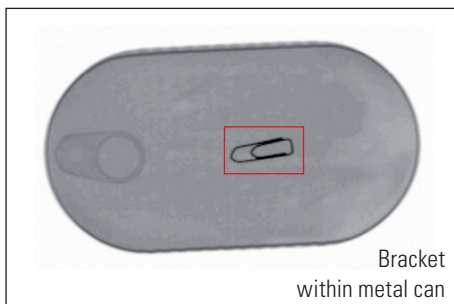
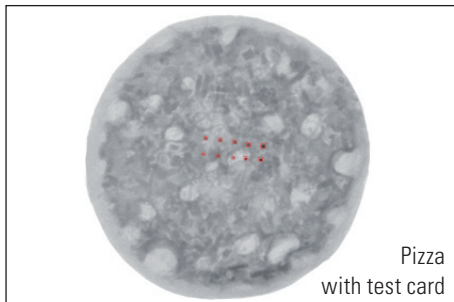


RAYCON D

Product inspection system for piece goods

- ✓ **End of line product inspection**
- ✓ **Inspection of medium to large sized packages**
- ✓ **Precise Inline-Detection of metallic and non-metallic foreign bodies**
- Foreign body detection at a maximum level (up to 0.6mm particle size)
- Efficient, user-friendly product setup (only 5 product samples necessary for automatic product setup)
- Outstanding hygienic design: Quick accessibility, tool-free maintenance, maximized uptime (Conveyor belt exchange within 2 minutes – 1 Person only)
- Conformity with guidelines within the food industry (BRC-, IFS- und HACCP)



RAYCON D

Performance features

Easy-to-maintain design of the RAYCON D product inspection system:



RAYCON D product inspection systems detect all contaminants that due to their density, chemical composition, or mechanical dimensions absorb X-radiation to a lesser or greater degree than the surrounding product. For example, metal, glass, ceramics, and stone contaminants in food. RAYCON D will also detect some plastics (e.g. PVC, rubber) as well as other product defects (e.g. cracks, trapped air). Desired "contaminants" (e.g. aluminium clips on sausage chubs) can be masked out.

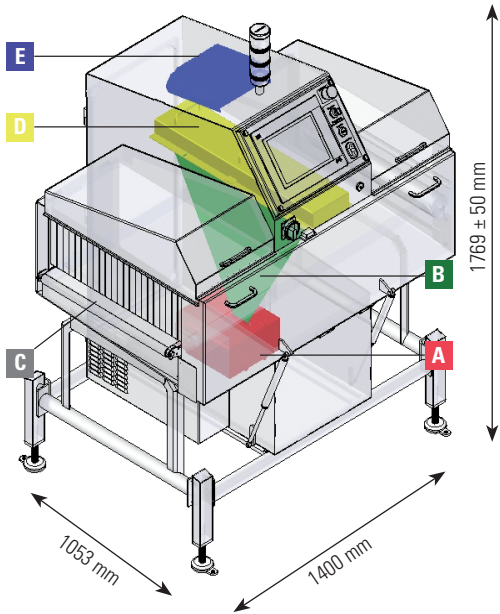
Design & Hygiene: Time reduction for maintenance due to:

- Sloped surfaces, best possible accessibility, Water flows off easily
- Shielding covers easily accessible (tool-less) (Gas struts keeping covers at maintenance position, conveyor fully accessible for cleaning)
- Shielding curtains removable (tool-less) optional wear off layer for reduction of residua caused by to sharp packaging edges
- Front access panel (tool-less) for cleaning access
- Conveyor belt exchange within 2 minutes for 1 operator (belt removal towards operator direction, no need for back end access)
- Conveyor guiding (self guiding, reducing the need for re-adjusting belt)
- Sliding plates made of stainless-steel, divided into light-weight parts, tool-less removal

X-Ray technology:

