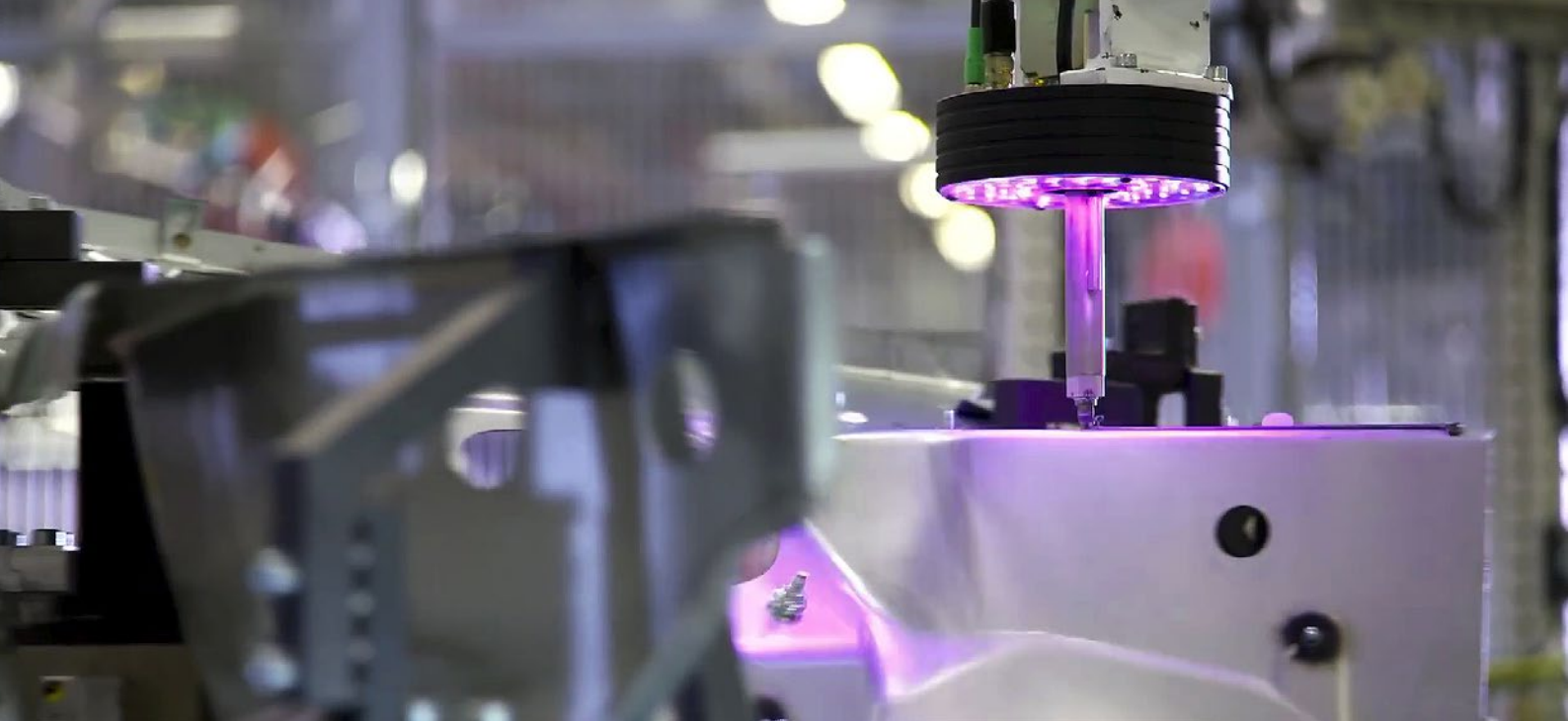




ADHESIVE BEAD INSPECTION

Inline inspection of adhesive beads and subsequent inspection of sealant beads





System solutions for the inspection of adhesive and sealant application

Adhesives and sealants are used in numerous industrial application areas, including automotive manufacturing, shipbuilding and aircraft construction, the production of household appliances and acoustic elements. Defective seals and sealing seams can impair functionality, safety or the visual impression and can no longer be corrected after assembly.

For quality assurance, fully automatic optical inspection systems are used for non-contact inspection. Typically, the position, course and width of the seams or the completeness of sealing foam and thermal conductive pastes are inspected.

VisionTools offers a comprehensive product range for these applications.

