

miho David 2

Empty Bottle Inspector

miho Inspektionssysteme



Complete inspection of the empty bottle between the washing machine and filler:
base, finish, thread, sidewall, ...

- Individually configurable
- Latest computer technology on the platform miho VIDIOS®
- Up to 72 000 bottles per hour
- Installed 500 times worldwide
- Hygienic design
- Innovation: miho FSI, miho OpAL, miho AIM
- Optimized energy efficiency
- Spare parts supply for at least 15 years

made
in
Germany

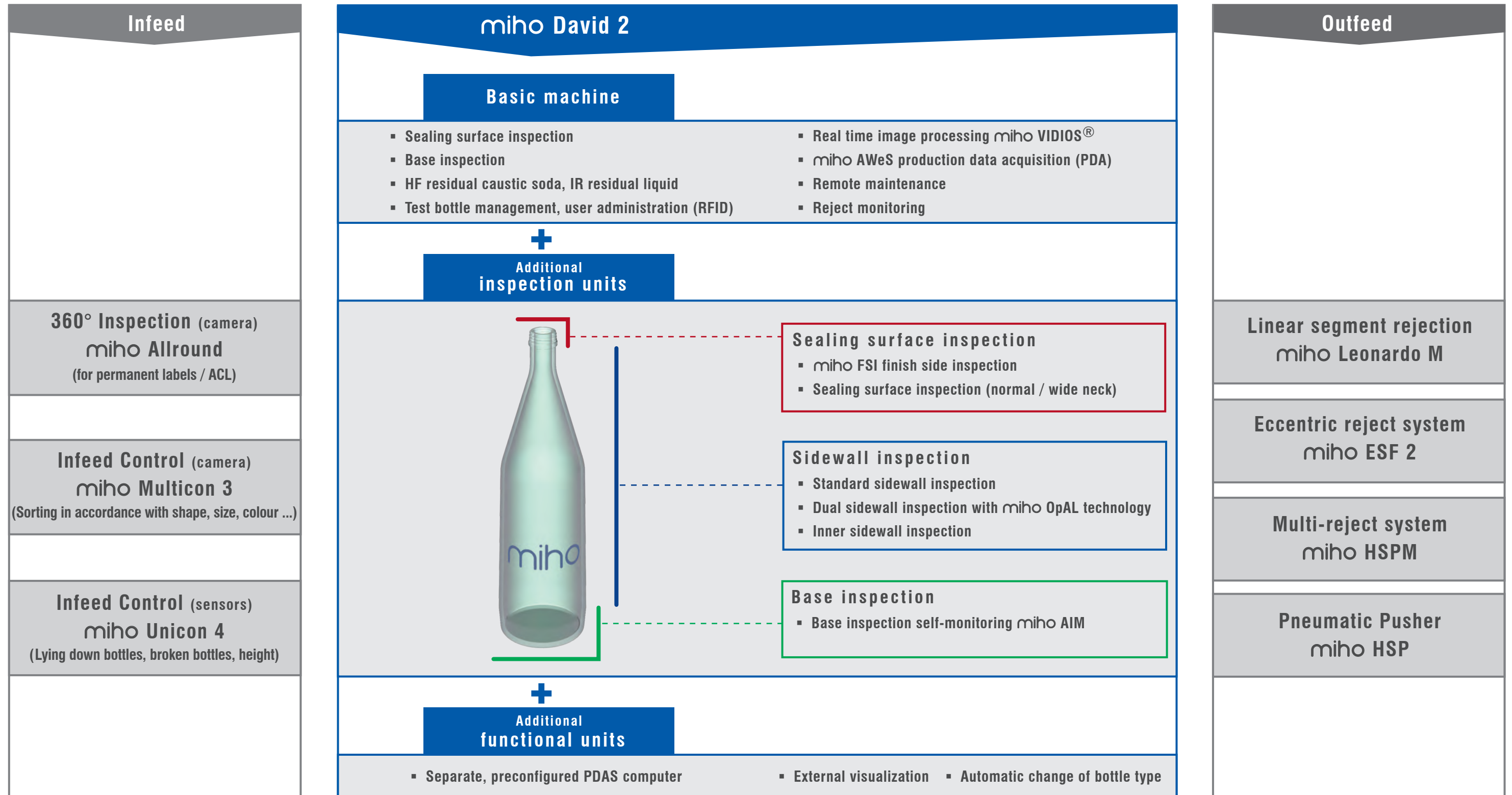


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The miho David 2

and the machines at the infeed and outfeed



2.1 Basic machine Advanced



Function

- **Base inspection** with foil detection and variofocus: automatic adjustment of the focus for bottles with different heights
- **Sealing surface inspection** (RGB) with colour camera: detection of damage to the sealing surface
- **HF residual caustic soda**: to detect liquid residues in the bottle
- **IR residual liquid**: to detect organic liquid residues
- **Test bottle management**: automatic request of specially prepared test bottles to check that the machine is running smoothly. Allocation via transponder ring
- **User administration**: via transponder or password entry
- **Production data acquisition** miho AWeS



Sealing surface inspection with RGB lighting



Test bottle with transponder ring attached

Technology

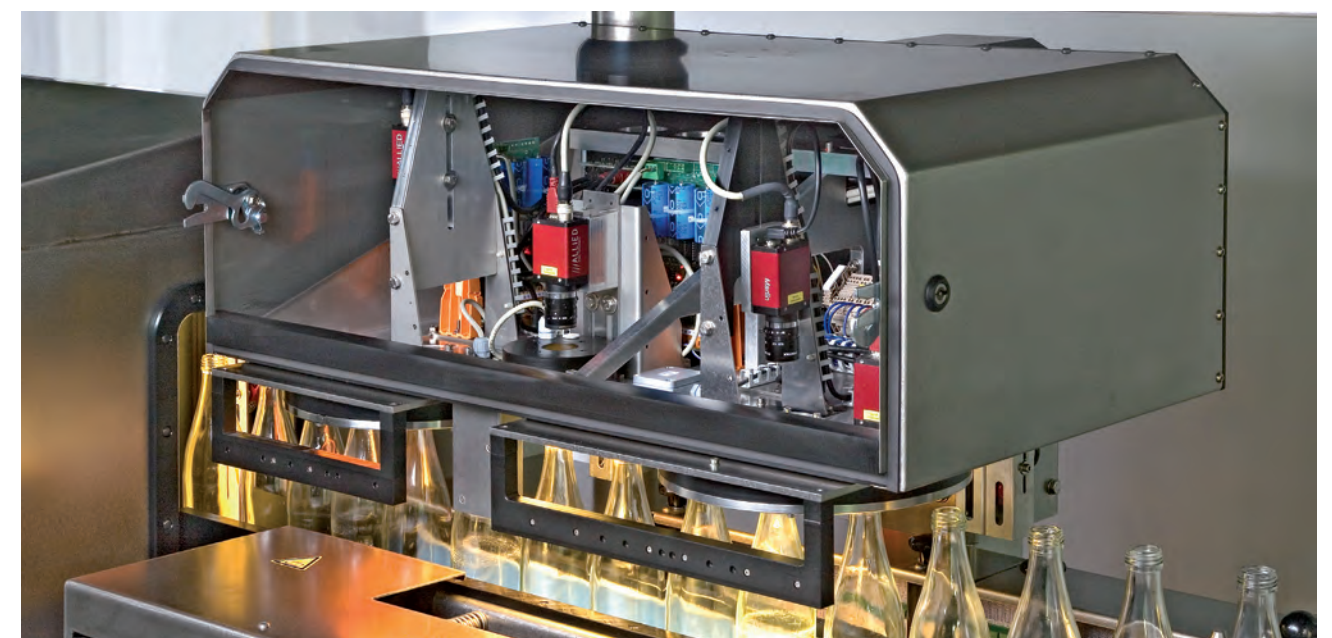
- Real time image analysis software miho VIDIOS®
- Remote maintenance functionality with all the necessary software licences
- Software package miho AWeS for production data acquisition: Logging of all production data, counter readings, test bottle protocols and user access; Weihenstephan standard
- Mechanical construction: stainless steel, hygienic design
- TFT colour display with touch screen
- Pipeline cooling, closed system: no contamination through outside air or moisture, air conditioner based on Peltier
- Servo drive: automatic adjustment of the rotation angle (90°) for different bottle diameters
- Simple infeed protection system with line shutdown (too high, too low, lying bottles)
- Reject monitoring: line shutdown if a bottle is not rejected



Touch operation through swivel arm

2.2 Basic machine Eco

As with the basic machine Advanced, but with the standard base inspection (without variofocus) and standard finish inspection (without RGB); without miho AWeS



Inspection head of the basic machine, opened

2.3 Base inspection in the basic machine

Function

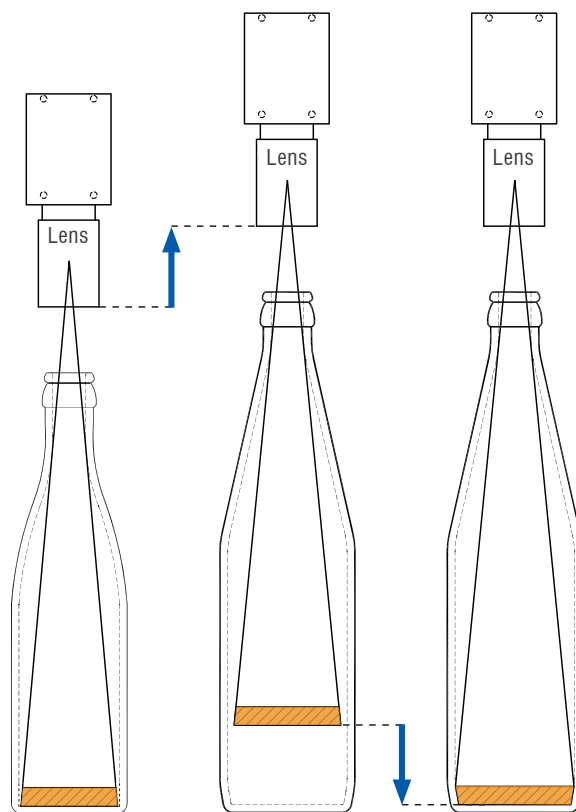
Detection of:

- Chipping, contamination, inclusions, damage
- Foreign objects
- Foil remains

Technology

- LED lighting unit below, circular pole filter, camera above
- Variofocus: automatic focal tracking for change of bottle type

Variofocus principle:



Left: small bottle with correct adjustment of the focus at the bottle base (orange) → sharp image

Centre: after changing to the big bottle, the focal point is above the bottle base, without having made any readjustment → blurred image

Right: miho Variofocus adjusts the focal point for the big bottle → sharp image.



