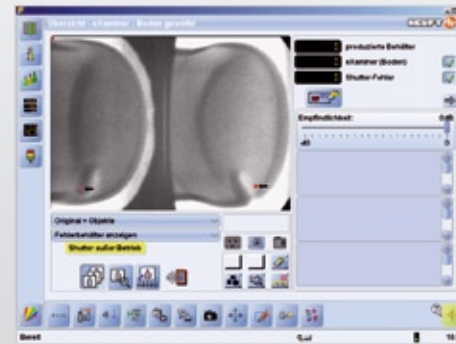
## The HEUFT *reflex* image processing



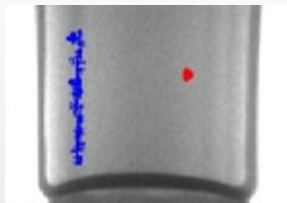
Combining two camera pictures in real time can only be achieved by using extremely powerful image processing technology. The calculating speeds of image processors available on the market are quickly exhausted in this connection and can only meet these requirements at low production outputs.

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 software controlled picture analysis. The result is a level of accuracy which is unparalleled on the market.



## The HEUFT *nbx* – filter technology

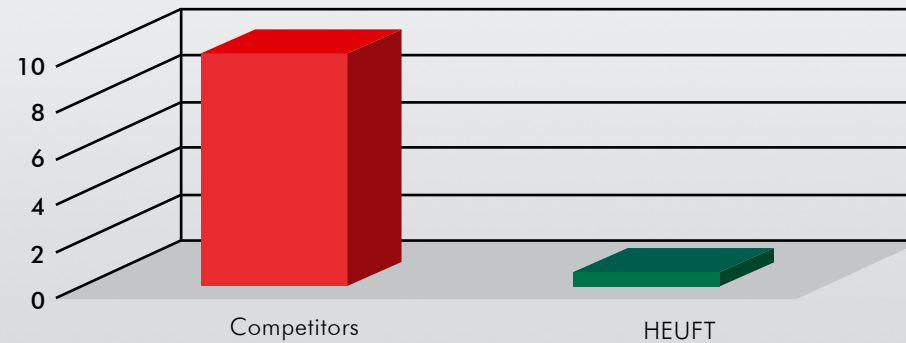


The non-homogeneity of a product and variations in the thickness of the glass cause an uneven absorption of the X-radiation. This effect has to be identified and taken into consideration by the software so that it does not cause false detections.

The HEUFT *nbx* technology provides filters e.g. which identify knurling marks

and differentiate them from foreign objects. In this way small foreign objects behind a glass facet can also be detected.

In contrast to other systems the HEUFT eXaminer XA does not depend on the alignment of the container.



Average X-radiation

## X-ray strobe

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

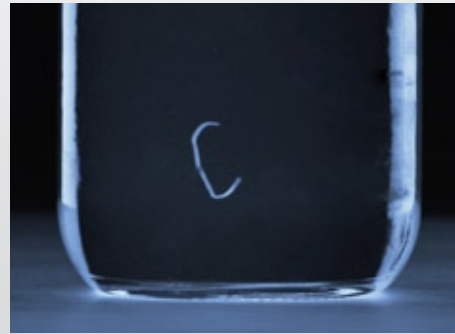
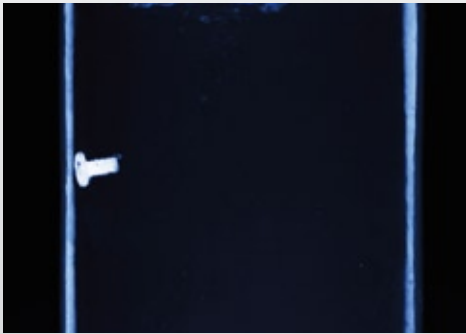
This means that the product is subjected to considerably less exposure and therefore complies with the incre-

ased demands of the consumer in the food sector.

