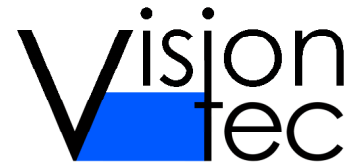


Fill-level inspection

Fill-level inspection



Quality assurance

Inspecting the fill-level is one of the most important tasks in quality assurance.

Depending on performance, packaging and content, various inspection systems / measuring methods are suitable for inspection; e.g. by using high-frequency or camera technology.

Fill-level inspection using camera

Thanks to the use of the latest technology, camera fill-level inspection is the perfect solution for checking the fill-level of transparent packaging.

Modern camera and lighting technology guarantee high measuring accuracy and high reproducibility, and in addition allow optimized settings depending on the type, both in relation to packaging color and in relation to beverage transparency (from "totally clear" to "very milky").

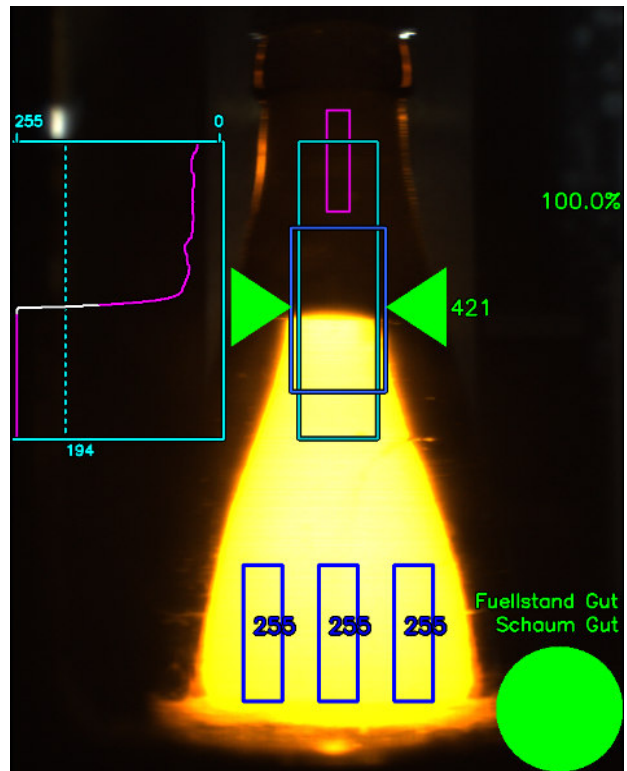
The inspection system consists of two components: the operating terminal with IPC and touch screen and the inspection unit with camera system and lighting device.

The camera system is a CMOS camera with an exceptionally high frame rate and brilliant image quality, which is significantly superior to the conventional CCD technology in terms of light intensity, energy consumption and speed.

The lighting system works with most modern LED white lights, which are age-independent on the one hand and on the other hand allow a very short exposure time. This results in an extremely high-contrast image with virtually maintenance-free and energy-efficient operation, in which colors and brightness are clearly differentiated, whereby both reliably identify the fill-level and foam limit.



After the filler is used, the complete filling of the neck area with foam is checked by means of airspace monitoring to ensure that bottles that are not completely foamed are reliably detected.

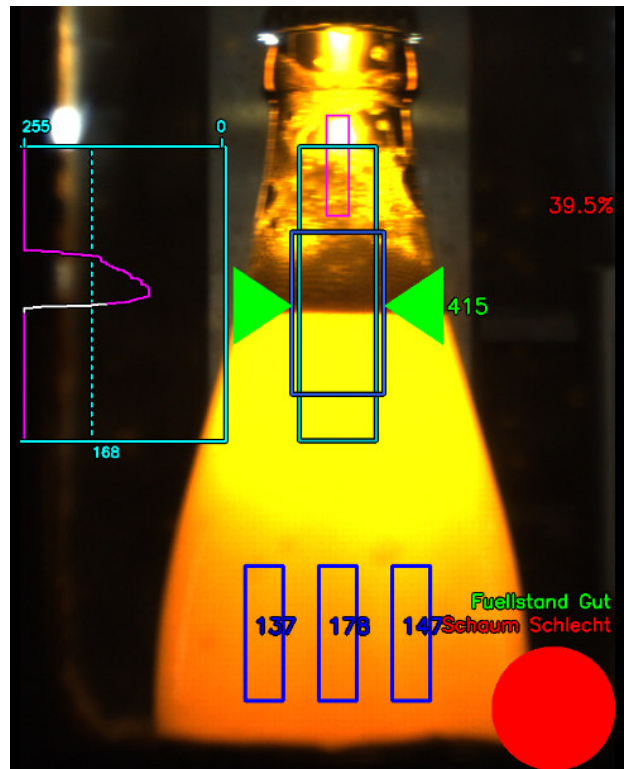


Example reading: Fill-level good/Foam good

For different bottle heights, the camera/lighting unit is equipped with automatic height adjustment so that the fill-level limit is always visible in the image without perspective distortion.

