Optical empty mould check

To assure top-quality sweets, Bi-Ber color image-processing systems check moulds for tiny splashes, remains or fragments. The most diverse array of moulds is used by the sweets industry in the manufacturing of sweets (bars, cakes, individual chocolates ...). Before the empty moulds are filled with the fluid mass, it must be ensured that the moulds are free from product residues. Bi-Ber systems monitor the moulds by means of the imageprocessing of specified contamination.

PC based color camera solution

The latest generation of our systems for optical empty mould check offers many outstanding detailed solutions. Based on modern GigE or USB3 cameras with color sensor and megapixel resolution, the systems recognise residual contamination in the alveoli down to a size of 1 mm². The cameras are connected to a panel pc with Windows operating system, its graphical user interface and software leaves nothing to be desired where software linking is concerned. As many as needed different mould types can be stored as standard.

Check is by means of 2 threshold values for color or light and/or dark mould or filling level respectively. Alternatively, an inverse evaluation to check whether the alveoli are completely filled is also possible.

All settings are password-protected, the firmware has standard modules as image storage, error snapshot, logging and statistic functions. For communication, a digital interface is available for linking to a PLC and Ethernet interface as well as ProfiNet for integration into the main process controller. If required, the software so can be quickly toggled between two types.

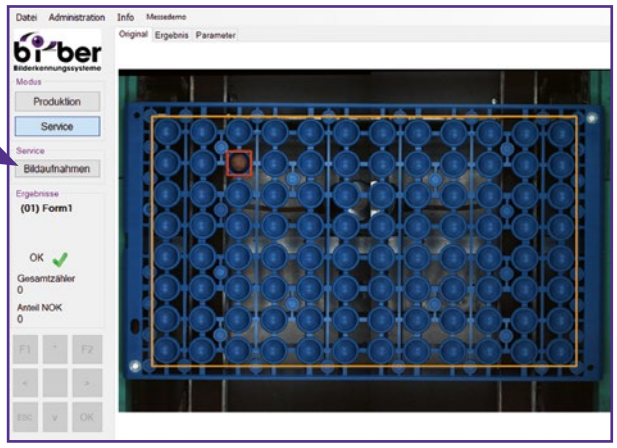
Key features

- maximum surveillance range is 1050 mm
- simple, fast type-changing
- throughput is a maximum of 60 moulds per minute
- Teach-In of free-form alveoli
- Energy efficient led lighting with constant brightness control
- Anti-shading: automatic lighting correction
- correction of lens distorsion
- maximum operational availability, low maintenance
- differentiation of chocolate and mould by color and brightness
- Output of results for individual alveoli and/or entire mould
- multilingual user interface (e.g. German, English, French, ask for other)

System options

All components (cameras, optics, lighting, panel pc, switch box) are mounted in a compact stainless steel cabinet which is positioned over the conveyor belt allowing free view of the moulds to be monitored. The system is operated via the touch display of the panel pc.

System for empty mould check – Basic model



Result image with overlay - mould not clean

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bi-ber Bilderkennungssysteme

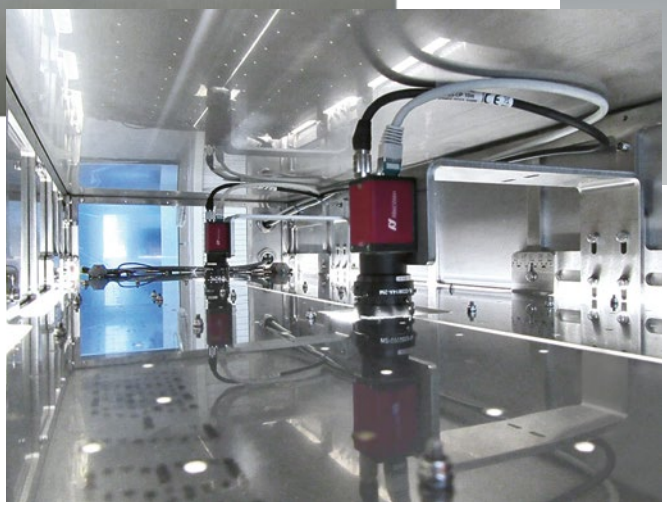
Optical empty mould check – Options

Design options

Except the basis version the system can also be set up with a separate control box, which comes in a variety of different housing designs. The delivery of a separate control box, in which also the panel pc is integrated, considerably reduces the height of the stainless-steel cabinet, without compromising any functions.

An additional advantage of this design is that no components are located above the product, as the panel pc comes out of the operator door. All other vision components (cameras, lighting, cabling) are normally located above the filter screen, which marks the upper limit of the product area.

Separate control box with panel pc (with on-board image)



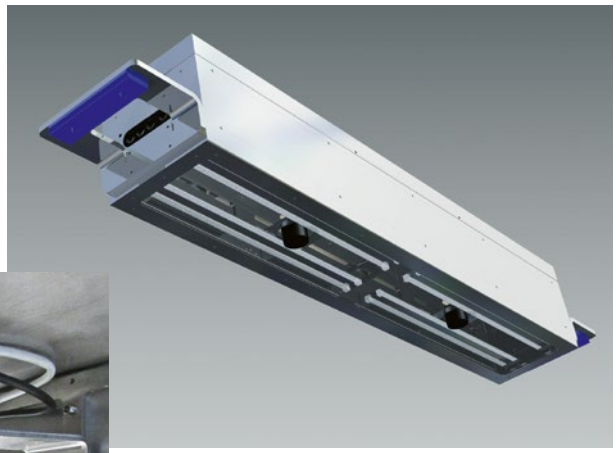
View inside the system with cameras and LED lighting

Camera and lighting unit

With an even more compact design, the system can also be installed above the production line. To do this, the system is split into a housing for the conveying system and a separate control box with the panel pc. The stainless-steel housing still contains the cameras, lighting and optical filters. They can be accessed via an inspection panel. Doors are not included any more. The customer is responsible for placing an ambient light shield in the space between the system and the mould.

The advantages of this set-up are:

- No installation surface required for an entire cabinet transverse section
- Easily integrated, with customized mounting brackets
- The system is easy to mount without a crane
- Can be built into an enclosed conveying system – also behind doors
- Better access to moulds, as there are no obstructing side panels
- Splash-proof version of the camera box possible
- Lower width of the camera housing



Camera and lighting housing

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