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

The following specification values are aimed for as regards the base and side-wall inspection in the case of standard containers with curved bases:

- A glass ball with a diameter  $> 3\text{mm}$  is identified as a fault with a reliability of at least 98% and rejected.
- A steel ball with a diameter  $> 1\text{mm}$  is identified as a fault 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 0.1%.

The exact specifications for original sample containers is determined for individual containers upon request.



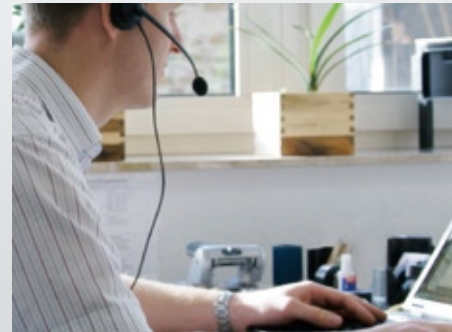


## The cost advantages with HEUFT



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

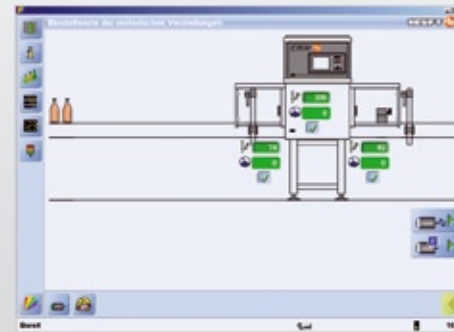
- high development achievement so that the devices are optimally geared to the task
- series production due to the modular design of the HEUFT *SPECTRUM* series
- easily integrated into existing lines
- advantageous spare parts storage
- shorter downtimes
- fast changeover times
- change parts not necessary
- fast trouble shooting
- short maintenance times
- cost-cutting as a result of reducing downtimes and ensuring the production flow
- robust and stable components
- increased service life
- minimum wear and tear
- low failure rates
- the HEUFT *TeleService* - cost savings: the service technician must not be 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 pre-configured 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, easy to understand menu set-up with extensive help boxes and complete on-line user's manual. The operating surface can be supplied in any language/graphic characters if required.
- Password-protected operator levels, can be adjusted to suit the tasks of the operating staff, 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 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.

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

## The HEUFT *rejector*

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

### The HEUFT *flip*

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

### The HEUFT *DELTA-FW*

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

### The HEUFT *DELTA-K*

- A 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*

- A single-segment, high-speed rejector for cylindrical containers.
- A very compact construction.
- Suitable for steady containers.





The HEUFT eXaminer XL



The HEUFT eXaminer XO



The HEUFT InLine

## Other HEUFT products



The following products can be used alternatively for similar tasks:

### The HEUFT eXaminer XL

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

### The HEUFT eXaminer XO

- foreign object detection specially for non-returnable lines for the drinks industry
- additional optical detection of foreign objects in a liquid
- up to 72,000 bottles per hour

### 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 use of the HEUFT *nbx* filter technology makes it possible to differentiate between foreign objects and container structures/product inhomogeneities and therefore reduces the false rejection rate of the device.  
[\[more\]](#) \*

One casing can accommodate several X-ray generators and cameras.  
[\[more\]](#) \*