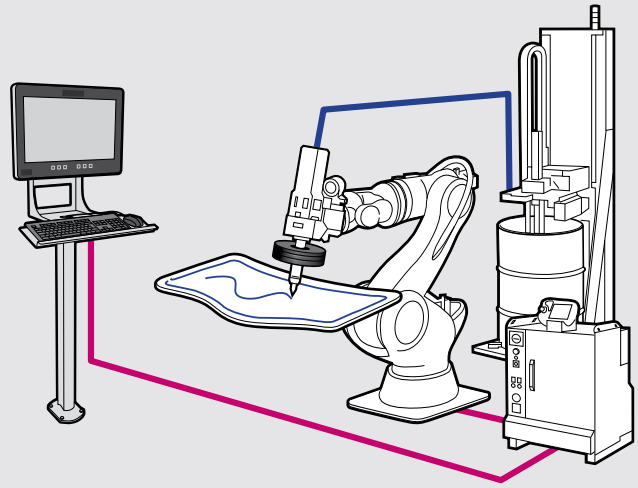
- Systems for **in-process** inspection, during application or **post-process** inspection, i.e. subsequently
- Any **seam geometry** can be tested
- Detection of interruptions, thickenings, neckdowns and positional errors
- Teach-in by teach run and simple parameterisation by the user
- **Position recognition** for correcting the inspection areas in case of workpiece position fluctuations within definable limits
- Intuitive **software user interface** for setting parameters
- Overview of **error visualisation** on the monitor
- Storage of individual results and inspection images for later evaluation and documentation
- Robust, industry-compatible system components with industry-compatible M12 circular connectors and Gigabit Ethernet

In-process

Seamless inspection with all-round view

With **in-process** or **in-line** adhesive bead control, a sensor unit is mounted directly on the application tool. A robot guides the application tool with sensor over the respective workpiece or vice versa (workpiece along the glue nozzle). In both cases, the adhesive bead is inspected directly during adhesive application.

- No additional cycle time required
- No additional inspection station necessary
- High inspection speed
- Only one sensor unit



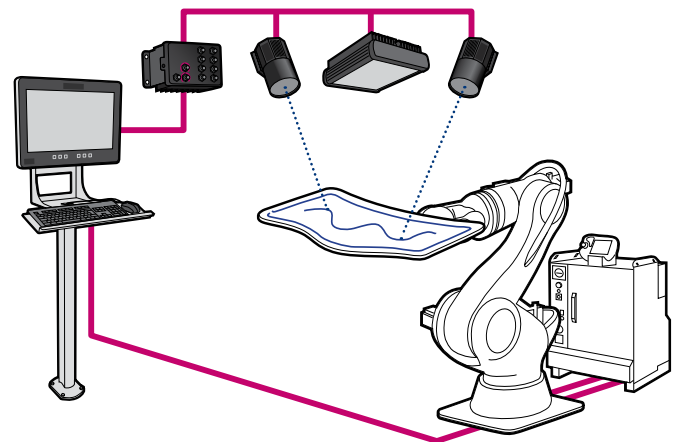
The compact **Cyclospotter** camera head combines 3 CCD sensors in one housing, for a 360° view of the adhesive bead. In difficult contrast conditions, the temperature difference between the sealing seam and the application surface can be imaged with the **Cyclospotter-T** with **IR sensors**.

Post-process

Subsequent inspection with flexible multi-camera system

With **subsequent** inspection, the workpiece is only inspected after the sealing bead has been completely applied. For this purpose, the workpiece is presented in one or more positions in front of a multi-camera system with stationary cameras.

- Adhesive bead is only inspected shortly before installation
- Plant-specific, individual system set-ups
- Different working distances
- Variable number of cameras



Our modular, PC-based camera systems of the **VoE product line** can be easily integrated into the production process. The camera systems can be expanded at any time without having to modify existing system components.

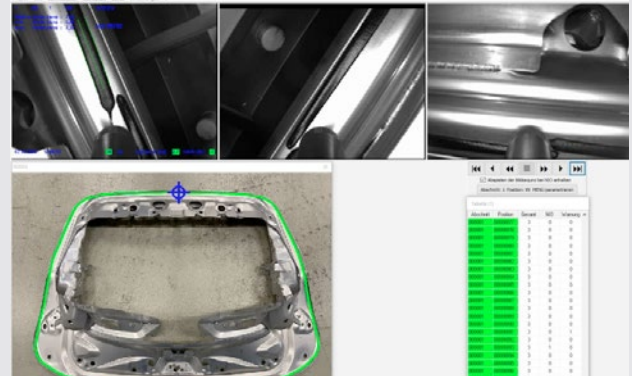
Evaluation with VisionTools V60

The evaluation of the images and communication to plc are realised with the standard image processing software VisionTools V60.

Ready-made software solutions in the form of project files that have been tried and tested many times are available for checking the adhesive and sealant applications. No programming is required.

All settings can be made with the intuitive user dialogue. Images and inspection results are clearly displayed, defective sections are visualised in a component overview. By clicking on

individual results, the corresponding images of the bonding area are displayed.



Cyclospotter

The compact camera head with 3 CCD sensors and RGB LED technology was specially developed for the inspection of sealants and adhesive beams directly during the application process.

Due to the simultaneous image acquisition of three images each from different perspectives, the bead is always visible in the image of one sensor. No reorientation of the work piece or the camera is required when changing direction during the application.



Cyclospotter-T

The compact CycloSpotter-T camera head is used to inspect sealant or adhesive beads with thermography (IR cameras). Even with a small temperature difference of 1 Kelvin between the bead and the component, the image can be evaluated without any problems.

- Clear imaging of the bead even if there is no optical contrast between the adhesive medium and the application surface, e.g. black seam on dark CFRP.
- Utilisation of different thermal radiation behaviour of different materials