All (transparent) bottle colors can be checked. Depending on the color (brown, green, blue, white), the appropriate color channels are evaluated using image processing.

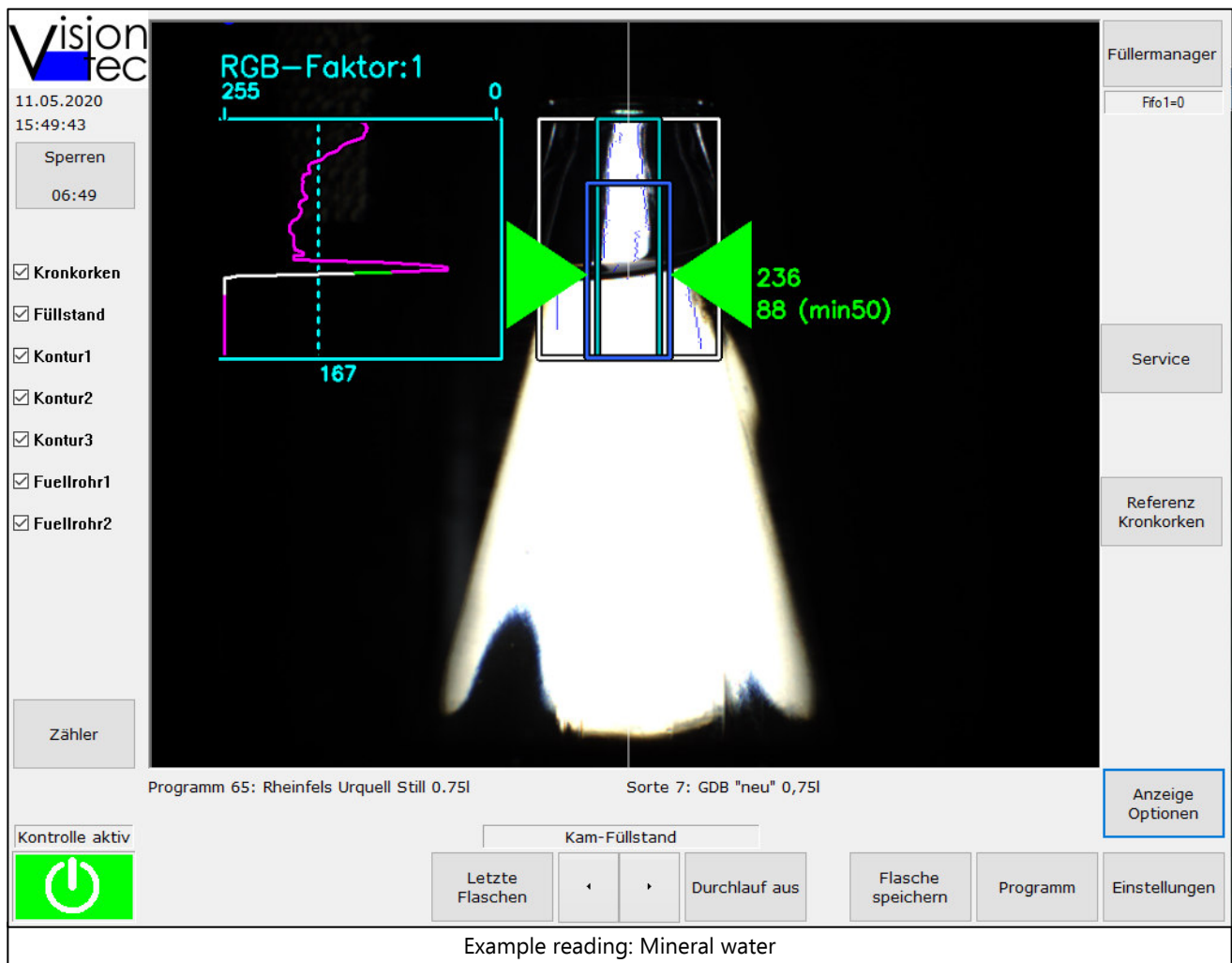
The camera is adjusted for each program with a suitable parameter setting, so that no mechanical changes are necessary when switching between products from the brightest to the darkest.