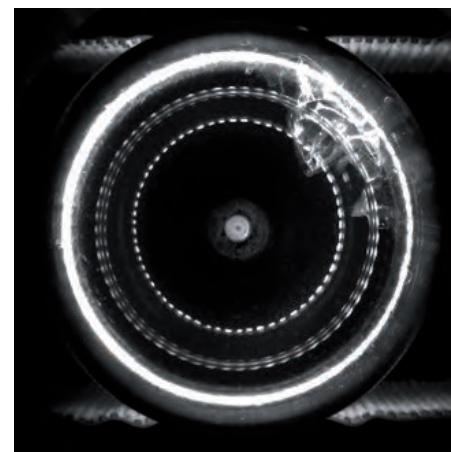
Shell-shaped chipping



PET returnable bottle with stress cracks



PET bottle: stress cracks, resulting in leakage



PET bottle: cigarette foil

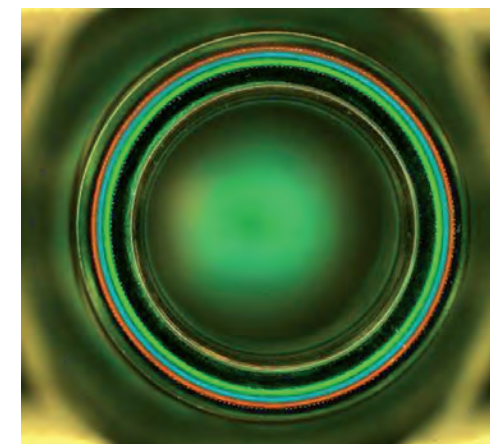
2.4 Sealing surface inspection RGB-Lighting in the basic machine

Function

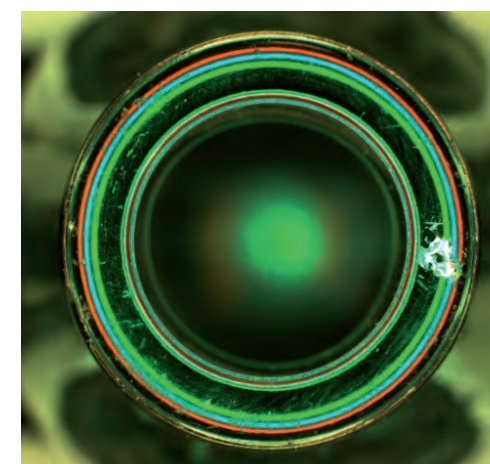
- for the improved detection of damage, especially at the outer edges of the sealing surface
- detects, for example, chips on the sealing surface / thread
- for both glass and PET

Technology

- three lighting zones with three LED colour lighting rings RED / GREEN / BLUE at different illumination angles
- colour camera with spectral filter



Bottle finish recorded from above with ring-shaped RGB lighting for the improved detection of chips



Chip on the sealing surface



Glass: chip on the sealing surface



PET returnable bottle: chip on the sealing surface / thread

Why network integration?

- **The empty bottle inspector is a prerequisite to**
 - monitor critical control points (CCP) in the filling process
 - initiate quality assurance countermeasures, if necessary
 - verifiably log all production conditions
 - comply with the duty of care of producers in accordance with HACCP, IFS or other country-specific requirements for risk management
- **Monitoring the filling process to control and improve efficiency,**
for example, in the control room, integration of the empty bottle inspector in a company-wide production data acquisition system (PDAS)
- **Statistical evidence of minimum rejection,**
in accordance with the specifications of the operator of the bottle pool
- **Remote diagnostics by miho for carrying out maintenance and optimization measures - quickly and inexpensively**

2.5 Production data acquisition system miho AWeS

Part of the scope of delivery for the basic machine Advanced

Function

- Visualization and logging of:
 - counters
 - operating status
 - warning and error messages
 - test bottle runs
 - measures to correct faults after an unsuccessful test bottle run
 - user registrations
- to monitor single or multiple miho machines, such as the empty bottle inspector miho David 2, the inspection of a fully equipped bottle by the miho Allround, the fill level inspection miho Newton Optic 2, ...
- export of data in pdf or xls format for further processing

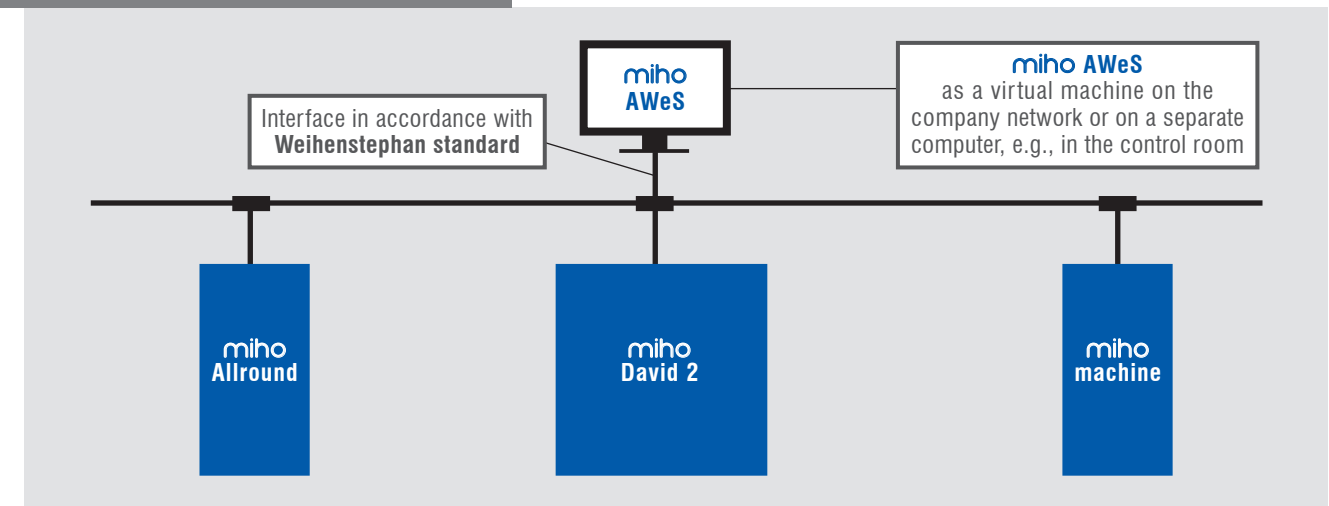
Technology

- polling the production data in accordance with the **Weihenstephan standard**, allowing easy integration into a PDAS
- either installation into the network on a virtual machine or on a separate PDAS computer from miho

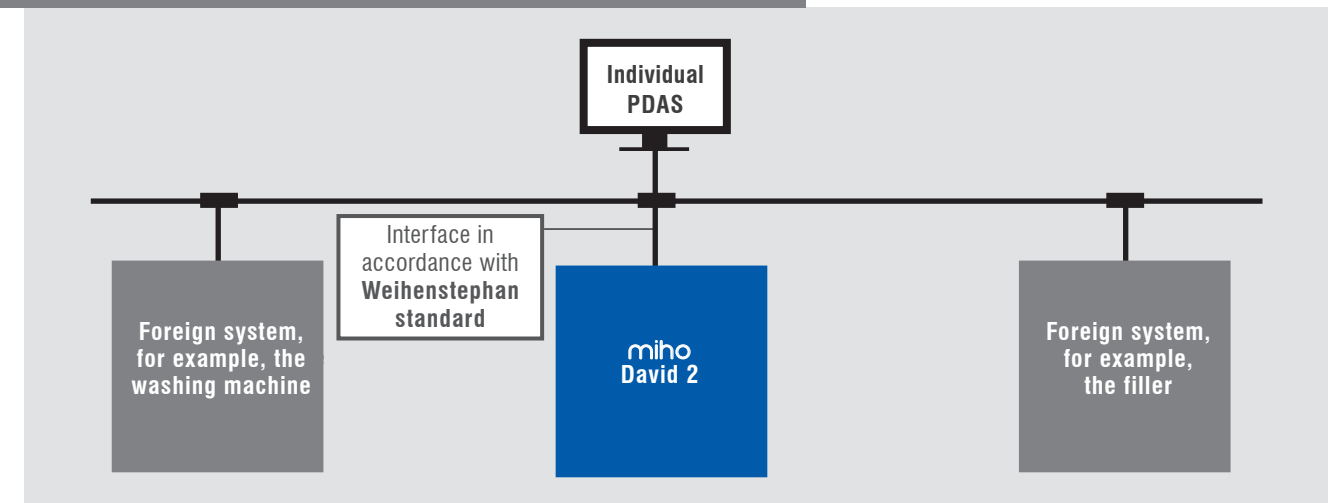
AWeS Viewer					
Production Data Rejection causes Sorting (1) Sorting (2) Machine Data Logging					
By inspection unit			By inspection unit		
Base (1)	336	(0.19 %)*	Base		
Base (2)			Finish		
Finish (1)	1032	(0.57 %)*	Side wall		
Finish (2)			Thread		
Finish (3)			Finish side wall		
Side wall in (1)	164	(0.09 %)*	By fault		
Side wall in (2)	168	(0.09 %)*	Wrong bottle type	37	(0.02 %)*
Side wall out (1)	212	(0.12 %)*	Bottle too high		
Side wall out (2)	249	(0.14 %)*	Bottle too low		
Thread (1)			Wrong coloured bottle		
Thread (2)			Defective opening	2236	(1.24 %)*
PET-Scuffing			Defective bottom	336	(0.19 %)*
Sorting	39	(0.02 %)*	Scuffing		
High Frequency (HF)	6	(0.00 %)*	Closed bottle		
Infrared (IR)	8	(0.00 %)*	Foreign object		
Chipped base			Side wall fault	485	(0.27 %)*
Inner side wall			Residual liquid in the bottle	10	(0.01 %)*
Finish side wall (1)	285	(0.16 %)*	Underchip fault	0	(0.00 %)*
Finish side wall (2)	414	(0.23 %)*	Other faults	75	(0.04 %)*
Finish side wall (3)	311	(0.17 %)*	Broken bottle	2	(0.00 %)*
Finish side wall (4)	306	(0.17 %)*	Lying bottle	0	(0.00 %)*
Sorting (HF)					
Sorting (IR)					

