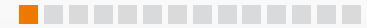




LEAKAGE CHECK

HEUFT *squeezer*



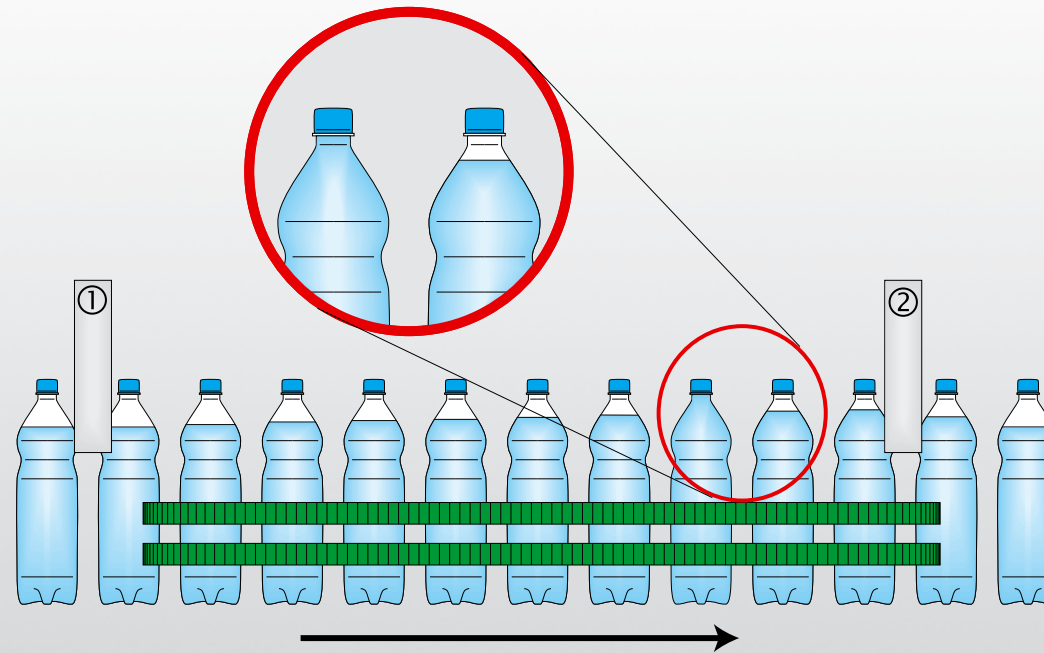
Identifying leaks with precision



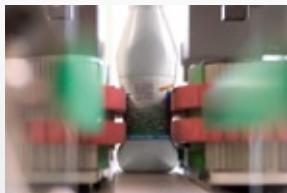
Sensitive drinks such as fruit juices or drinking yoghurts are frequently filled into PET bottles. The safety of the product and with that the health of the consumer is seriously put at risk if they should leak. The systems of the HEUFT *squeezer* range put things right. The inspection devices for checking the tightness even identify microscopically small leaks as well as stress cracks, leaks in the closure system, faulty foil closures and cracks in the sidewall.

For this the fill level of the container is measured whilst being transported on the conveyor first of all and then in a controlled compressed condition. The two results are compared to each other. A pressure measurement in a compressed condition can further improve the result depending on the processed product. The inspection results are so exact that even leaks which can hardly be seen with the naked eye and can cause the product

to go off prematurely or to seep out of the packaging are reliably detected. This protects the consumer's health and the outside world from the product. The HEUFT *squeezer* systems check the filling quantity for overfilling and underfilling, monitor the filler valves and closer heads and provide a detailed filler / close analysis at the same time.



The leakage check



The HEUFT *squeezer* finds even the smallest leaks. Two measuring principles are available which are just as precise as effective:

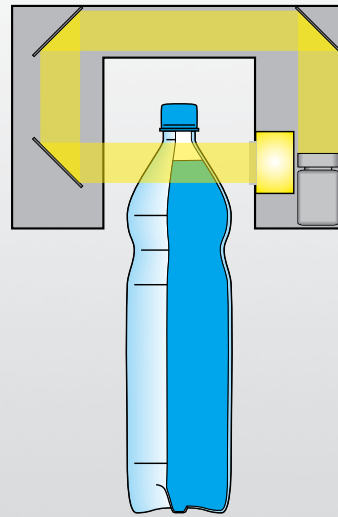
Pressure is applied to the container by means of a belt which grasps the body of the container from the side during the comparative inspection based on the fill height measurement. The fill level rises more if the container has a leak than in

the case of a container without a fault. The fill level is measured once in a non-compressed condition ① and once in a compressed condition ② in order to take existing differences in the filling quantity or the container height into account. Comparing the measurements yields the result.