- Long-life x-ray tube with integrated HV-supply, power adjustable per product increasing tube lifetime, air cooling with low-maintenance required air conditioner
- High resolution x-ray detector (foreign bodies at a diameter of 0.6mm detectable)
- Excellent radiation protection in accordance with statutory X-ray regulations (<1 mSv/a)

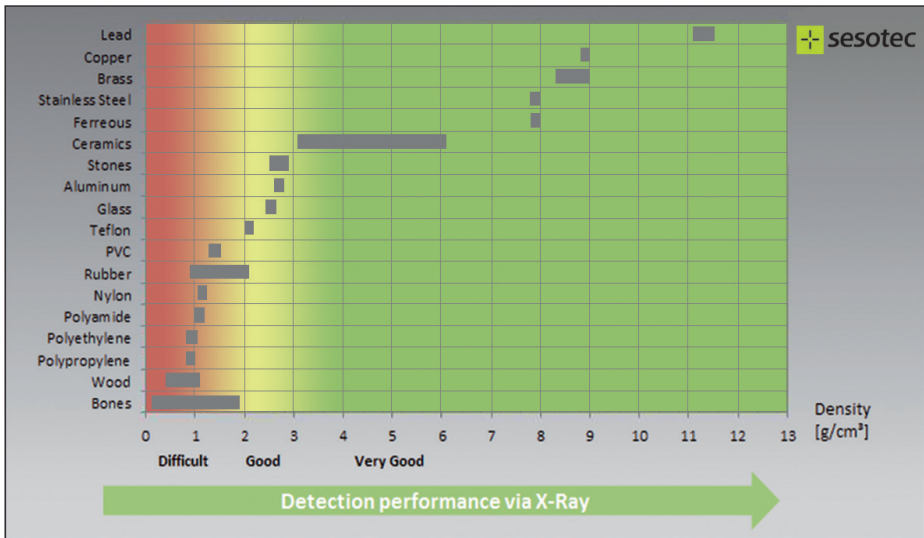
Function



The system comprises the following main components:

- A X-ray tube**
X-rays are emitted from the tube and collimated through a narrow slot, entering the product as a fan shaped beam from bottom to top. Product height and density determines the amount of radiation absorbed.
- B X-ray beam**
- C Transport system**
A fixed speed conveyor belt transports product through the collimated, line X-ray beam. Scanning takes place line by line.
- D Detector unit**
The linear detector row installed above the conveyor belt converts the incident X-radiation into an electric signal, from which a digital X-ray image can be created and processed.
- E Industry PC**
Evaluation of the X-ray image for contaminants and other product defects is performed here.

Overview detectability depending on density



Product range

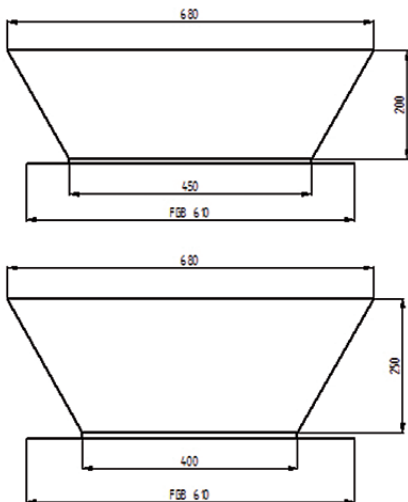
The following standard sizes are available:

	Belt width:	max. product dimensions (WxH):
RAYCON D 450/200	610 mm	450 x 200 mm
RAYCON D 400/250	610 mm	400 x 250 mm

other sizes on request

Reject systems, e.g. pusher or air blast nozzles available on separated reject conveyor

High flexibility for wide product formats due to “Bottom-Up-Inspection”. Wider than tall products are reliably inspected even at boundary zones



Menu structure:

