wilco
Being sure

Automated Visual Inspection

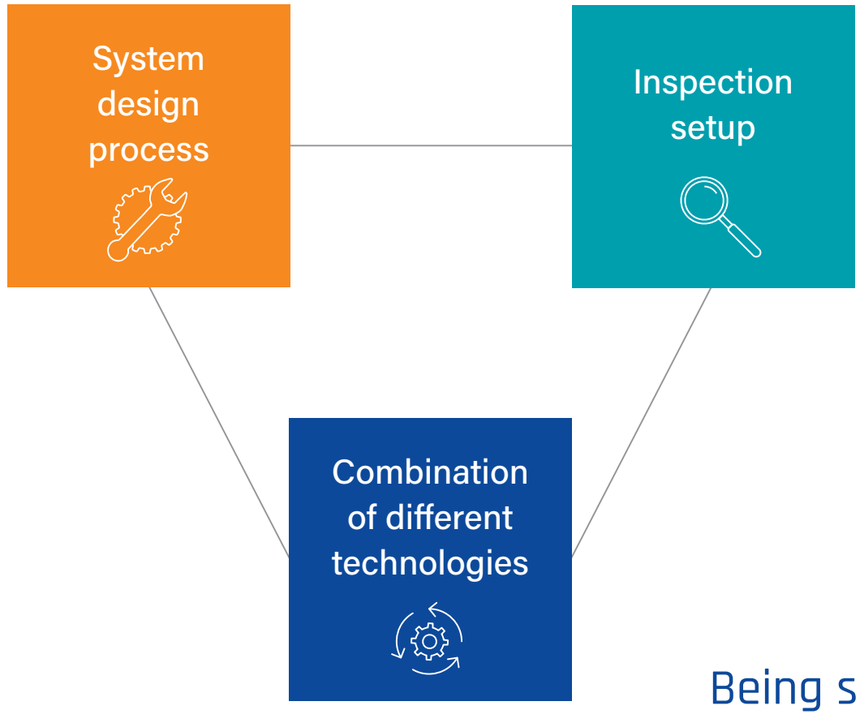
of Vials

Made in Switzerland

Our Expertise

The basis of your individual solution

Parenteral drugs require 100% visual inspection. We trust our holistic system design for your various inspection requirements. For the inspection setup we use the latest optical components and image processing technologies. With our portfolio of multiple inspection technologies, we combine visual inspection with other modules to create process-specific inspection solutions for the most demanding requirements.



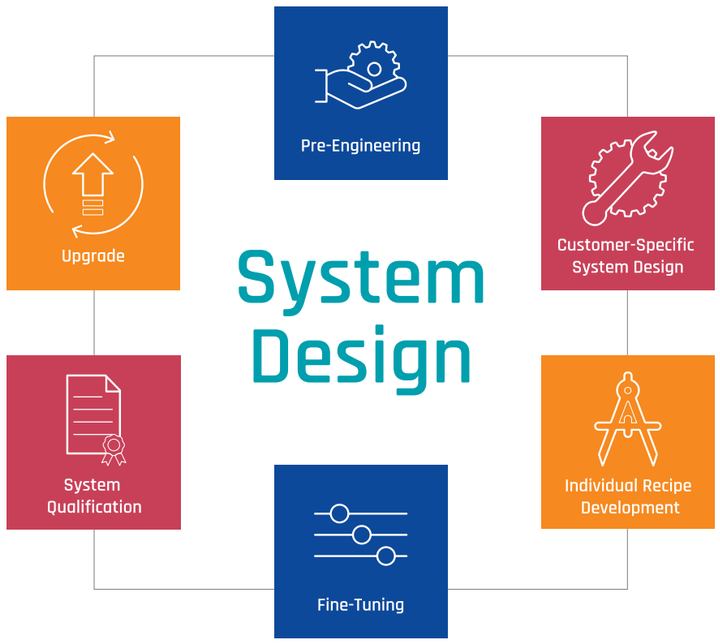
Being sure.

System Design Process

The key to success

We use a system design in six phases for your visual inspection solution.

System design process



After an in-depth analysis of the inspection requirements, we develop a task-specific inspection setup in our laboratory. The various hardware and software components are tested and the inspection setup is defined. Finally, the inspection setup is transferred to the modular inspection platform.
This allows a scaling of the image processing and thus a gradual optimization of the inspection results.