Section of the miho AWeS user interface:
Statistical analysis of the inspection modules and causes of rejection

miho AWeS as the central PDAS



Integration of miho machines into an existing PDAS



2.6 miho Remote maintenance

Part of the scope of delivery for the basic machine Advanced / basic machine Eco

Function

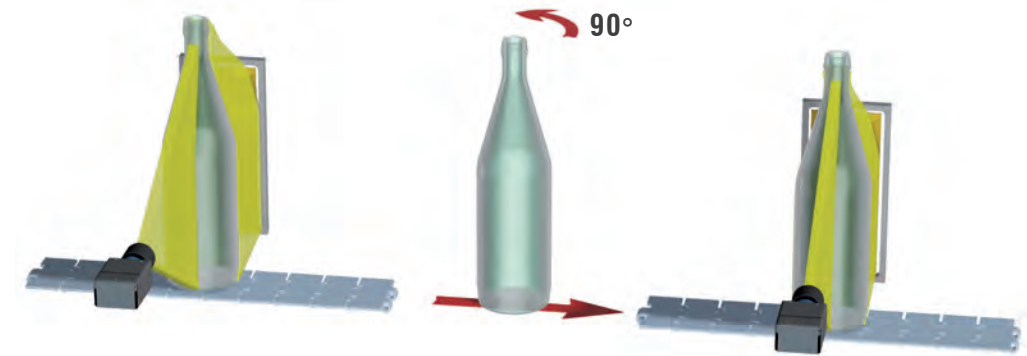
Software package for remote visualization of the operating status, the parameters and images on an authorized computer of a miho service engineer: monitoring of counters and disruptions, checking and operating the inspection systems, new input and optimization of inspection parameters, accurate and quick analysis of faults

Technology

- Internet access with data transfer of at least DSL standard
- **OpenVPN**, a globally recognized tool for establishing a **virtual private network** via an encrypted TLS connection, or alternatively with TeamViewer (licence supplied by the customer)

Standard sidewall inspection

- 2 cameras
- 360° inspection
- foil detection
- meets the basic requirement of a modern full inspection

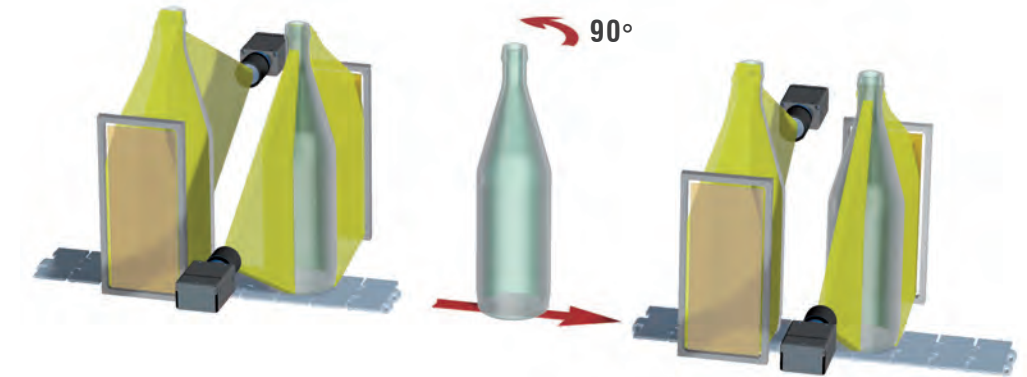


Dual sidewall inspection with miho OpAL

- 4 cameras
- 360° inspection: fault at least once on the side facing the camera
- miho OpAL technology
- foil detection

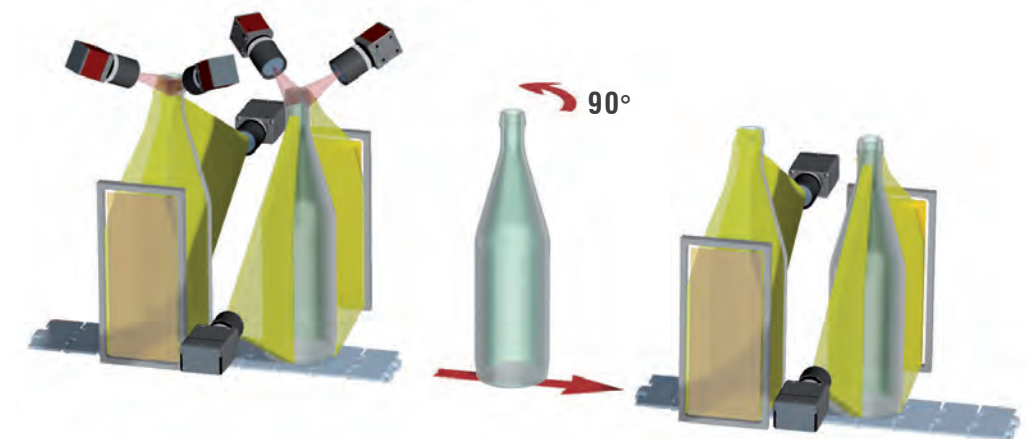
Consider for:

- semi-transparent contaminants
- bottles with ACL labels
- bottles with relief or embossing
- swing top bottles



Dual sidewall inspection with finish side inspection miho FSI

- 8 cameras
 - 360° inspection: fault at least once on the side facing the camera
 - miho OpAL technology
 - foil detection
 - Additional miho FSI: unique transmitted light method
- Consider the miho FSI for:**
- bottles with finish side damage and contamination
 - bottles with finish cracks without sealing surface damage
 - screw top bottles: inspection from beginning to end, from below and from above



Why dual sidewall inspection with miho OpAL technology?

Improved sidewall inspection: glass

- contamination and damage of the sidewall, inclusions, ...
- bottles with embossing and ACL labels, no masking out of the permanent areas anymore
- swing top bottle inspection: no masking out of bracket area!

Improved sidewall inspection: PET

- labelling with permanent markers
- misted-up bottles / droplet formation
- semi-transparent contamination

3.1 Dual sidewall inspection with miho OpAL

Function

- two modules (infeed and outfeed of the empty bottle inspector) for significantly improved detection of contamination, foil residues and damage to the outer and inner sidewall of the bottle, using a total of **four** cameras. This ensures that all areas of the bottle are recorded at least once directly from the front by one of the cameras
- especially suitable for bottles with relief structures, embossing, swing top bottles or permanent ACL labels
- defects that are difficult to detect, such as semi-transparent dirt, conchoidal fractures, or inclusions can be inspected
- OpAL** algorithm: no concealed areas that are completely masked out by ACL or embossing anymore

Technology

- dual sidewall inspection with one module at the infeed and at the outfeed of the empty bottle inspector respectively
- two** cameras in the infeed module and **two** cameras in the outfeed module
- two images per camera through mirror cabinet
- including circular pole filter to detect adherent foils on the inside of glass bottles



miho OpAL (Optimized Area Localisation) is an innovative development of the image analysis software miho VIDIOS®, used in the dual sidewall inspection. From now on, objects such as ACLs, embossing, shadows of bottle reliefs or parts of a swing top closure are recognized as such and no longer lead to false rejects. The **entire** sidewall of the bottle is inspected from now on!

Advanced inspection by miho OpAL:

Up until now:	miho OpAL:
<div>✗</div> <div>Bracket area: masked out</div>	<div>✓</div> <div>Bracket area: inspection</div>
<div>✗</div> <div>Embossing: limited inspection</div>	<div>✓</div> <div>Embossing: inspection</div>
<div>✗</div> <div>ACL: masked out</div>	<div>✓</div> <div>ACL: inspection</div>
<div>✗</div> <div>Semi-transparent fault: limited inspection</div>	<div>✓</div> <div>Semi-transparent fault: inspection</div>

3.2 Standard sidewall inspection

Two modules (infeed and outfeed of the empty bottle inspector) for the detection of contamination, foil residues and damage to the outer and inner sidewall of the bottle, using a total of **two** cameras

Why dual sidewall inspection with miho FSI technology?

miho-FSI (Finish Side Inspection), an upgrade of the dual sidewall inspection, allows for the complete inspection of the finish and thread:

- dirt and damage
- rust ring detection
- cracks
- inspection regardless of the thread form
- no false rejection of refunded new bottles

3.3 Dual sidewall inspection with miho FSI - Advanced

Function

Functions identical to the dual sidewall inspection, and in addition:

- detection and visual display (360°) of damaged and incorrectly manufactured threads for screw cap bottles
- detection of contamination and damage in the area of the side finish (for example, glass defects, glass cracks, rust rings, underchip damage, chipping)
- inspection regardless of the thread form:
 - segmented thread: twist off, vent slot
 - fault at the thread start / end
 - roughness of the thread is examined
 - contamination of the thread dial
- no false rejection of refunded new bottles anymore
- full inspection of the thread dial: from beginning to end, from below and from above

Technology

- as with the dual sidewall inspection
- an additional **four cameras** in the infeed module to ensure a full 360° view
- automatic adjustment of camera positions when changing bottle type (transmitted light process)



miho FSI schematic view:
the cameras look down at an angle from above into the finish

3.4 Blowing device (glass bottles)

Function

For the removal of adherent water or foam residues in the area of the thread dial, in order to ensure a proper inspection

Technology

Blowing device before the empty bottle inspector, compressed air supply, optionally with sterile air filter, including control system and solenoid valve

3.5 miho Bottle Dryer (PET bottles)

Function

Blowing and drying the thread dial and the support ring for the proper inspection of PET bottles. The bottles being blown are held by two powered guide belts and are blown by air jets that are suitably positioned and adjusted. The guide belts can be adjusted to the respective diameters of the bottle types by using a hand wheel. The necessary air for blowing off is generated by a high performance fan with HEPA filter

Technology

- stainless steel case
- motor control system
- robust and easy to clean substructure
- wear-resistant guide belts
- quick change device for the guide belts
- high performance fan with HEPA filter Class 7

Why self-control of the base inspection with miho AIM?

- More frequent monitoring - continuously
- Reduced false rejection
- Constant detection accuracy is ensured
- Logged inspection, irrespective of the operator

Base inspection self-monitoring module miho AIM

Function

The self-monitoring system miho AIM automatically checks in short and defined intervals (for gaps created by production or the conveyor control system) the functionality of both the optical and the electronic components of the base inspection without using test bottles.