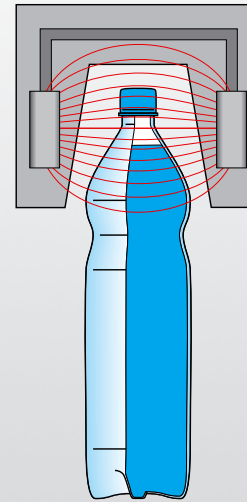
The resistance with which the container counters the pressure of the belt is che-

cked during the measurement based on pressure. This is higher in the case of a tight container than that of a container with a leak.

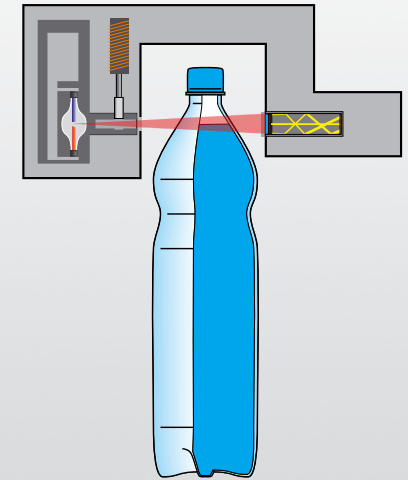
The measuring result can be improved by combining the two methods.



The operating principle of the camera inspection



The operating principle of the high frequency measurement



The operating principle of the X-ray measurement

Fill height check



Underfilling as well as overfilling are conditions which are not wanted (by the customer, the legislator or the producer). A measurement with camera, high frequency or X-ray technology provides the best result depending on the container and the filled product.

Transparent containers can be checked optically. A stroboscope light illumi-

nates the container from the side. The light is directed via mirrors to a CCD camera which takes a picture of the fill level.

The containers pass through an electric field in the case of the high frequency technology. The field is influenced depending on the amount of the product in the container. This change is mea-

sured and makes an exact conclusion regarding the fill level possible.

The product attenuates the measuring beam in the case of the fill level examination by means of the X-ray measurement. A receiver records this and the fill level of the container is provided by evaluating the result.

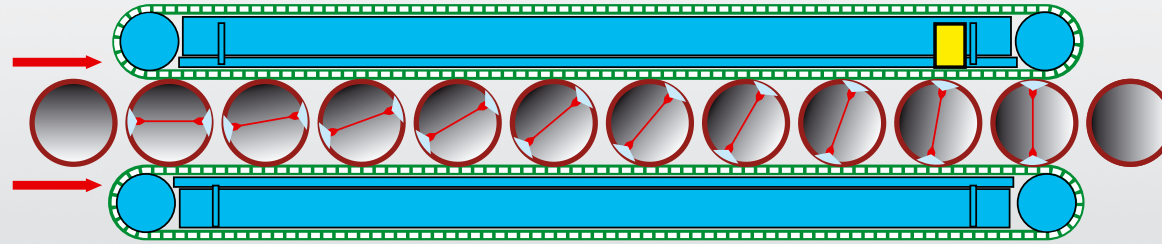


Diagram of the rotation principle and the position of the pressure measurement (yellow)



Pressure test

In many filling plants material and energy costs are saved by filling the product in plastic containers with walls which are increasingly thinner.

They have to build up a certain internal pressure, e.g. by injecting liquid nitrogen, in order that they have sufficient stability. The necessary stability is not achieved if the container has a leak.

The HEUFT *squeezer* measures the resistance with which the container counters the pressure of the conveyor belts in order to check the internal pressure. The simultaneous rotating of the container whilst being transported in the belt area ensures that no leaking points remain uncovered. Therefore a 360° examination is guaranteed.



Closure inspection



The closure is the part of the container requiring the most attention regarding the tightness. HEUFT confronts the multitude of closure systems and the different test criteria relating to these using specialised procedures in order to achieve the optimal inspection result.

Photocells can be used universally in order to check for excessive height.

Camera-based systems check the position and integrity of the closure. For example a missing nozzle behind a transparent cap can be detected in this way.