Advantages with the WILCO System Design

- Holistic view of your requirements
- Shared understanding of inspection tasks
- Early feedback on inspection performance
- High degree of customization possible
- Direct transfer of laboratory setup to AVI-System

Highest Process Reliability

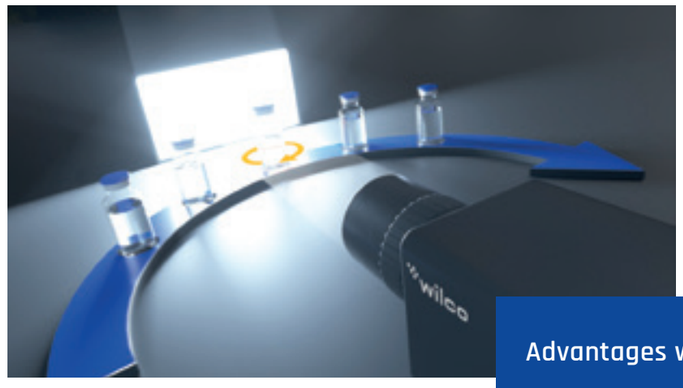
OptiX – the static optical path

The central feature of our visual inspection is OptiX, the static optical path. It is the basis for high-quality image capture and excellent inspection results. All cameras, lenses and light sources are designed in such a way that no movement of the components in the optical path is required. This prevents vibration and wear of the components.

Inspection setup

The components of the inspection setup

Hardware – Components | Software – Algorithms | Optical Design | Mechanical Design | Machine – Functions



Advantages with OptiX

- Improved process reliability
- Prevention of misalignment
- Reduction of wear on optical components
- Very fast format changeover
- Coverage of the whole format range

Holistic Inspection

CosmetiX and ParticleTrack

Cosmetic defects of the container as well as particles in the product are detected by individually adapted inspection stations.

Inspection setup

CosmetiX – Inspection of cosmetic defects

For the inspection of cosmetic defects, the test samples are rotated 360°. This allows inspection of cracks, scratches, contaminants and other cosmetic defects on the bottom, vial wall and crimp cap.

ParticleTrack – Particle Inspection

Automated particle inspection distinguishes between floating, suspended and settled particles at the bottom. Particles in the liquid are inspected using image subtraction and particle tracking algorithms.
Sequences of high resolution images are acquired as the liquid inside the vial rotates, causing potential particles to move. The spinning profile is defined individually for each inspection task and is part of the inspection specification.

Depending on the inspection task, the optical setups – consisting of cameras, lighting and image processing – are configured individually.

Inspection tasks

As diverse as your requirements

Defects on the Crimp Cap
- Missing crimp cap
- Cracks, scratches, damage or cap contamination
- Quality of the crimping
- Presence of a stopper

Defects on the Flip-off
- Missing Flip-off-Cap
- Cosmetic defects
- Color

Major Defects
- Cracks in glass
- Missing caps
- Crooked caps

Defects on the Shoulder
- Cracks
- Scratches
- Impurities
- Deformities
- Chipped glass

Inspection of Coding
- Quality
- Presence

Particles on the Surface of the Liquid
- Synthetic material

Cosmetic Defects of the Wall
- Cracks
- Scratches
- Impurities
- Deformities
- Chipped glass
- Level of liquid / Lyo product

Particles in the Liquid
- Fibers
- Hair
- Filter material

Cosmetic Defects on the Bottom
- Cracks
- Scratches
- Impurities
- Deformities
- Chipped glass

Heavy Particles on the Bottom
- Metal
- Glass
- Polypropylene

Inspection setup

Differentiating bubbles and particles using artificial intelligence (AI)

Bubbles can form in liquid products during filling or transport. These can be detected as particles in the automated visual inspection and thus lead to false rejections.
We prevent this with the support of AI in image processing. This achieves a significant reduction in the false reject rate and ensures better productivity. The self-learning algorithm is frozen and validated after optimization.

Applications

Visual inspection of low-fill vials

Vials filled with a small amount of liquid pose a challenge for conventional visual inspection. The common approach of particle inspection by means of image subtraction is not possible, because the small amount of liquid cannot form a defined profile during rotation.
In cooperation with a customer, we have developed a system that works with optimized camera and lighting components, as well as adapted motion profiles. By integrating this system, the detection rate could be increased by 60% compared to conventional image subtraction.

Learn more about our applications

Visual inspection of highly viscous liquids

When visually inspecting test samples with highly viscous liquids, detecting particles with standard automatic visual inspection is a challenge. The contents cannot move independently of the vial, making reliable detection impossible.
Therefore rotation of the vials is optimized, which enables a large number of images to be generated, using special algorithms to track the position of the particles. This allows us to distinguish between critical and non-critical particles.