Example reading: Fill-level good/Foam poor

The ability to save reference images for "good" and "bad" makes it possible to reproduce the selected settings. Such "proof images" also make differences visually representable for the human eye.

Fill-level inspection



Example reading: Mineral water

Scope of delivery

- Camera/lighting device with the necessary mountings
- Lighting unit with LED white light assembly
- Stainless steel construction (protection class IP65)
- Operator terminal with display
- Touch surface (15" or 10.4")
- Industrial or compact PC
- Operating system: Windows
- Remote maintenance access
- PDA according to Weihenstephaner standard (mandatory tags)

Benefits

- high detection accuracy (overflow/underfill from 3 mm: > 99,5 % behind filler or > 99,8 % behind label machine)
- high reproducibility
- intuitive, user-friendly
- can be used behind the filler and in the inlet of the label machine
- no radiator
- no official approvals required

Fill-level inspection



High-frequency fill-level inspection

The HF fill-level inspection is ideally suited for checking the fill-level in non-transparent packages (e.g. clay or lacquered glass bottles) as well as for use after the rinser with hot-filled beverages.

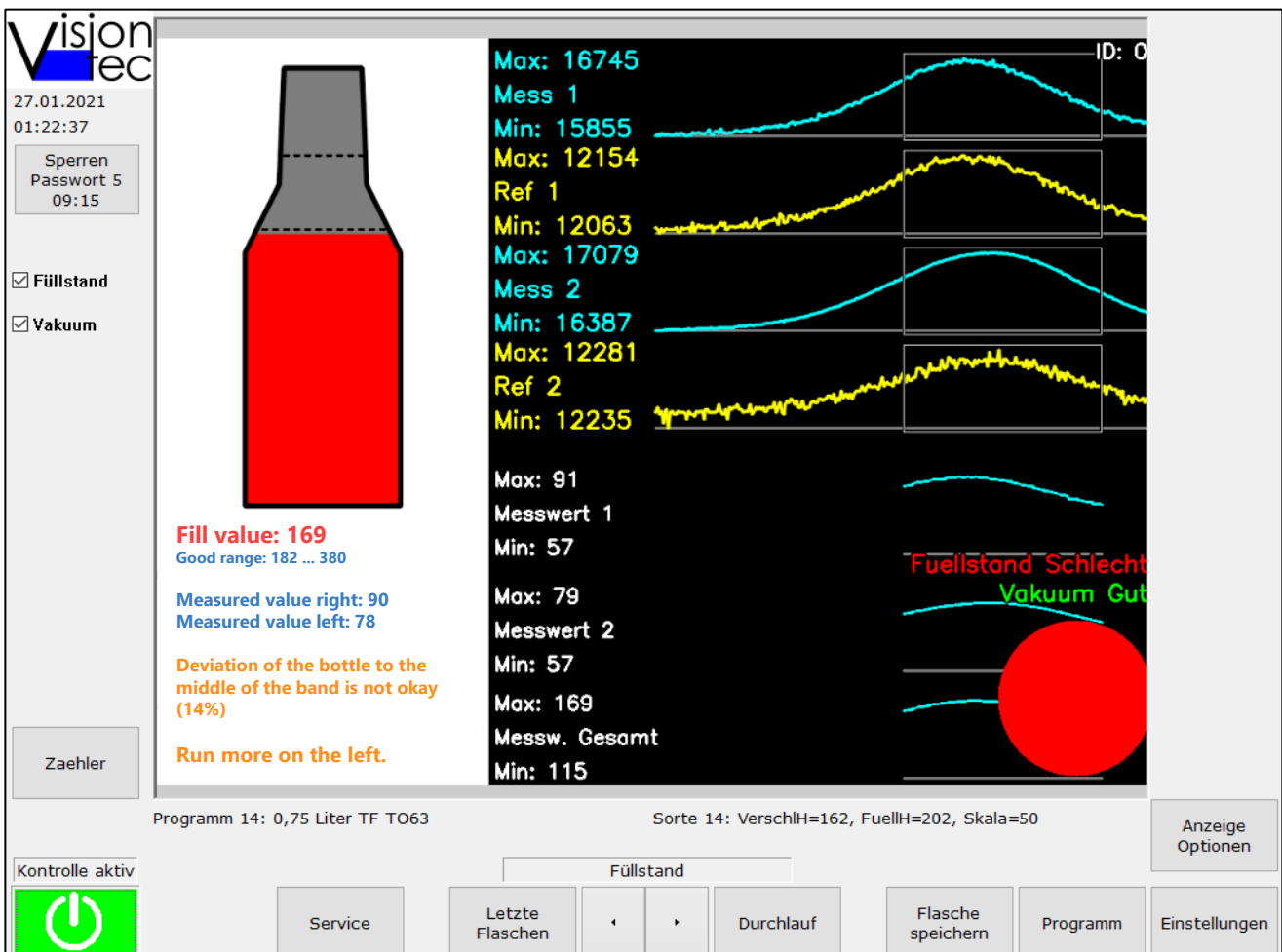
The inspection system consists of two temperature-compensated measuring heads which are encapsulated in V2A housings and have IP67 protection. The two measuring heads form together a measuring bridge. For different bottle heights, the measuring bridge is mounted on an electronic height adjustment.