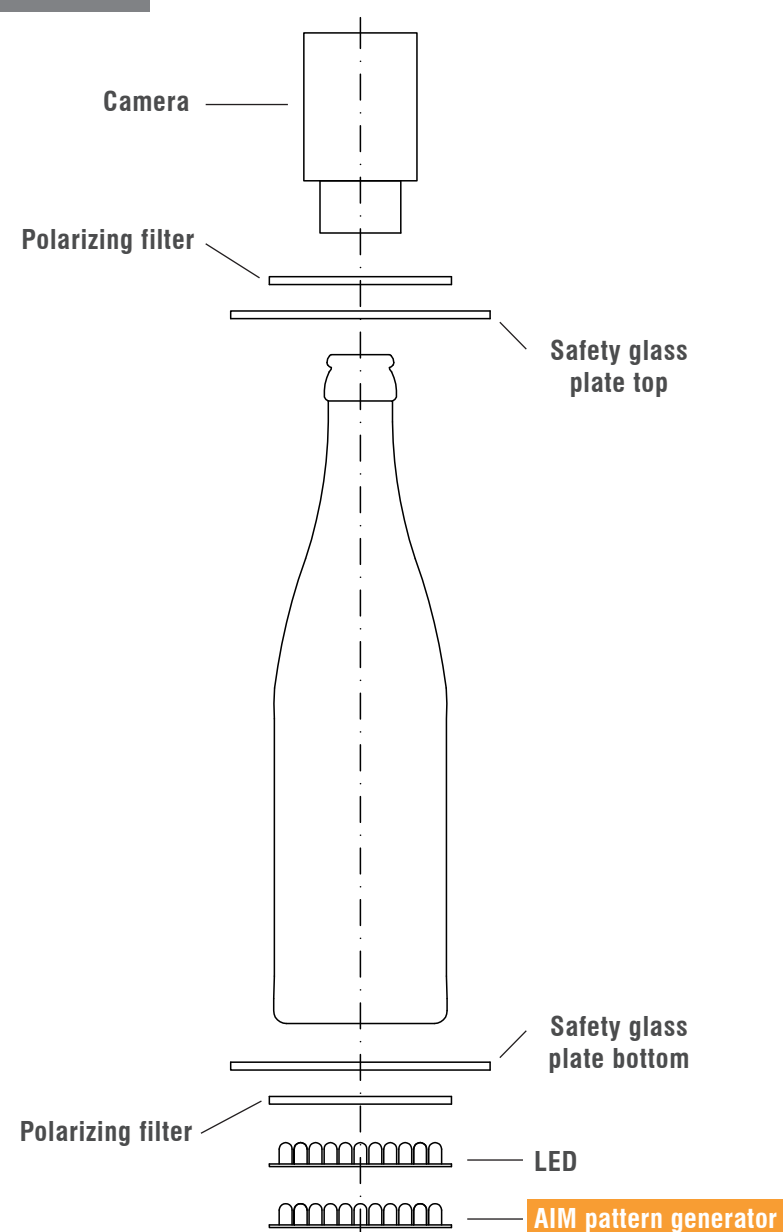
Technology

A pattern generator is integrated in the lighting unit of the base inspection. The test image is completely seen by the camera. Water drops or damage, which may lead to an inferior quality of inspection, are thus promptly detected.

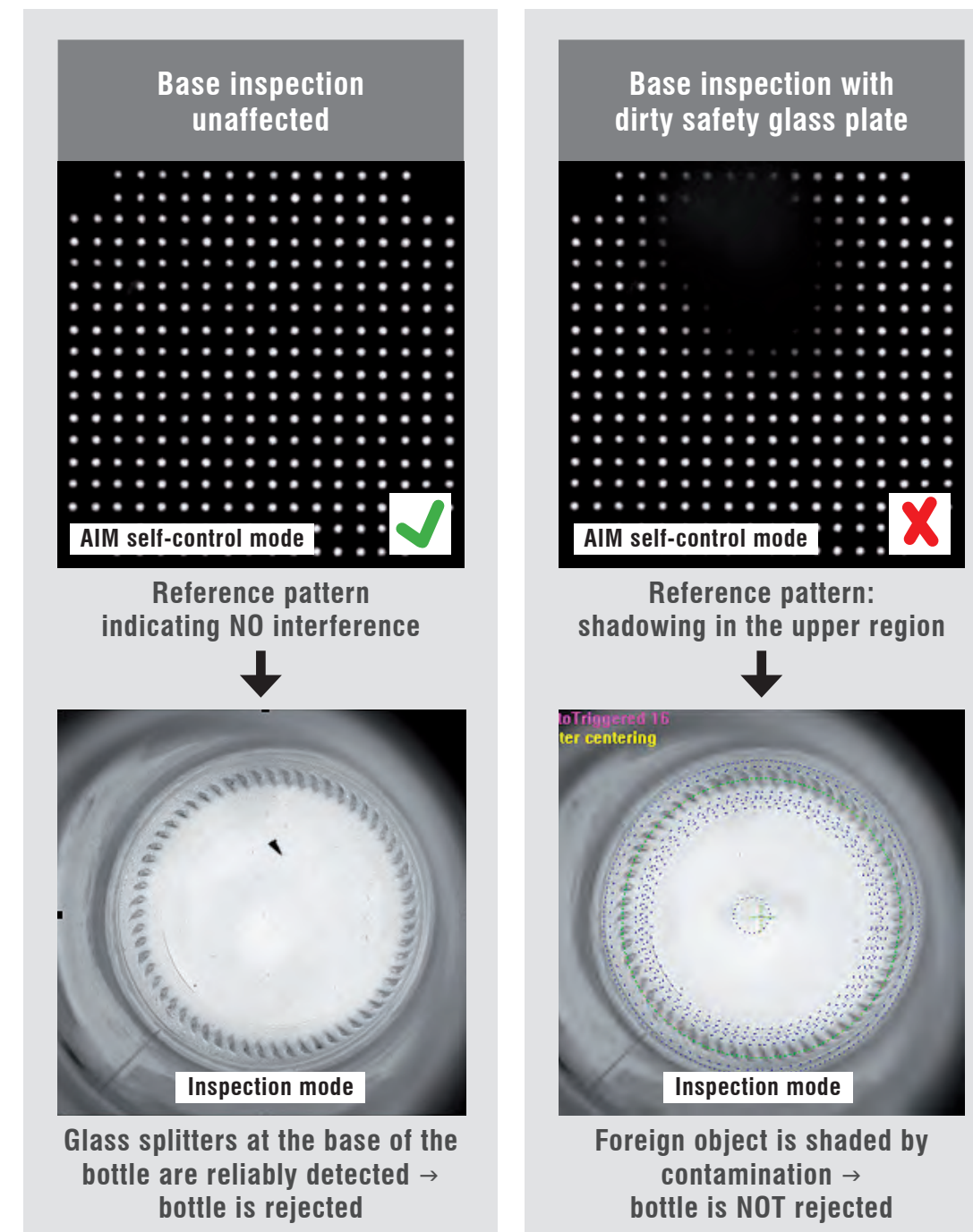
In addition, the complete monitoring of all areas of the bottle base takes place, whereby with a conventional test bottle only the area where the fault is located is checked. If a gap is created by production, an image of the specific pattern of the base plate is recorded and compared with the stored reference image.

If the pattern is complete and correct, then production can continue → no damage or contamination on the base inspection unit.

If the test pattern is not displayed correctly, then there must be some contamination / defect on the safety glass plate. The empty bottle inspector immediately goes into the stop mode and gives a plain text statement that the glass plate must be cleaned → contamination of the base inspection unit could otherwise endanger product safety.



Construction of the base inspection with the miho AIM



Without the AIM self-control system, contamination of the safety glass plate is not detected. In addition, another consequence is that foreign objects at the base of the bottle are shaded and not rejected.

Detailed information about the miho AIM:



5.1 Inner sidewall inspection

Function

To detect three-dimensional dirt on the inner side wall, which is, for example, obscured by ACL labels or glass embossing. Restriction of the viewing angle is dependent on the bottle shape

Technology

Lighting by a maintenance-free LED lighting unit from below, camera-based detection above the bottle

5.2 Standard thread inspection

Function

To detect damaged thread dials in screw cap bottles, with camera technology and maintenance-free LED lighting unit

Technology

Lighting unit and camera above the bottle finish, special mirror arrangement for inspecting from the side (incident light or reflection method)

5.3 Extension of visual angle of the base inspection

Function

Extension of visual angle of the base inspection for improved inspection of longneck and / or swing top bottles

5.4 Additional UV filter detection

Function

To detect clear glass bottles with or without UV filtering for subsequent sorting

Technology

Absorption measurement with a UVA detector, sensitive to a wavelength of 365 nm, including hardware and software kit

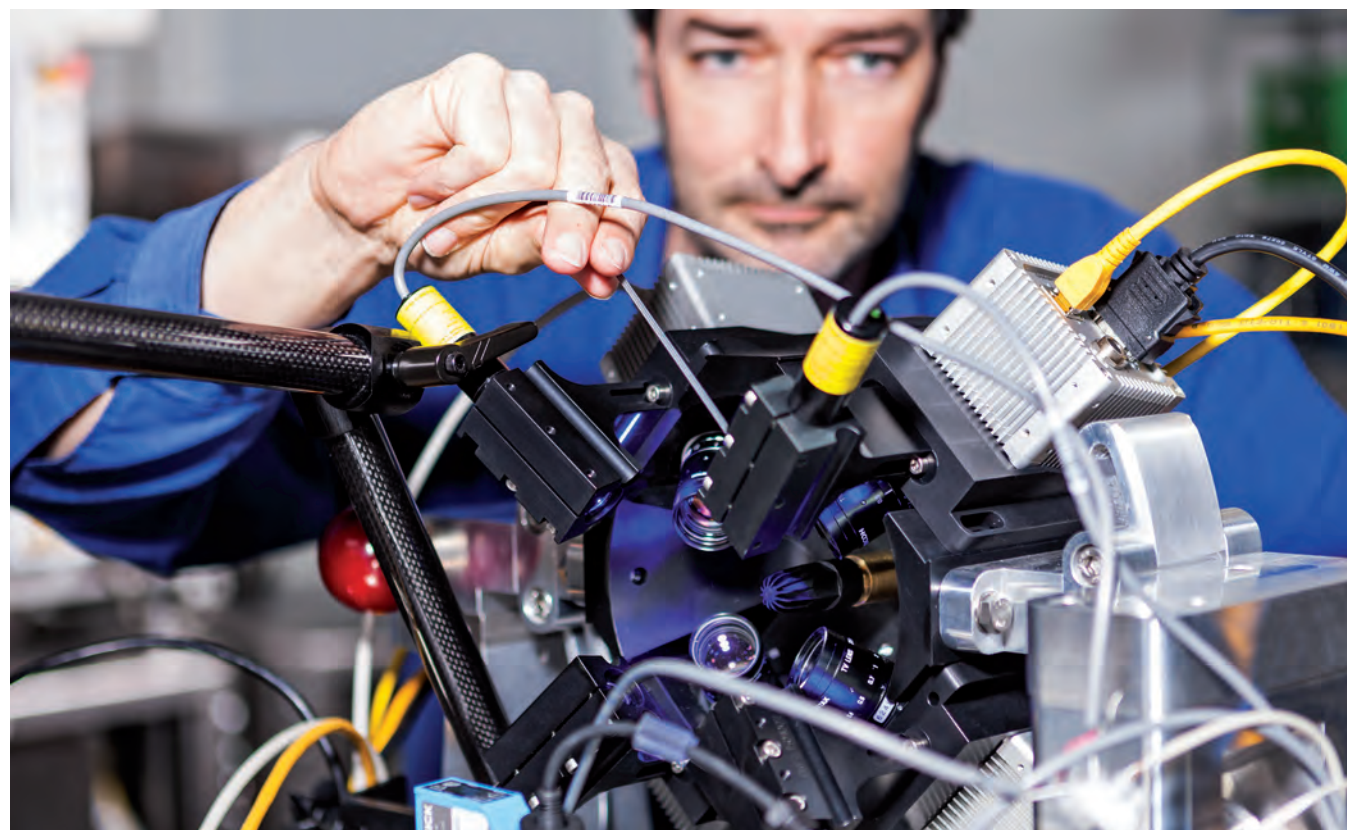
5.5 Automatic adjustment when changing the bottle type