Automated Visual Inspection

VISION CAV

The VISION CAV visual inspection platform is designed for customized, fully automated inspection of particles and cosmetic defects of vials containing liquid or lyophilized products.

OptiX – Static Optical Path

→ Guarantees a reliable inspection path

Task-specific Inspection Setup

→ Scalable image processing units for task-specific inspection settings

Additional Inspection Technologies

→ Integration of NIRS and HSA modules for leak testing and residual moisture determination

State-of-the-Art optical Components

→ Cameras and lighting, protected from environmental influences

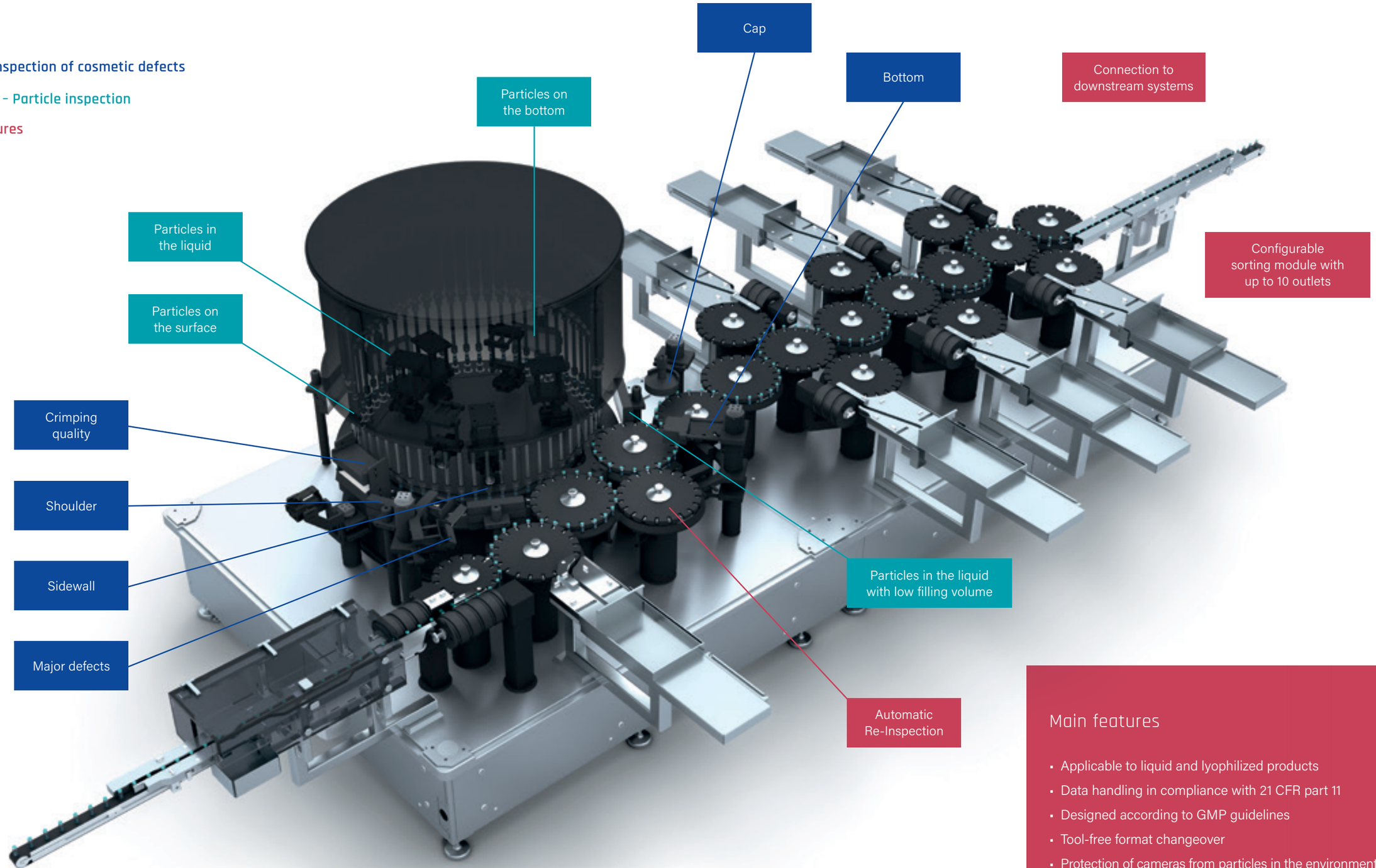
VISION CAV 600

- Integration of up to 13 inspection stations
- Test capacity of up to 600 test samples per minute
- For 2 ml up to 250 ml glass vials
- Product specific rotation profiles
- Monitoring of critical parameters
- 60 servo-controlled rotation stations