The presence of metal foil closures is inspected by means of sensors which work inductively and canted closures can be identified by means of ultrasonic sensors.

The modular construction of the HEUFT *squeezer* makes it possible to combine different inspection modules which suit the requirements exactly.



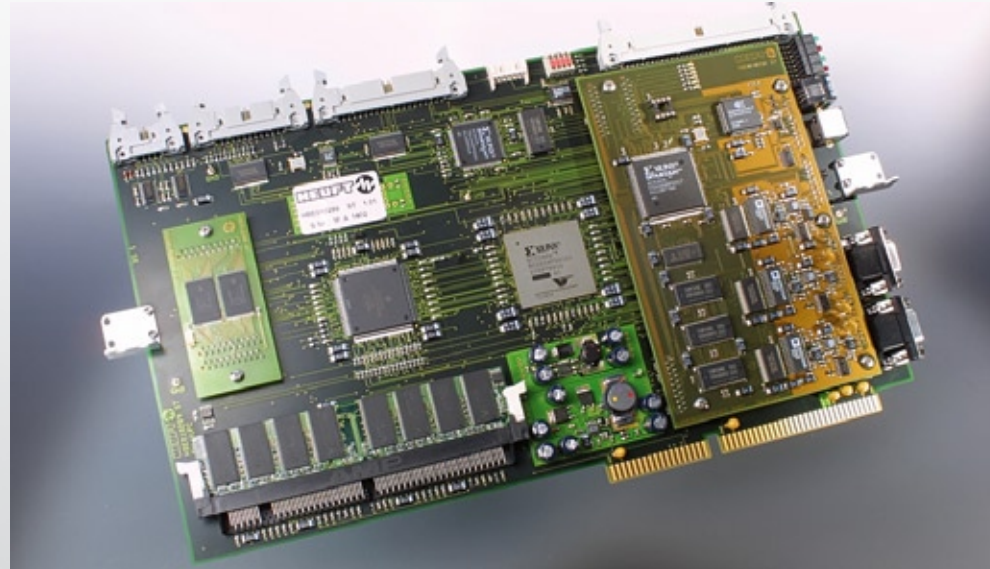
For all cases: three versions



There are three versions of the leak check available depending on the on-site tasks: the HEUFT *squeezer* QA standard system is the right choice for healthcare lines where a product change is only rarely necessary. This device manages to change to other packaging formats semi-automatically. The servo control of the HEUFT *squeezer* QS adjusts the height and the passage width of the belt drive and the position of the measuring bridges fully automatically during a product

change for the fill level detection. This saves valuable time and at the same time human resources in the case of a great variety of products and packaging. Misadjustments due to operating errors are ruled out. The product adjustments can also be reproduced full automatically in the case of the HEUFT *squeezer* QL. In addition the belt drive is considerably longer than that of the two other variants. The result: increased inspection time for a considerably higher detection reliabil-

ity. It quadruples itself with regard to the size of the hole at the same transport speed. Even microscopically small leaks are precisely identified. Alternatively the already impressive detection accuracy of the two more compact variants can be achieved at higher transport speeds. In addition the system, which is equipped with a central lubrication and a contact strip cooling unit as a standard (just as the HEUFT *squeezer* QS), can process particularly large-format containers.



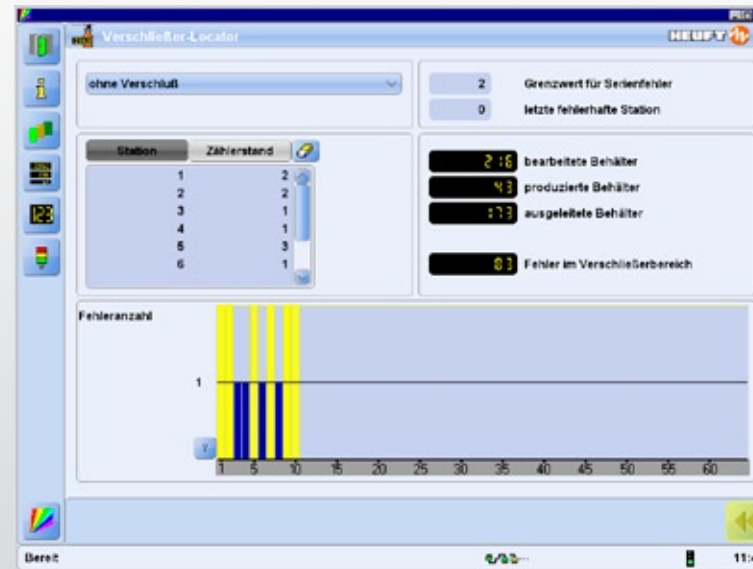
The HEUFT *reflex* image processing card

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.