Inspection function

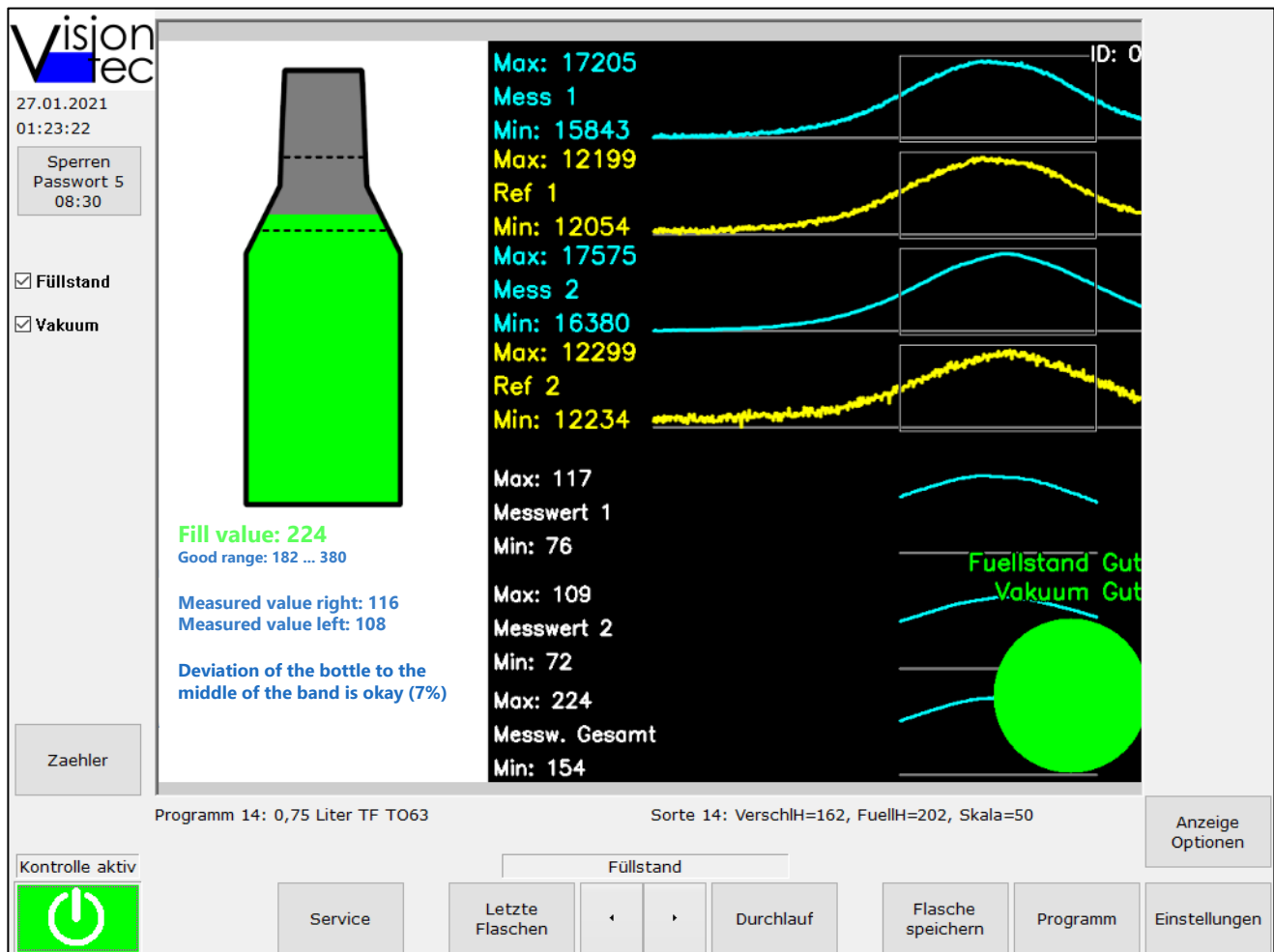
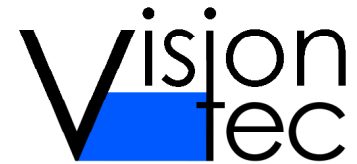
The measuring heads generate an analog signal via a generator board, which is evaluated in the computer.