VISION CAV

Modular and scalable

- CosmetiX – Inspection of cosmetic defects
- ParticleTrack – Particle inspection
- General features



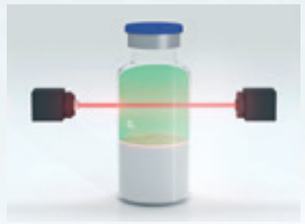
Main features

- Applicable to liquid and lyophilized products
- Data handling in compliance with 21 CFR part 11
- Designed according to GMP guidelines
- Tool-free format changeover
- Protection of cameras from particles in the environment
- Vacuum gripper for gentle transport through the system

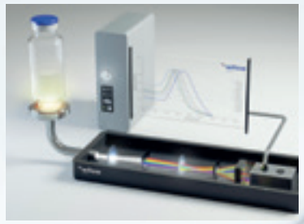
Multi-Inspection Platform

VARIO MTX

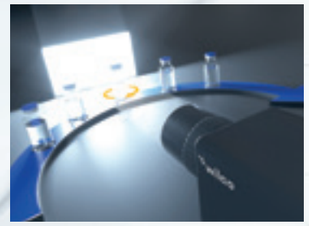
The VARIO MTX is a modular inspection platform that enables application-specific configuration for pharmaceutical packaging quality control and allows the combination of different inspection technologies.



Headspace Analysis



NIR Spectroscopy



Visual Inspection

Combination with other technologies

Headspace Analysis

→ Automated leak test or residual oxygen measurement

NIR Spectroscopy

→ Non-destructive testing of defects and residual moisture in lyophilizates

Visual Inspection

→ Camera-based inspection of cosmetic defects

Flexibility

→ Inspection of multiple packaging and product types

VARIO MTX 600

- Different inspection technologies in one platform
- Test capacity of up to 600 test samples per minute
- Configurable product outlet
- Optional integration of code reader

Advantages with our inspection platforms

- Customized design for maximum detection rates and low false reject rates
- Easy retrofitting of existing stations for new inspection tasks
- Easy replacement of individual inspection stations without re-qualification of the other stations
- Inspection of a wide range of features in the smallest possible space thanks to multiple inspection technologies

WILCO 360° Services

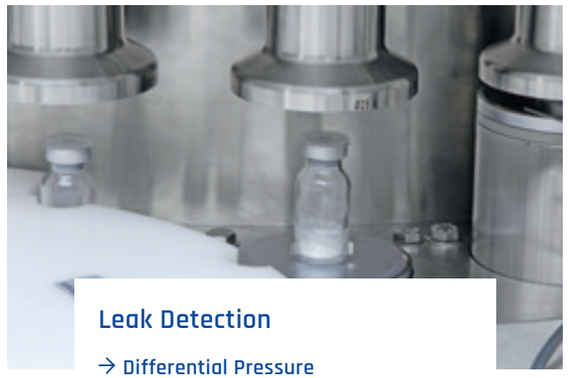
Cooperation based on trust

The process determines the solution. We focus on the long-term success of your test and inspection processes. We offer a wide range of services to meet your individual challenges both today and in the future.

Inspection Technologies

Precision through combination

We combine the most important inspection technologies in modular systems for your individual needs. We offer the right technology for every product and the right machine for every requirement.



Leak Detection

- → Differential Pressure
- → Headspace Analysis
- → Force Sensor Technology
- → Mass Spectroscopy

Visual Inspection

- → Camera based Visual Inspection
- → X-ray based Visual Inspection
- → Image processing

Process Analytical Technology (PAT)

- → Near-infrared spectroscopy
- → Headspace Analysis

Handling & Coding

- → Object transport
- → Robot handling
- → Tray loading
- → Object coding

Leading Solutions

Made in Switzerland

WILCO AG is a Swiss solution provider of leading inspection systems for the pharmaceutical, biotech, diagnostic, medical device and packaging industries around the globe. With 50 years of innovation tradition, we offer our customers tailor-made solutions for Container Closure Integrity Testing (CCIT) as well as visual inspection.

About us

- Founded in 1971 in Wohlen, Switzerland
- 130 inspired employees
- Represented worldwide
- Part of the Bausch+Ströbel group
- ISO 9001 certified
- Over 5000 machines in operation
- Holder of various patents

Please contact us.

Together we will find the optimal solution tailored to your needs.

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