Screenshot: overview showing the performance of the individual closer heads

Filler / closer management



It is not only important to detect a fault but also to eliminate its cause. The HEUFT *squeezer* provides the operator with an integrated tool in order to make it easier to find the cause: the filler / closer management.

Information regarding the overall production quality can be obtained on the one hand and the performance of up-

stream machines such as the filler and closer can be monitored by means of statistical methods on the other hand using this system.

For example if a certain valve regularly underfills this is detected by the filler management system of the HEUFT *squeezer* and a warning message emitted.

The graphic preparation of the data helps to compare the performance of the individual valves. This system supports filler maintenance and troubleshooting should the need arise.



Limit values	Min.	Max.
Container diameter	40 mm	170 mm
Container height	100 mm	350 mm
Required headspace <i>(in the case of a 100 mm container height)</i>	10 mm	25 mm
Required headspace <i>(in the case of a 350 mm container height)</i>	10 mm	50 mm
Maximum conveyor speed	1.5 m/s	

Specifications



The HEUFT *squeezer* detects faults in accordance with the following specifications for PET and HDPE bottles.

Conveyor speed:

- up to 1.5 m/s

Fault size:

- a leak in the head area of a container which is greater than 0.2 mm² and which has an unrestricted flow is detected with a probability of more than 99%

False detection rate:

- less than 0.1% of the containers examined are falsely rejected

The HEUFT *DELTA-K*The HEUFT *DELTA-FW*The HEUFT *mono*

The HEUFT *rejector*

HEUFT has a suitable rejector for each task. The following rejection systems are used during the processing of plastic containers:

The HEUFT *DELTA-K*

- upright rejection of containers or rejection into a bin at production speeds of up to 72,000 bph

- specially suitable for shaped containers due to adjustable contact point

The HEUFT *DELTA-FW*

- upright rejection of containers or rejection into a bin at production speeds of up to 72,000 bph
- lying containers on the conveyor can be cleared away

- virtual follow-on multi-segment rejection curve

The HEUFT *mono*

- rejection into a bin at production speeds of up to 72,000 bph
- competitive, multifunctional system





Your cost advantages with HEUFT



We do everything in order to provide the highest quality at the best price:

- the HEUFT *SPECTRUM* range with a uniform hardware and software architecture
- a future-proof investment due to modular construction with simple retrofitting, upgrading and converting options
- minimum cleaning required due to a design which is in accordance with the HEUFT *CleanDesign*

- high-performance image processing specially developed for the task and its requirements
- easy integration into existing lines
- minimum changeover times
- no change parts necessary
- minimum maintenance required due to the use of robust and stable components
- long service life
- space-saving construction
- advantageous spare parts storage

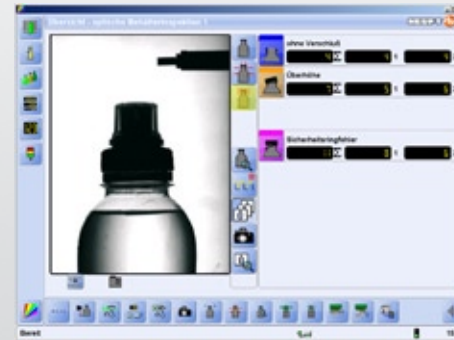
- fast trouble shooting due to the HEUFT *PILOT* graphical user interface
- easy identification of wearing parts and spare parts due to an integrated spare parts catalogue with exploded views and photographs
- connection to the HEUFT *TeleService* - fast trouble shooting by means of help for self-help



Networking



- operation possible either via jog shuttle or touchscreen on the TFT screen at the device or via a network
- integrated Ethernet interfaces as well as TCP / IP access to all networks
- the HEUFT *PILOT* graphical user interface with a comprehensible menu structure for easy operating
- connection capability to a preconfigured DDE interface and SQL database
- 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 via the Internet - the HEUFT *TeleService* can access the equipment 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 down-times