Function

Automatic adjustment of inspection head height and the belt width when the operator changes the bottle type on the touch screen of the inspector

Technology

Adjustment via servomotors, all parameters of that setting are stored under miho VIDIOS® according to type



A miho development engineer evaluating a prototype



Circuit board test by a miho technician

5.6 Undervoltage supply

Function

To ensure an electrical supply if there is a fault in the power supply

Technology

APC Smart-UPS 3000VA USB & Serial 230V, including housing

5.7 Separate computer for PDAS miho AWeS

Function

Separate PC system incl. monitor and printer for operation with the production data acquisition software miho AWeS. Also enables the integration of additional miho machines. Also available as an option to set up the remote maintenance connection

Technology

Min. Intel Core i5, min. 4 GB RAM, min. 250GB HDD / SSD, min. 2x PCIe slot, min. 2x Ethernet (RJ45), min. 1x VGA or DVI / HDMI, screen resolution min. 1280x1024 pixels, Operating System Windows 7 Professional / Windows 8.1 Professional (32 or 64bit)

5.8 Separate viewer

Function

Remote visualization of the operating status of the empty bottle inspector on a separate computer, for example, in the foreman's office

Technology

Installation of a separate viewer, for example, on a separate miho AWeS computer from miho; network connection is necessary. Requirements in accordance with miho IT-regulations

5.9 Safety cabinet

Function

- improved access safety guard to the bottle conveyor belts
- operator protection against broken glass
- enhanced protection of bottles within the inspector from contamination by adjacent units or bottle conveyors
- improved soundproofing

Technology

- 2 large-size safety doors on the front side
- monitoring through non-contact, tamper-resistant security switches, integrated into the ASI bus safety system of the machine



Mechanical installation of the miho David 2 basic machine



Pre-commissioning of the empty bottle inspector at miho with the bottle types to be filled

General features of the infeed control:

▪ Machine protection for

- too high,
- too low or
- lying bottles;
- broken shards of glass

▪ Bottle sorting

- shape, colour, height
- secondary characteristics such as embossing, ACL labels

6.1 Infeed control miho Unicon 4

Function

- infeed control before the empty bottle inspector for broken bottles, lying bottles and bottle height
- rejection by the miho HSP (included)

Technology

- light barrier technology
- control and reject monitoring by the empty bottle inspector



At miho, state-of-the art CAD tools are used to design new machines on time

6.2 Sorting miho Multicon 3

Function

- camera-based infeed control (lying bottles, broken bottles) before the empty bottle inspector
- sorting in accordance with shape, colour and differences in size
- compensation of disruptive factors such as labels sticking out, drinking straws etc...
- independent of the container material, even PET
- sorting of bottles based on secondary features such as embossing, permanent labels or degree of scuffing

Technology

- image processing system miho VIDIOS® and modern colour camera system, innovative lighting concept
- rejection in accordance with different sorting criteria to different reject channels is possible
- glass-PET distinction is a possible option
- rejection by the miho HSP (included)
- control and reject monitoring by the empty bottle inspector

6.3 Optical 360° inspection miho Allround



miho Allround (here for the inspection of a fully equipped bottle after filling and labelling)

Function

- complete 360° inspection for accurate infeed control and sorting of unfilled empty bottles via four colour cameras for ACL labels
- the empty bottles are inspected for the logical accuracy of the ACL labels
- as an upgrade of the infeed control for the necessary miho Multicon 3

Technology

- flexible camera concept
- four cameras completely record all sides of the container, by using a 360° mirror system
- low-power, variable, maintenance-free, high-power LED lighting with reflected light method
- real-time image processing miho VIDIOS® using the latest energy-saving computer technology
- reject system miho HSP, including reject monitoring
- interface (Ethernet) for superior PDAS (Weihenstephan standard) and data outputs for different control functions
- permanent self-monitoring of all systems, such as image-processing, cameras, sensors, reject systems, etc...
- synchronization with the conveyor speed via an incremental encoder

miho rejection - four systems for different requirements:

- the appropriate reject system, depending on the function and requirement
- all reject systems including reject monitoring
- central control system through the empty bottle inspector

7.1 Reject system miho HSP

Function

- to reject the faulty bottle via a pneumatic pusher
- including reject monitoring in the empty bottle inspector

7.2 Multi-reject system miho HSPM

Function

- Universal use in glass and plastic bottles, as well as in cans or carton packaging, empty or filled
- up to 60,000 containers per hour
- different container shapes and weights are compensated thanks to the servo-control of the linear drive and have no influence on the motion sequence of the reject block
- the reject process is individually configured for different container types and optimized for the respective container type

Technology

- the reject block of the miho HSPM is driven by an optimized high speed linear servomotor
- parameterization and operation integrated in upstream inspection unit
- low maintenance and durable
- no compressed air supply necessary
- including reject monitoring in the empty bottle inspector

7.3 Eccentric reject system miho ESF 2

Function

- for the rejection of cans, glass or plastic bottles with a specially shaped and rotating reject block
- for high conveyor speeds

Technology

- driving the reject block with a servomotor, independent of load and long-term stability
- high standing stability of the bottle by slight vertical downward pressure whilst rejecting
- horizontal and vertical adjustment of the reject block with rail guide
- including reject monitoring in the empty bottle inspector



miho HSPM:
multiple rejection (red arrows),
depending on the type of bottle defect

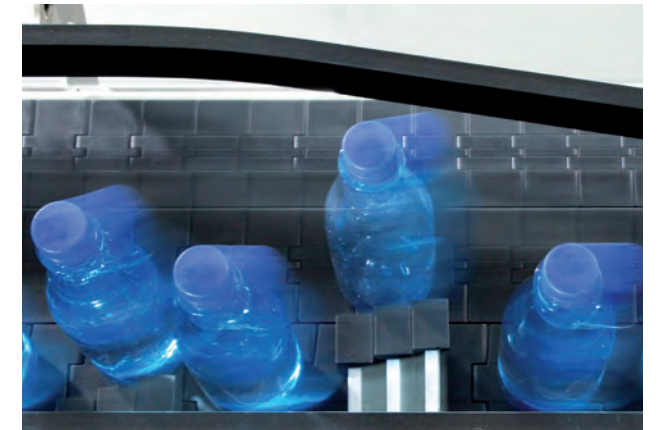
7.4 Segment reject system miho Leonardo M

Function

- secure standing rejection of bottles, cans and carton packaging, even of difficult bottles in terms of shape and centre of gravity
- suitable for sorting tasks

Technology

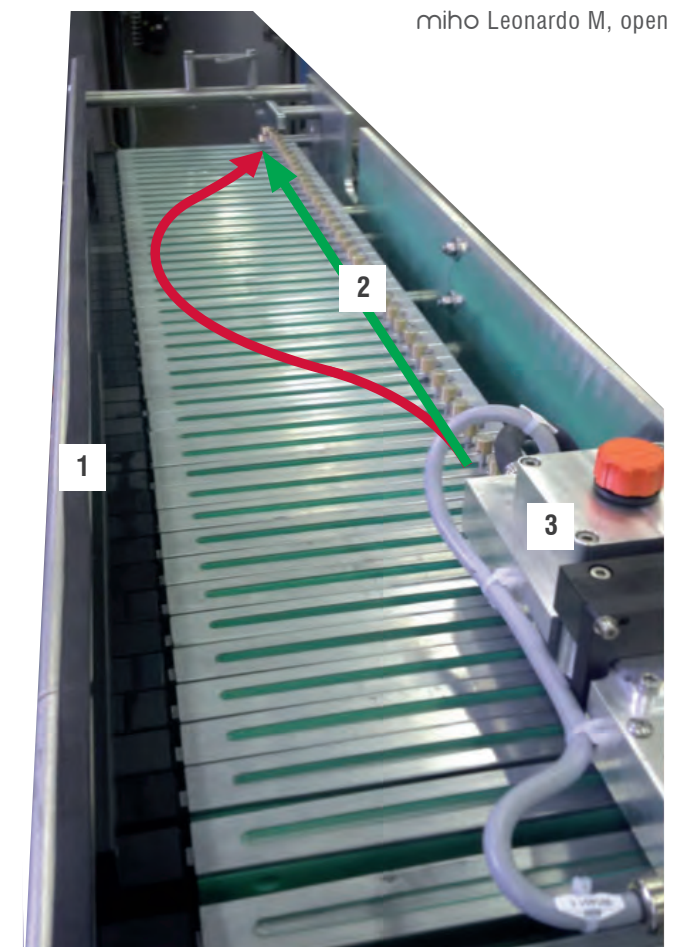
- magneto-mechanical reject system: containers to be rejected are transferred to a parallel conveyor by slide segments which run synchronously and parallel to the conveyor
- gearless drive via toothed belt, thus less mass movement and low-wear
- torque monitoring of the servomotor through slip clutch
- including reject monitoring in the empty bottle inspector



miho Leonardo M, slide segments in action

Reject principle:

The mechanical core piece of the **Leonardo M** is the approximately **100 reject slides (1)**, each one being connected to its own private **guide element (2)**. They are all permanently driven parallel to the reject conveyor (**green line**) by a rotating **chain** and synchronously with the belt speed. If a bottle is to be rejected, the **central switching unit (3)** electromagnetically moves two or three of the guide elements in a mathematically calculated **curve (red line)** vertically to the running direction of the conveyor. Thus, by activating the reject slides in this way, the bottle to be rejected is pushed **gently and securely standing** onto the parallel reject conveyor (left reject conveyor, not pictured).