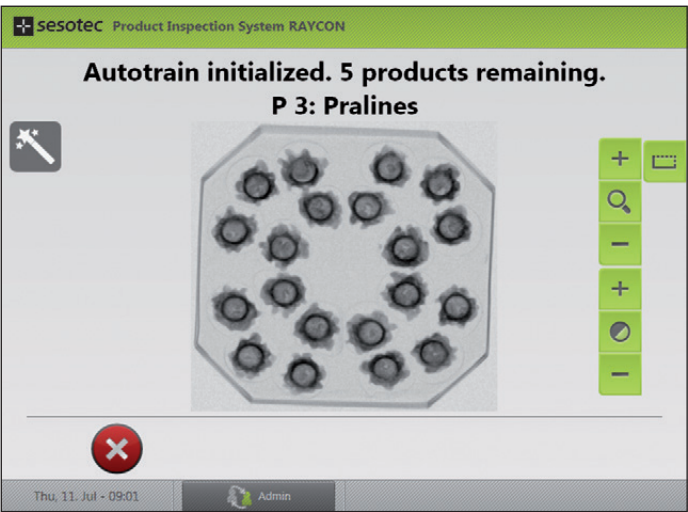
The icon driven, intuitive menu allows a quick and fast o menu guiding thoroughly. Simple Autolearn, product setup can be done easily without special knowledge.



Software

Processing software

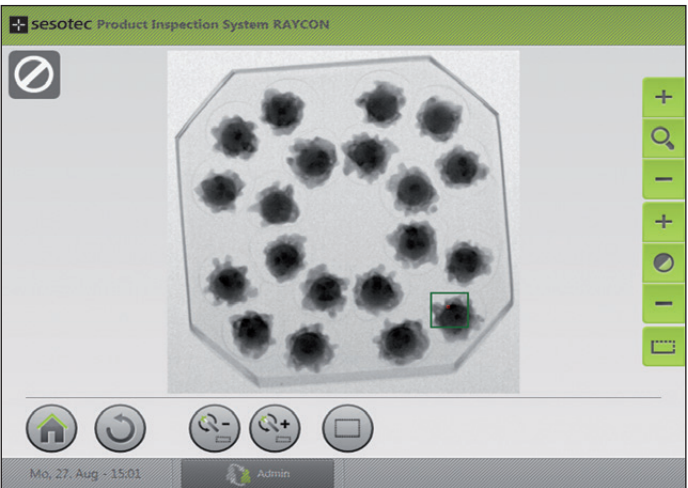
The RAYCON D processing software inspects x-ray images at up to 400 pcs./min (product related, e.g. chocolate pralines). Optionally several production lines could be combined to one X-ray system only. The Multi-Lane Inspection algorithm inspects up to 4 lanes simultaneously. Due to the easy Autolearn functionality a quick setup is possible with five (5) product samples only. While passing the product samples the detection algorithms are taught automatically for best sensitivity at the lowest level of false rejects.



Autolearn function – Automatic sensitivity adaptation in only a few product passes Autolearn function

„Retrain Region“

Maximized productivity ensured by the “Retrain-Region” standard software. No more user knowledge and additional training required for filter setup. For sensitivity adjustment the operator only has to drag a shape (finger mark on the screen) within the area of interest. By selection the operator can advise the software to increase or decrease the sensitivity (globally). The operator receives a virtual feedback on the screen (i.e. higher rate of false rejects) and can react immediately. With three (3) clicks only the last setup could be restored.



Software advantages

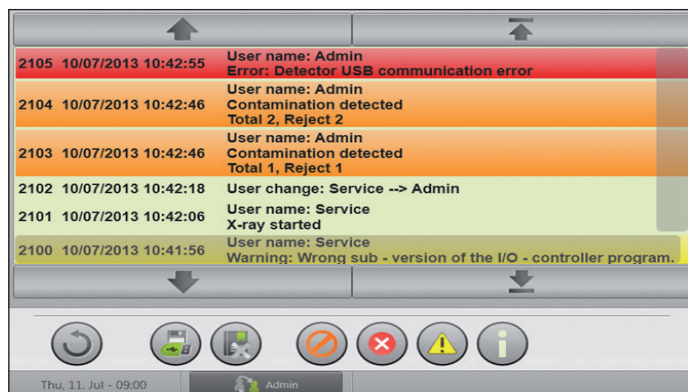
InsightLog.NET



The product inspection system RAYCON D supports the operator actively in process control with the AuditCheck feature.

