

X-ray scanner for integration in to plastic cup filling and sealing machines

X-ray scanner for integration in to filling systems

The SC 4000-L, also referred to as integration scanner, has been developed to scan solid, viscous and liquid products in deep-drawn containers. This cutting edge scanner is a unique and space-saving solution to detect foreign objects and check fill levels in sealed containers. Both of these tasks are performed with an unparalleled precision.

In modern filling systems, the packaging process ends when the sealed containers are stacked in trays and ready to be shipped. When scanning systems are installed at the end of the production line, complete trays have to be checked, rather than individual products. Usually several trays are stacked onto each other and the plastic containers are not completely fixed. The overlapping of products means that end of line scanners are unable to provide optimal accuracy. This leads to an increased number of false-positive rejections. The innovative SC 4000-L takes a different approach to overcome these limitations.

Integration and Inspection

The SC 4000-L is seamlessly integrated into the filling line, mechanically as well as electronically. The scanner is mounted downstream of the sealing station, just outside of the sterile section of the filling line. This is to ensure that all quality control criteria are still met by only scanning sealed products. A single layer of containers are fed through the scanner. The scan is performed during a short standstill where the high-performance camera, x-ray tube and collimator are moved

across the containers, perpendicular to their transport direction. As with all scanners in the SC-series, the result is a pin sharp X-ray picture. The image processing software developed by OCS can identify the individual product compartments and detect foreign objects and filling levels. The pictures of the rejected products are stored and archived. Each picture is easily identifiable with a timestamp, container number and reason for rejection.

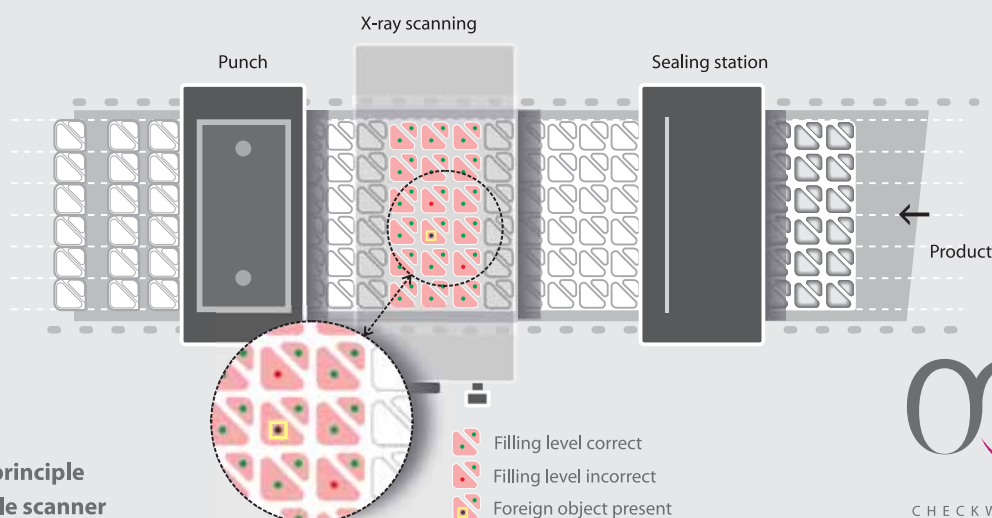
In addition to a high level detection capability, our scanning system also has a reliable rejection device to remove faulty products from the production line. The SC 4000-L transmits the individual numbers of the compartments and the corresponding scanning results to the filling machine via Ethernet. The filling machine uses this information to remove the affected product from production. Furthermore, a feedback about the individual filling levels is used to adjust the filling nozzles accordingly.

Easy operation

The complete integration into the filling system includes an exchange of signals to communicate system status information. These signals include changes of product, start, stop and line synchronisation. The whole line is therefore controlled from the display of the filling machine.

Radiation protection

The access panels in the filling line, which are required for radiation protection, are equipped with safety switches. As the



X-ray operating principle of the integratable scanner

scanner is fully integrated in to the fill line, any open access panels will immediately switch off the x-ray source. Self-monitoring signal lamps on both sides of the scanner indicates that the system generating x-rays.

For highest hygiene requirements - inline cleaning is possible

The entire scanner is made of stainless steel and can be cleaned inline. The radiation protection hatches can independently be brought into the service position by means of servomotors. This allows an efficient cleaning of the scanner.

For verified safety - automated performance checks

An automatic test function, specifically developed for this scanner, moves a test object into the scanning area. These performance checks can either be triggered manually or after an adjustable period of time. This test function ensures that the performance checks, required by quality standards, can be carried out easily.

For easy maintenance - the trolley

To facilitate all maintenance tasks, the SC 4000-L is mounted on a specially designed trolley. The whole scanner can be easily pulled out of the filling line so that the X-ray system is accessible from all sides.

Advantages over X-ray systems with conveyor belts

- Less space required
 - Can be integrated into the filling machine
- Highest detection accuracy combined with lowest rate of false-positive rejections

- Containers are scanned at rest, one layer at a time in a fixed position
- Scan results for the individual compartments
- Higher productivity and lower rejection rate
 - Easy operation via the filling system
 - Rejection of individual cups
 - Feedback to the filling system possible
 - No wear parts
 - No conveyors
 - Unrestricted form factor (trays can be stacked as high as needed)

Features

- Software package "Contamination and filling level"
- Stainless steel housing
- Stainless steel radiation protection hatches, actuated by servomotors
- Servo technology for the motors
- 15" TFT colour touch screen (option: detached display)
- Type-approved metal-ceramics-tube
- High-performance camera detector with highest resolution
- Memory for 100 product types (>100 on request)
- USB-Port IP 65*
- Access control for the user levels via EKS* (Electronic key system)
- Automatic cleaning unit of the camera level*
- Automatic performance check with test objects*
- Connection to ComScale NT*
- Remote maintenance*

*optional



Integratable scanner SC 4000-L



Multi-compartment container during scan

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