miho Leonardo M, open

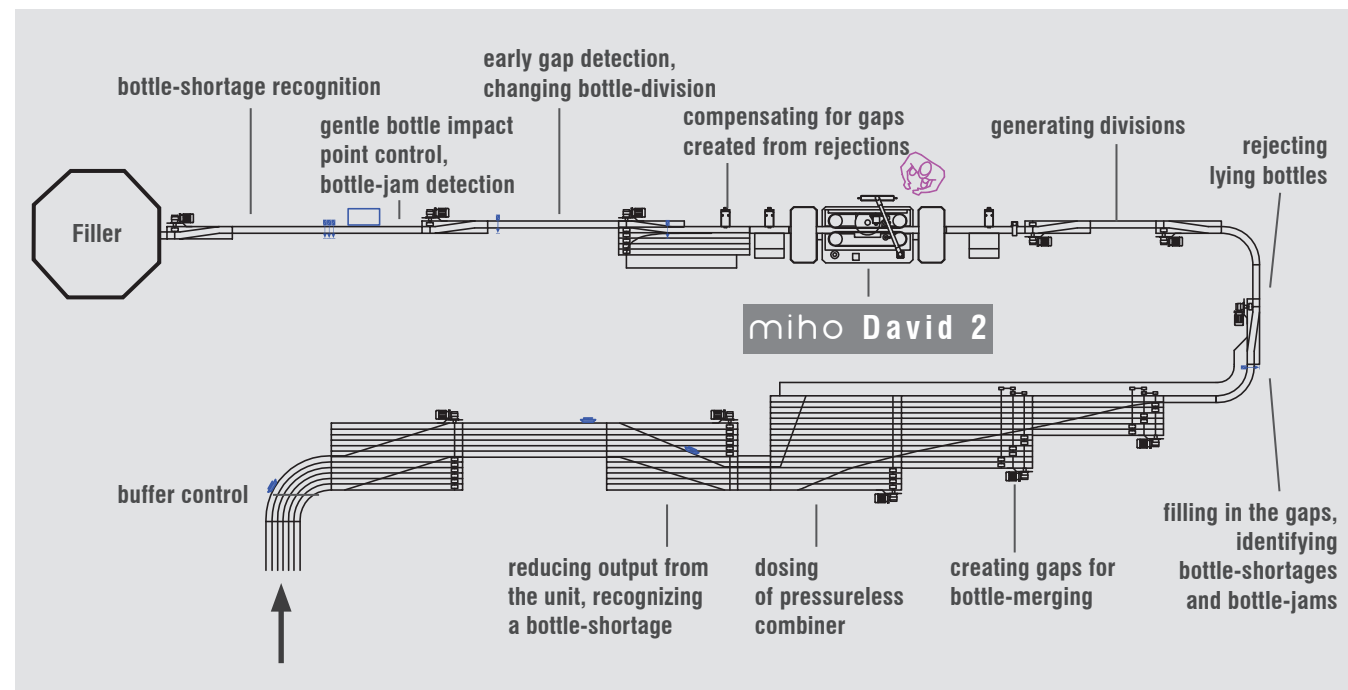
Why **conveyor control** and **container transport** from a single source?

Conveyor control

- contactless compensation of bottle gaps: reducing the noise and bottle abrasion
- **one** single control unit from the washing machine to the filler
- a modern conveyor control system brings efficiency, less disruption, less idle running at the filler

Conveyor installation

- **one** integrated solution from a single source, without planning interfaces
- tailor-made concept
- project management from a single source saves time and nerves



Concept for conveyor control miho Pascal, from the washing machine to the filler



Planning the inspection machines in a new bottling plant, in accordance with the customer's specifications and with our many years of experience in project management

8.1 Intelligent conveyor control system miho Pascal

Function

- early detection of one of the nominal output deviating transportation capacities of the bottle line
- gaps created by rejected containers are compensated for without any container contact
- smooth and low noise gap closure for smooth bottle transport
- buffer control, isolation and single-lane blocking between two aggregates with only one control module miho Pascal
- reduction of aggregate interference from a lack of bottles at the infeed
- remote-controllable change of bottle type with short changeover times, and no user intervention is necessary

Technology

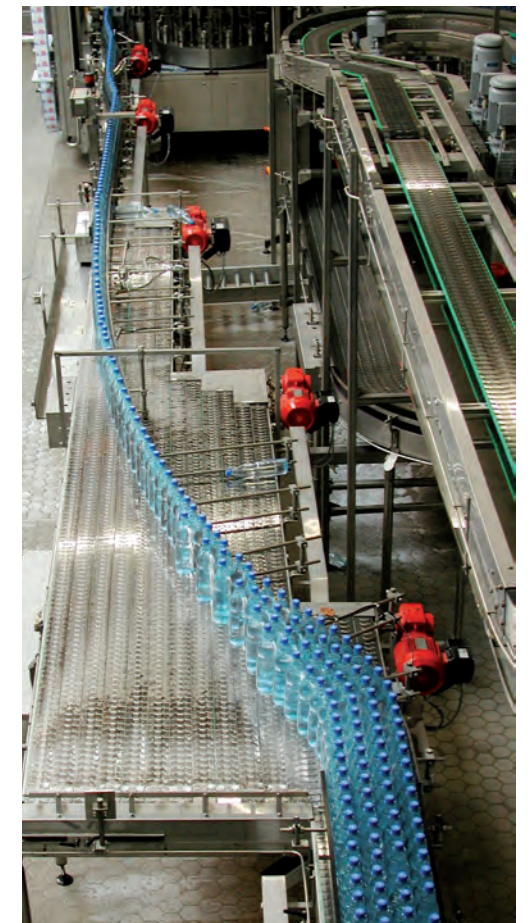
- microcontroller technology for quick responsive conveyor control in real time
- millimetre-precise detection of gap size
- bottling plant status in local language
- alarm detectors can also inform on plant status on the spot

miho Pascal 2 / 2017

- the conveyor control miho Pascal 2 enables an even more delicate access to multiple conveyor sections
- production data acquisition in accordance with the Weihenstephan standard and remote visualization, for example, in the foreman's office
- a VGA display with touch screen makes operating for the user even easier

8.2 Additional module conveyor control through the empty bottle inspector

Automatic adjustment of the conveyor control parameters to the empty bottle inspector when changing the bottle type



8.3 Container transport system miho Conveyance

Overview

- modular container transport system for modern filling and sorting systems
- single and multi-lane conveyors, pressureless combiners, buffer systems and reject tables
- high quality reject tables from miho are a requirement for secure standing rejection
- hygiene-friendly design details
- pre-assembled in the factory, thus short installation and commissioning times
- the miho Conveyance and miho Pascal form a combined basis for smooth production and high plant efficiency

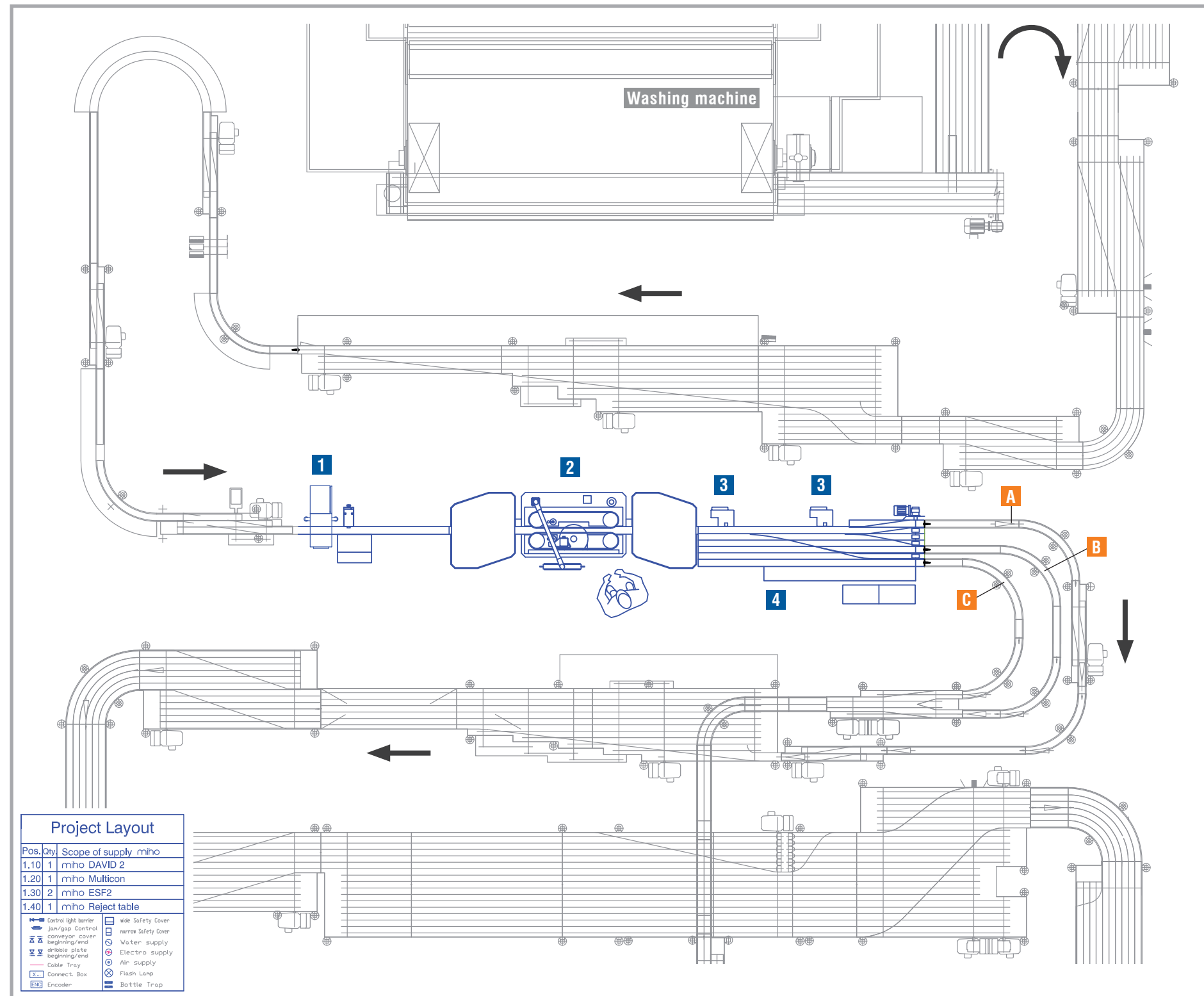
9.1 High-speed bottling line 72 000 bottles / hour

Installed by **miho**:

- Up to 72,000 bottles / hour;
5 different bottle types
- Integration into the existing
conveyor control
- Connection to the existing
PDAS of the customer