- Reduction of time consuming manual documentation and paperwork on the line
- Defined number of test samples to be detected, selection of check modes, audit test cycles

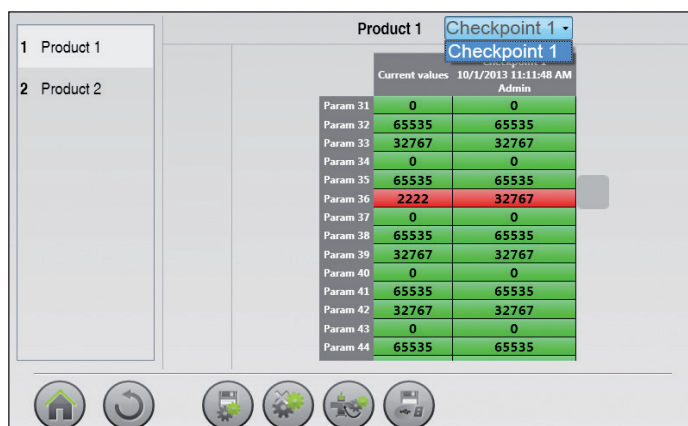
Logbook:



- Continuous traceability of product information, e.g. audit check
- Export logbook via USB or Ethernet

QA-Parameter:

- All relevant sensitivity parameters are saved within a checkpoint (product specific)
- Switch back easily to known setup if process drifts



Data can be saved on the customer's network with InsightLog.NET

- Save X-ray images, logbook information via integrated Ethernet connection into network

Software-Features:

- Counting for product completeness, gross weight estimation, clip detection/ ignore function, shape detection
- Multi-Product Software for automatic product recognition
- Multi-Lane Inspection for simultaneous product inspection up to 4 lanes
- Zone Analyzer for selection of zones within an X-ray image (selected zone(s) inspected with best sensitivity and optional product defect inspection)

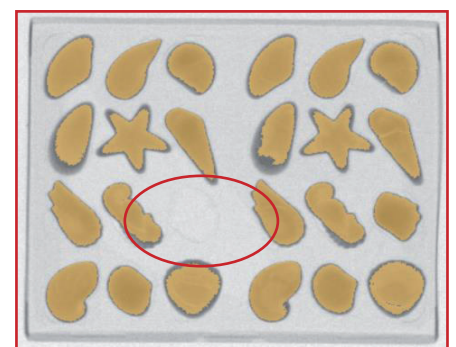
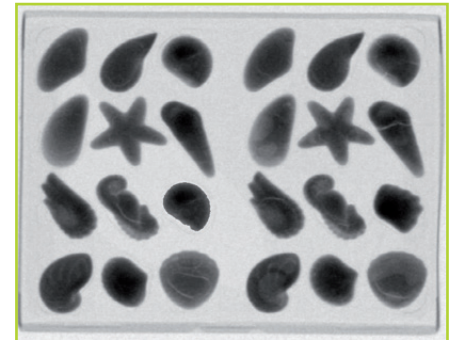
Zone Analyzer:



Product inspection with X-ray technology. New possibilities for consistent product inspection

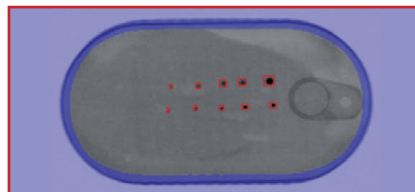
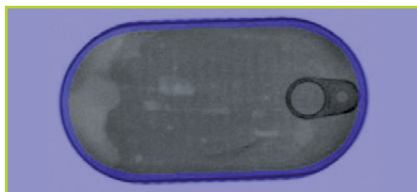
The RAYCON D X-ray system provides a large variety of product inspection possibilities:

