**POSITION CORRECTION**

In most processing steps, an add-on piece or a tool must be positioned relative the workpiece.

The constant relative reference point is crucial for successful processing.

The choice of detection points on the workpiece and the robust conversion of this information into a position correction of the tool are crucial for accurate positioning.

![Correct position of workpiece](image1)

![Workpiece shifted](image2)

![Workpiece with deviating contour](image3)

Fig.: If the contour of the workpiece deviates, an optimum and individually adjusted position must be found.

**CONTROLLED RELATIVE POSITION**

- Complete correction of all static positioning errors of the robot.
- Highly accurate positioning better than the reproducibility.
- Rapid positioning using continuously measuring sensors.
- Best possible relative possible if the shape of workpiece deviates.
- Complete control of the workpiece and positioning tolerances.
- If necessary, dynamic following of a moving workpiece (optional).

**METHOD**

The relative position between the workpiece and a robot gripper is continuously determined using a suitable sensor system.

The sensor data are converted into a position correction value using a mathematical compensation procedure.

A position controller continuously guides the robot gripper until the correct relative position is reached.

![Controlled position at rear lamp cut-out](image4)

**YOUR BENEFITS**

- Constant manufacturing quality, even for component ageing and temperature fluctuations
- Best possible manufacturing quality for shape tolerances
- Lower cycle times
- Lower setting up, operation, and maintenance times
- Complete process control and documentation
PERFORMANCE FEATURES

- It is possible to use all common, continuously measuring distance sensors
- Laser distance sensors have a high robustness for variable illumination and critical surface properties
- Calculation of the position correction from the data measured by the sensor using a weighted best-fit procedure
- Redundant sensor arrangement that allows production to continue even if sensor fails
- Integrated check of the deviation in the workpiece shape safeguards against incorrect processing
- Automatic checks for mechanical changes in the sensor mounting
- Reliable robot movement by specification of limiting values for the control speed and movement range during guidance
- Standardised real-time interface to the robot
- Logging of all system activities internally and at the interface to the robot
- Password-protected access to critical system parameters
- Simple set-up of the system with self calibration

TECHNICAL FEATURES

Implementation with robots
KUKA, other manufacturers on request

Interfaces
Ethernet to the robot, further interfaces Interbus, Profibus and others on request

Distance sensors
Laser triangulation, analogue output 4-20 mA, other sensors on request

Control process for position correction

Control of up to six degrees of freedom
- Positioning accuracies that are well below the reproducibility of the robot and which remain stable over a long period
- Short positioning times depending on the final accuracy preset in the system
- Fine adjustment of the relative position on the workpiece always possible, even after the system has been set-up

VMT® IMAGE PROCESSING

VMT provides individual turnkey systems and complete solutions for industrial image processing applications and automation. In order to control processes and guaranty perfect quality our systems are integrated in almost all industry trades. The highly qualified VMT engineer team has more than 200 man years of experience in industrial image processing. We maintain long lasting and successful relations to market and technology partners and their clients. More than 500 proven system installations speak for themselves.

VMT system solutions are based on self developed software products adaptable to the clients’ specific needs, added with the appropriate machinery if desired. The systems responsibility stays with VMT. Due to own developments, cooperations with research centres and technology partners the guaranty of constant development of the systems and the used technologies is always given.