The HEUFT VX

The HEUFT *FinalView FX*The HEUFT *pakCheck*

Other HEUFT products



The following products can be used alternatively for similar tasks:

The HEUFT VX

- leakage check for glass bottles
- extensive possibilities for filler management

The HEUFT *basic*

- internal container pressure measurement

- vacuum check
- up to 72,000 containers per hour

The HEUFT *FinalView FX*

- fill level measurement with high frequency, X-ray, camera or infrared technology
- optical all-around check of the finished product
- up to 72,000 containers per hour

The HEUFT *pakCheck*

- leakage check for carton packages
- up to 72,000 containers per hour



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The HEUFT squeezer leakage check for plastic containers



FUNCTIONS

- leakage check
- closure inspection
- internal container pressure measurement
- overfill and underfill check
- optional servo-controlled belt drive for fully automatic brand changeovers

- a longer belt drive (optional) for a longer inspection time and maximum detection reliability as well as the inspection of larger packaging
[more] *

THE ADVANTAGES

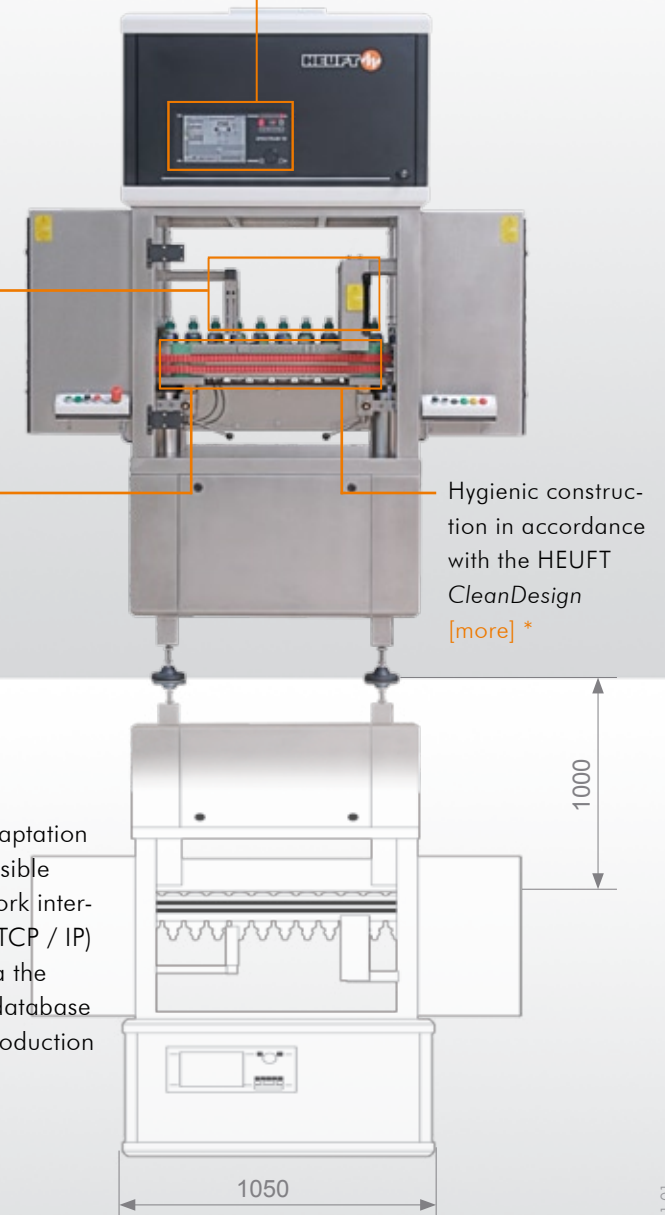
- continuous quality assurance by means of online detection
- increased effectiveness for the filler / closer system by means of integrated analysis tools

Outstanding detection performance due to the unique linking of different measurement technologies
[more] *

Graphic editing of the data extracted
[more] *

Wear-resistant belt guidance due to automated interval lubrication
[more] *

Hygienic construction in accordance with the HEUFT CleanDesign
[more] *



- modular design makes an adaptation to company-related tasks possible
- integrated, future-proof network interface (Industrial Ethernet and TCP / IP)
- remote service connection via the Internet and the SQL / DDE database interface for storing all the production data
[more] *

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