Graphic display of all the statistically recorded values  
[\[more\]](#) \*

Compact X-ray generator  
[\[more\]](#) \*

## The HEUFT *eXaminer XA* foreign object inspection for paste-like and liquid food



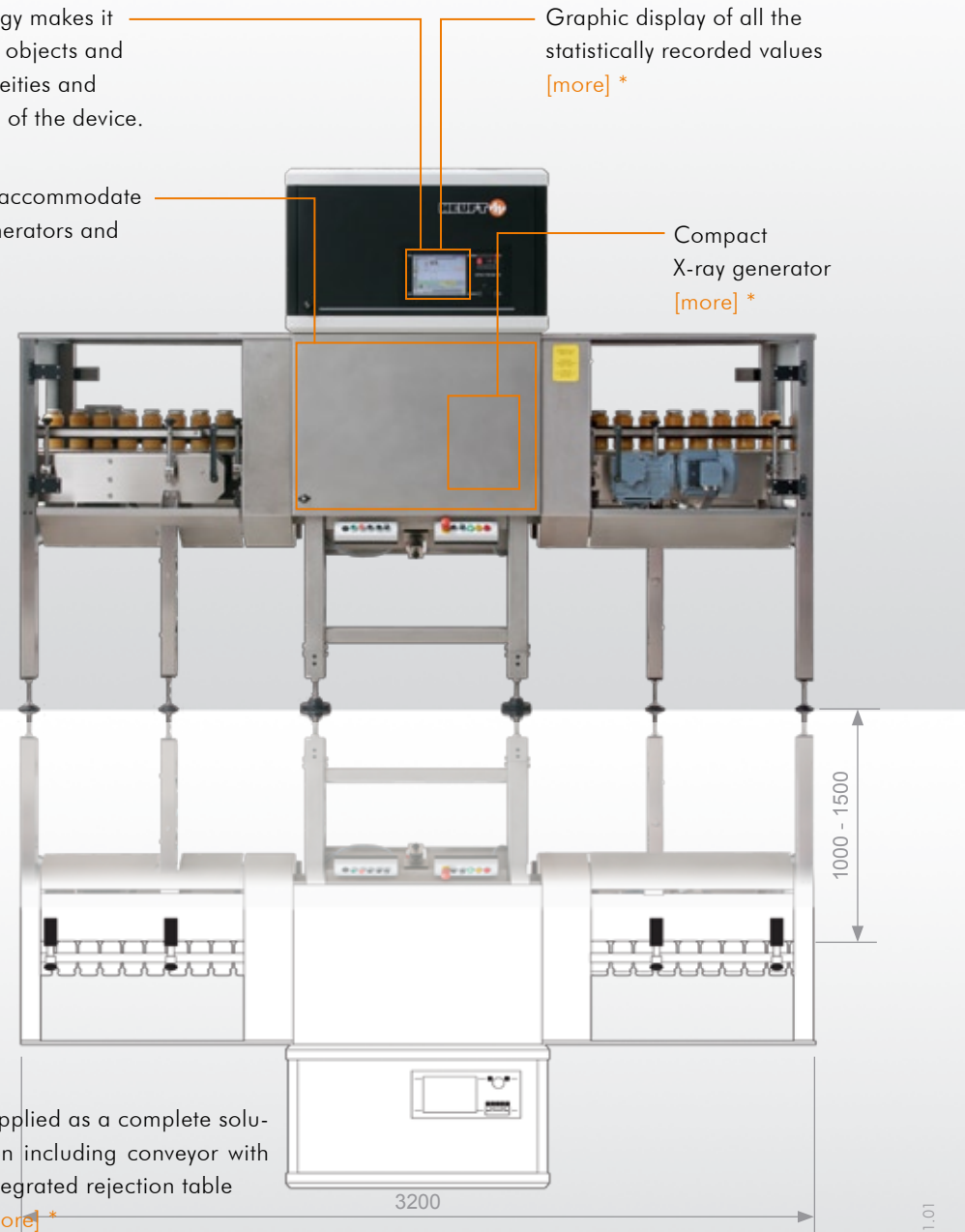
### FUNCTIONS

- the detection of foreign objects such as pieces of broken glass, metal splinters and stones
- base detection and optional sidewall detection  
[\[more\]](#) \*

### THE ADVANTAGES

- low radiation dose for all containers irrespective of the speed at which they pass through
- 100% detection even in the case of curved container bases
- optimal inspection by using the HEUFT *reflexx* technology
- extremely compact design
- up to 60,000 bottles per hour
- the HEUFT *SPECTRUM TX* basic unit with a high degree of operating convenience due to the HEUFT *PILOT* graphical user interface

- supplied as a complete solution including conveyor with integrated rejection table  
[\[more\]](#) \*



\* [\[more\]](#) detailed information on [www.heuft.com/xa](http://www.heuft.com/xa)