- 1 Infeed protection
with foreign bottle inspection
miho Multicon 3
- 2 Empty bottle inspector
miho David 2 with:
 - dual sidewall inspection
 - finish side inspection
miho FSI
 - sealing surface inspection
with RGB-Lighting
 - base inspection with **miho AIM**
and **miho Variofocus**
- 3 High performance
eccentric reject system
miho ESF 2
- 4 Reject table, optimized for
high speeds

- A** Good bottle continues to the filler
- B** Dirty bottle
goes back to the washing machine
- C** Damaged bottle
goes to the container for broken glass



Damage in thread



Vertical split

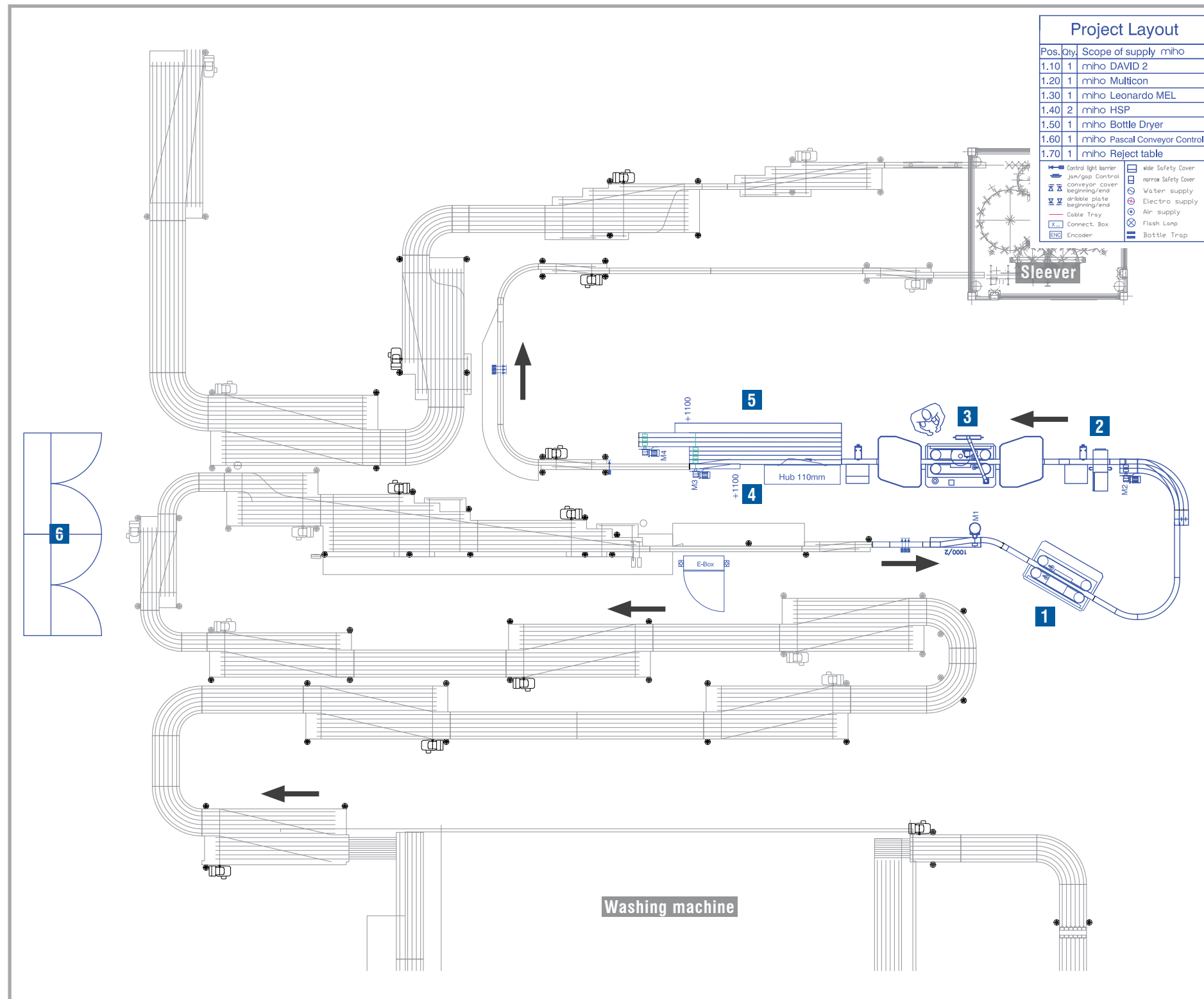


Crown cork rust ring

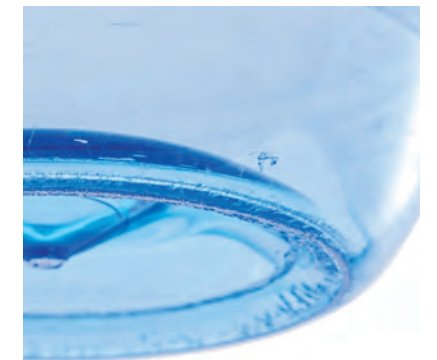
9.2 Bottling plant returnable PET

Installed by **miho**:

- Extremely accurate finish and thread inspection **miho FSI**, for example, to detect stress cracks
 - Extremely effective thread blowing to avoid false rejects
 - Secure standing rejection at 40,000 bottles / hour
- 1 High-performance thread blowing **miho Bottle Dryer**
 - 2 Infeed protection with foreign bottle inspection and sorting of scuffed bottles **miho Multicon 3**
 - 3 Empty bottle inspector **miho David 2** with:
 - dual sidewall inspection
 - finish side inspection **miho FSI**
 - sealing surface inspection with RGB-Lighting
 - base inspection with stress crack detection
 - 4 Linear segment rejector **miho Leonardo M** for standing rejection of empty and (partially) filled PET bottles
 - 5 Reject table, optimized for PET bottles
 - 6 Intelligent conveyor control system **miho Pascal** / central control cabinets



Dirty vent slot



Stress cracks



Permanent marker

More about the inspection of PET bottles:



9.3 Bottling plant swing top bottles

Installed by **miho**:

- Complete bottle transportation
- Intelligent conveyor control
- All control and inspection systems:

After the washing machine:

- 1 Infeed control **miho Unicon 4** with rejection and additional residual liquid detector

- 2 Empty bottle inspector **miho David 2**

After the filler:

- 3 Fill Level inspection **miho Newton HF**
- 4 Ultrasonic bar for detecting leakage **miho UIP**

After the labeller:

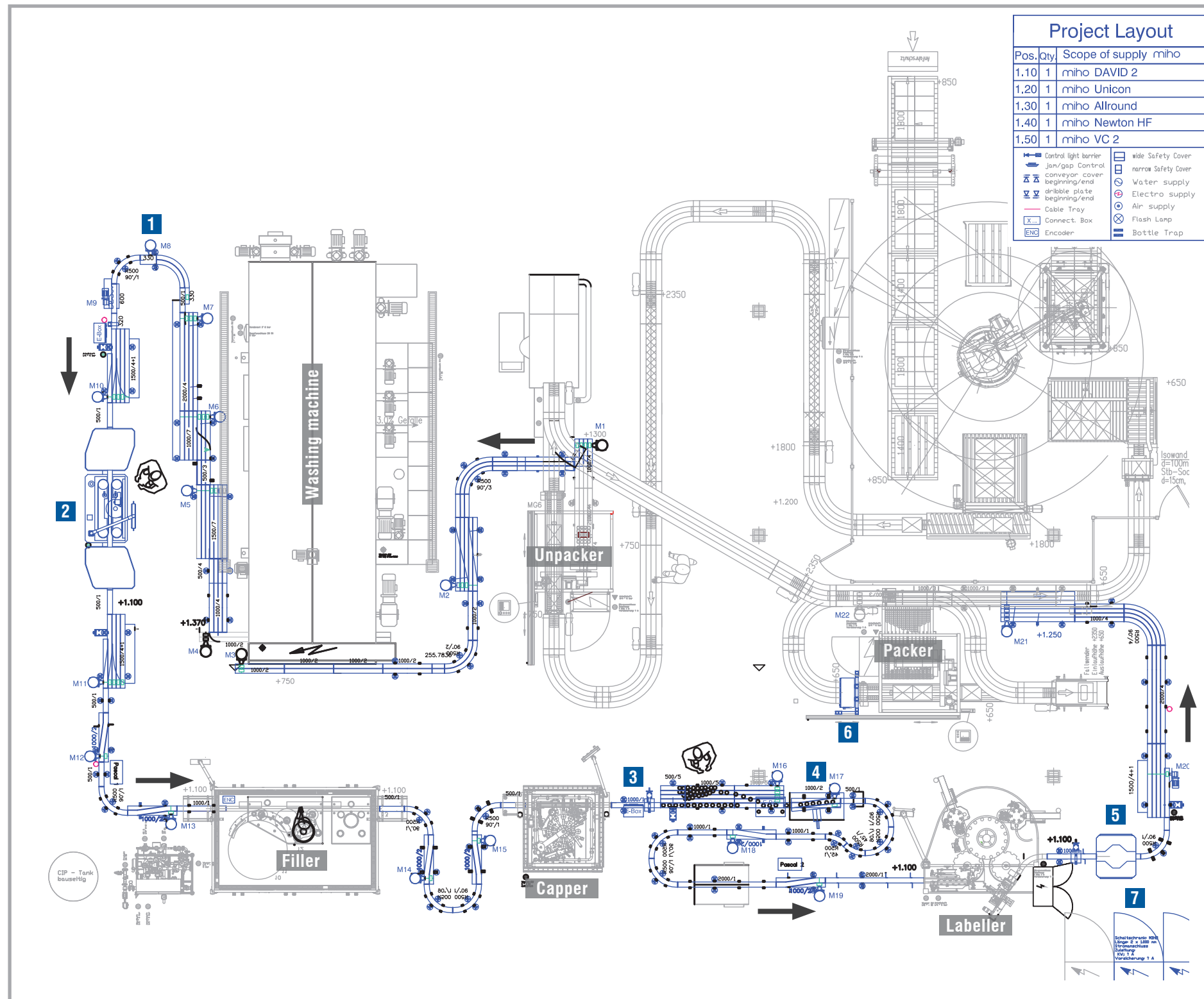
- 5 360° inspection of a fully equipped bottle **miho Allround** with rejection

After the packer:

- 6 Full crate inspection **miho VC 2**

Conveyor control:

- 7 Intelligent conveyor control system **miho Pascal** / central control cabinets