- Detection of contaminants (metals, glass, ceramics, stones, raw bones, PVC, Teflon, rubber, fibreglass-reinforced plastics, ...) in packaged or unpackaged food materials.
- Checkweighing of the complete product or of individual product components, e.g. separate side dishes.
- Integrity checking in closed packaging (e.g. missing chocolate, biscuits).
- Detection of agglomerated, deformed, or broken products.
- Detection of trapped air in tubes and cans.
- Unlike ferrous-in-foil sensors, metal contaminants consisting of non-magnetic stainless steels and non-ferrous metals (brass, copper, ...) can be detected in aluminium packaged food.



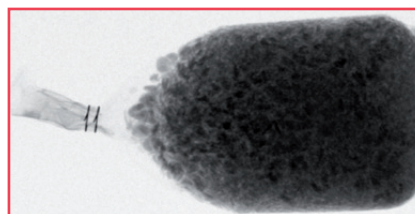
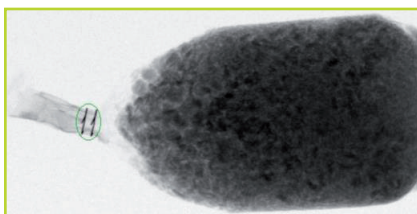
Box with 24 chocolates

Integrity checking in sealed non-transparent packaging using a count function, and verifying product position.



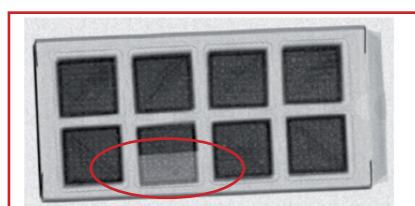
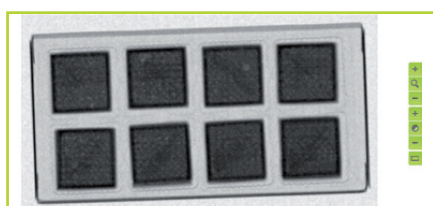
Canned fish

Contaminant detection also is possible in metal packaging. The system detects stainless steel balls starting from 0.8 mm and glass test balls starting from 2 mm. With an "edge filter" dense edges of a product can be masked out (blue frame of the image), which increases the maximum detection accuracy. The opener also has no influence on the sensitivity.



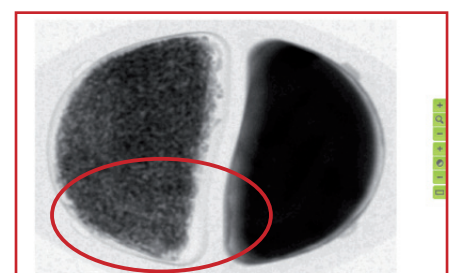
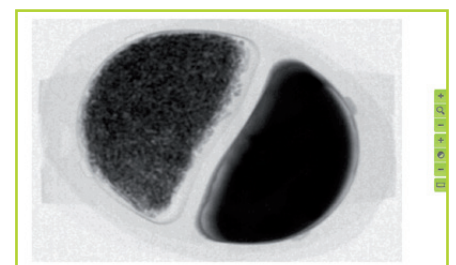
"Ignore Clip" function

This function can be used to mask out the metal clip of a product. Without such masking-out the sensitivity in the product would strongly decrease because the metal clip has a high density. The clip is shown on the X-ray image (green frame), but is masked out for image processing by the software. The system also can check every product for the presence of a clip.



Carton with cookies

Detection of incomplete filling (half a cookie is missing!)



Instant meal

with rice and meat in separate sections, total weight 350 gram. Checkweighing of individual product components: rice is underweight by 20g!