A trigger light switch is mounted on the measuring heads in order to synchronize the incoming bottle with the recorded measuring curve. The measurement result can be synchronously assigned to the bottle.

With this structure overfill and underfill can be measured. The surface of the measuring bridge allows foam compensation, i.e. the foam flows into the fill-level calculation.



Fill-level inspection



Scope of delivery

- Measuring bridge, consisting of 2 measuring heads
- Stainless steel construction (protection class IP67)
- Operator terminal with display
- Touch surface (15" or 10.4")
- Windows-oriented user interface
- Industrial or compact PC
- Keyboard for service purposes
- Remote maintenance access
- PDA according to Weihenstephaner standard (mandatory tags)

Benefits

- High inspection accuracy (overfill/underfill from 3 mm: > 99.5 %)
- Inspection of non-transparent packaging (except metal packaging)
- Detection of standing water after using the rinser (hot fill)
- Intuitive and user-friendly
- Comprehensive overview of the measured values, the fill-level and the counter readings on the touchscreen interface

Fill-level inspection



Overview

Product-No.	900 210 100	900 210 170	900 210 201	900 210 200
Method of measurement	Camera	Camera	HF-measuring bridge	HF-measuring bridge
Computer	Industrial-PC	Compact-IPC	Industrial-PC	Compact-IPC
Touchscreen	15"	10.4"	15"	10.4"
Max. capacity	70,000 bph	15,000 bph	70,000 bph	15,000 bph
Inspection accuracy	Behind filler: 99.5 % Behind label machine: 99.8% (Overfill/underfill from 3 mm)		99.5 % (Overfill/underfill from 3 mm)	
	Included (Required: max. 50 mm difference in height between good fill-level and top edge of cap)		-	-
	Optional: sensor or additional camera system	Optional: sensor	Optional: sensor or camera system	Optional: sensor
Cap seating inspection	Included for screw caps - Detection of differences from 3 mm - (Required: max. 50 mm difference in height between good fill-level and top edge of cap)		-	-
	Optional: additional camera system	-	Optional: additional camera system	-
Technical data	<ul style="list-style-type: none"> Connection voltage: 230 V N/PE Frequency: 50 Hz Normal current: 6,5 A Connection power: 2 kVA Pre-fuse protection (on-site): C 16 A Max. connection cross section: 2,5 mm² 			
Ambient conditions	<ul style="list-style-type: none"> Temperature: +5°C to +45°C Humidity: max. 80 % Altitude: max. 2000 m (available upon request) 			
Air conditioner	Included	-	Included	-
Operational areas	Breweries, mineral water companies, soft drink bottler		Breweries, mineral water companies, specialty manufacturer, hot fill	
Packaging	Transparent packaging		Transparent and non-transparent packaging (except metal packaging), foil-wrapped bottles	
Expansion opportunities	<ul style="list-style-type: none"> Crown cork inspection Cap inspection (slanted seat) Filler/Capper Management 	<ul style="list-style-type: none"> On request 	<ul style="list-style-type: none"> Crown cork inspection Cap inspection (slanted seat) Filler/Capper Management 	<ul style="list-style-type: none"> Foam sensor Inductive sensor (Cap presence inspection)
Remote maintenance	Remote maintenance access provided			
Production / operation data acquisition:	According to Weihenstephaner standard (mandatory tags)			



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