Crack in the finish area



Dirt in the bracket area



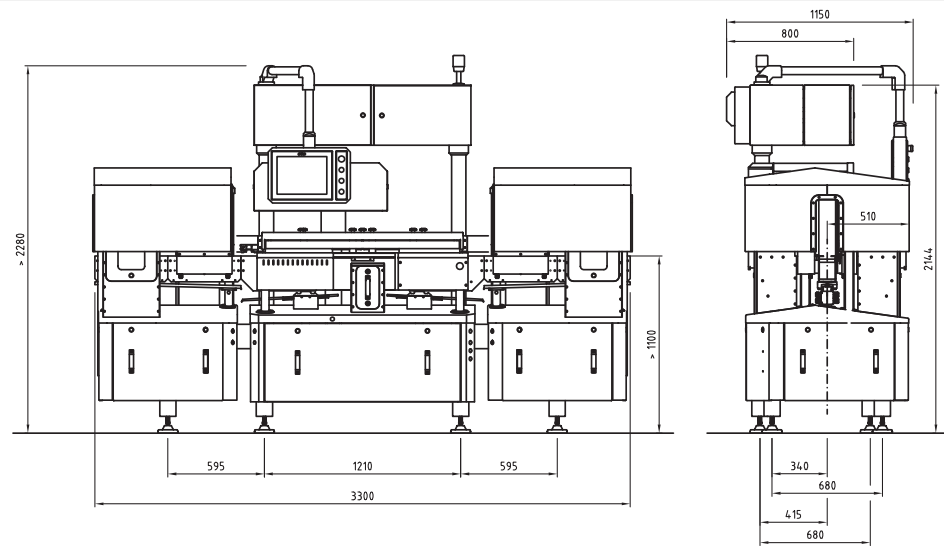
Incorrect bracket attachment

More about the inspection of swing top bottles:

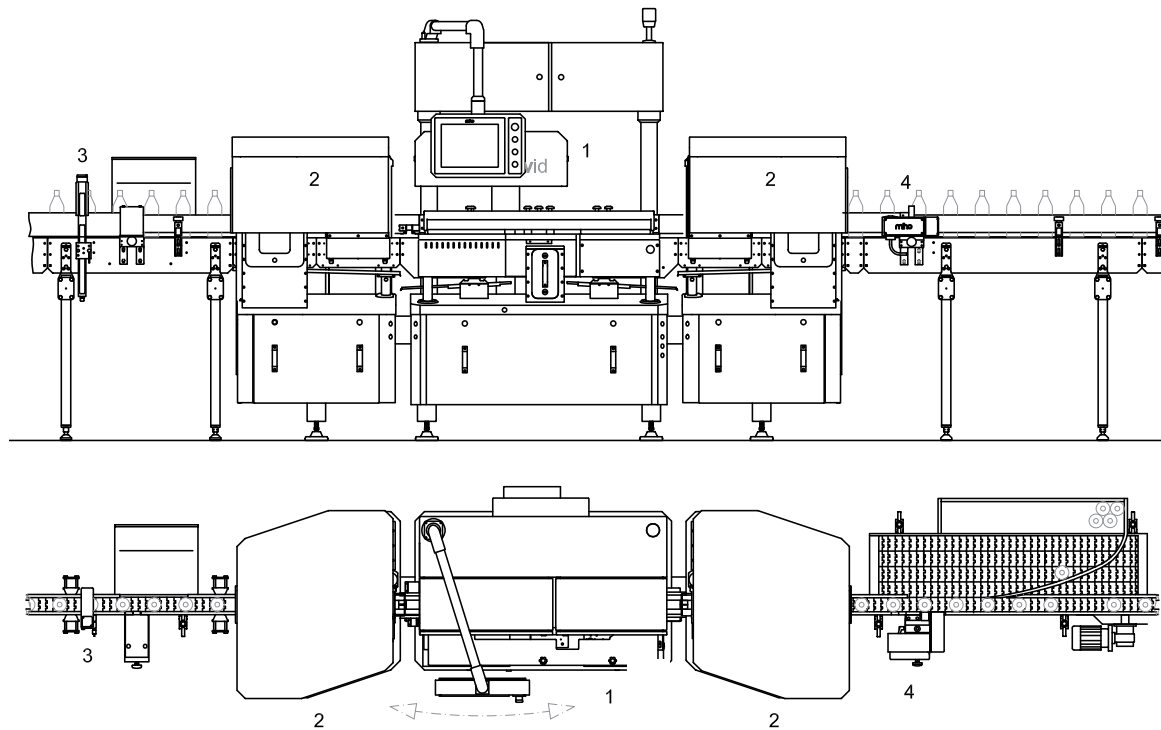


10.1 miho David 2 with Dual sidewall inspection and miho FSI

Dimensions



Recommended Installation



Legend:

(Installation recommendations on the left and right side)

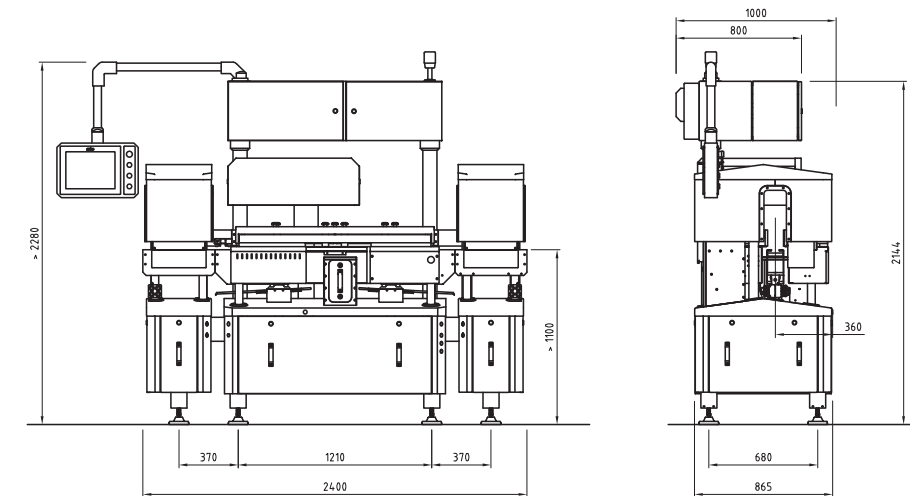
- 1: Inspection head 2: Sidewall inspection units
3: Infeed controls 4: Ecc. reject system miho ESF 2

Cleaning

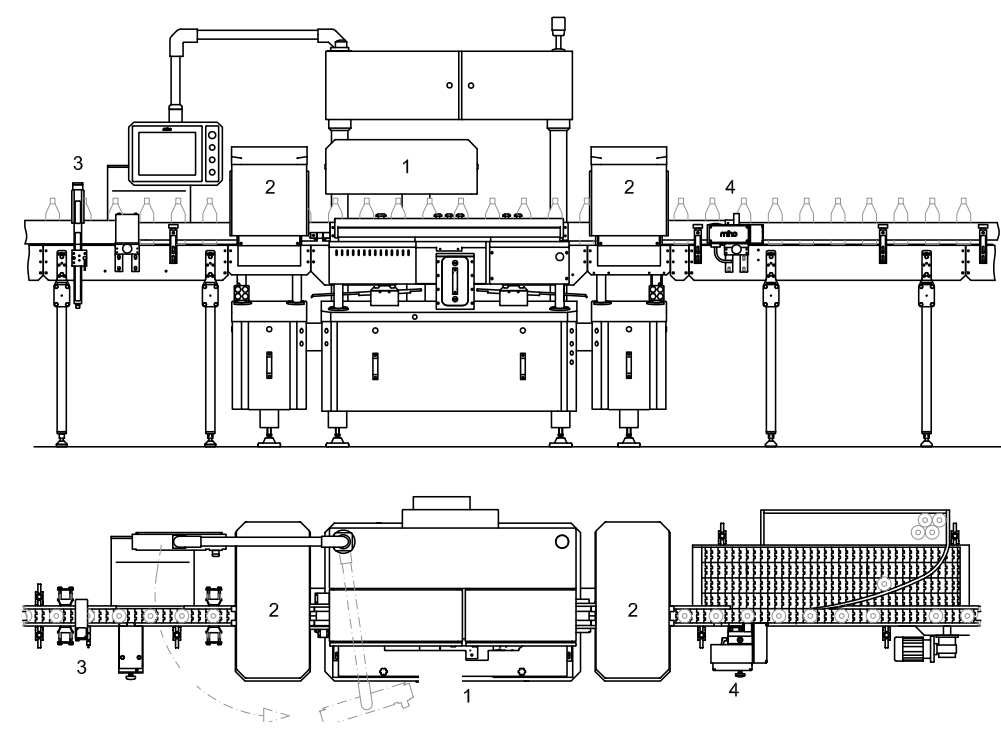
- cleaning plans in accordance with the instruction manual
- with standard industry cleaning agents

10.2 miho David 2 with standard sidewall inspection

Dimensions



Recommended Installation



Operation

- temperature +10°C to + 40°C
- relative humidity: 30% to 90%

Supply

- operating voltage 230 V +/- 10%, 1-phase AC
- frequency: 50 Hz to 60 Hz
- power < 1.5 kW
- pneumatic, operating pressure: 5 bar - 10 bar

The **complete** monitoring of the filling process by **miho** inspection systems:

		Filling Process					
		Depalletising	Unpacking	Cleaning	Filling / Capping	Labelling	Palletising
miho Product Program	Inspection	Empty Bottle Crate Inspection miho Maxx	Bottle Sorting System miho Multicon 3	Empty Bottle Inspection miho David 2	Fill Level Control for Containers miho Newton X2	Optical 360° Inspection miho Allround	Full Crate Inspection miho VC 2
			Bottle Sorting System miho Unicon 4	Bottle Sorting System miho Multicon 3	Fill Level Control miho Newton HF	Label Control miho EC	
			Bottle Counter miho FZ 2	Residual Liquid Inspection miho LC	Fill Level and Cap Inspection miho Newton Optic	Fill Level Control for Containers miho Newton X2	
				Residual Liquid Inspection with test bottle program miho LC 2	Filling Pipe Detection miho MX	Fill Level Control miho Newton HF	
				Bottle Counter miho FZ 2	Filler Monitor miho FM 2	Sealing Inspection for PET miho Feeler	
				Blowing device for the thread area (PET bottles) miho Bottle Dryer	Ultrasound Sealing Inspection miho UIP		
					Sealing Inspection for PET miho Feeler		
		Intelligent Conveyor Control System miho Pascal for the Container Transport System miho Conveyance					
		High Speed Pusher for Bottles miho HSP	Multi-reject system for Bottles miho HSPM	Eccentric Reject System for Bottles miho ESF 2	Linear Reject System for Bottles miho Leonardo M	Segment Reject System for Crates miho Leonardo SK	

miho Inspektionssysteme



miho's excellent Sales Agent in:

