

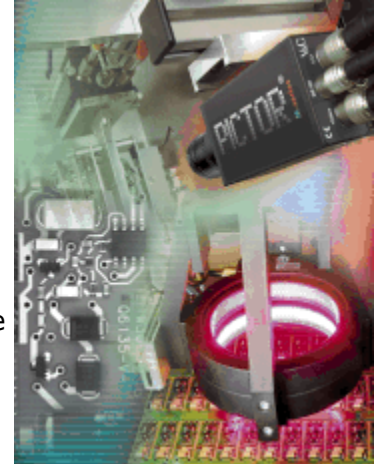
Applications Examples

Systems offered by FS Systems and components supplied by Vision Control can be found in virtually all areas of the processing and production industries, all over the world.

Our most important aim is insuring that product quality is improved and is maintained at a high standard via 100% inspection, that processes operate reliably and that the level of automation is raised.

Some application examples (below) display the breadth of industries and tasks where FS Systems and Vision Control components are in use

- Precise measurements
- Robotics
- Short cycle times
- Rough environmental conditions
- Difficult lighting
- Multiple products / Small batches



The types of problems that can be successfully solved by use of FS Systems supplied components and systems are extremely varied and the possibilities for employing them are practically limitless. Typical sorts of problems involved are:

Measurements:

- length
- width
- height
- angle
- orientation
- size
- area
- center of gravity
- straightness
- roundness
- shape
- contour
- colour
- brightness

Testing:

- attributes
- distances, positions
- completeness-/presence
- colour- and pattern recognition
- degree of a feature
- read / recognize signs and characters
- code reading
- object recognition / identification
- material flow control
- proof of process capability (ISO 9000 cont.)
- process control: optimization of yield
- surface inspection
- print check control
- check of assembly
- recognize structures and textures
- recognition of position and rotation (robot vision)

Applications from robotics

Inspection of spot welding / dimensional accuracy of car body parts



The task:

Measurement of position and welding quality of butt-welded bolts on car body parts.

The MV system is mounted directly next to the welding head on the robot arm. Compact assembly is required.

The benefits:

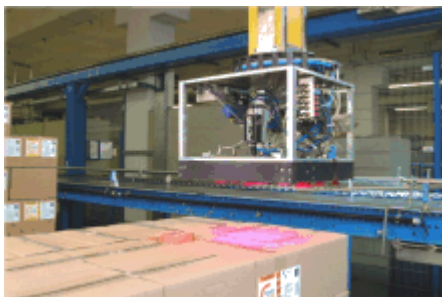
- achievement of 6-Sigma capability within the process
- avoidance of detection of errors first during subsequent assembly processes
- measurement follows directly after the welding step



Components used:

- PICTOR®
- mounting plate
- OH series objective mount
- VICOTAR® T100 telecentric lens
- VICOLUX® RK2029 LED ring light
- clamp adaptor for ring light

Commissioning of pharmaceutical goods



The task:

Product cartons must be reliably recognised in the commissioning of products for nutritional and infusion therapy. Deviations in position and rotation are processed by the robot control. Different products must be handled reliably.

The benefits:

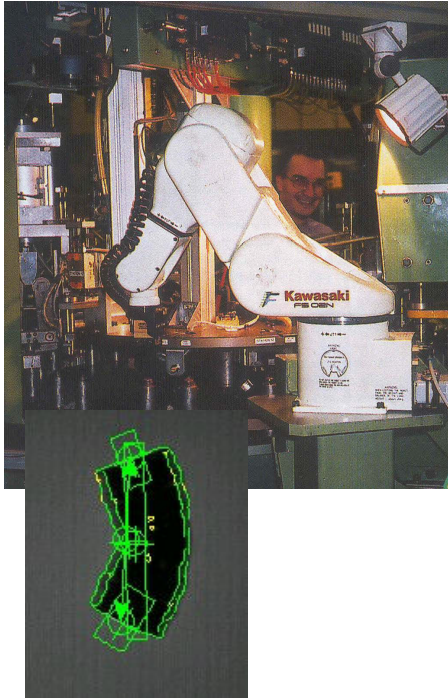
- rapid handling of the cartons
- guaranteed 24 hour service within Germany
- avoidance of cartons falling of pallets with associated downtime for clearing up



Components used:

- Smart Camera PICTOR®
- entocentric lens of the VCN-series
- directed VICOLUX®-lighting with camera look-through ALKD-series

Detection of component orientation and position



The task:

- Detect position and rotation of randomly orientated plumbing fittings on a conveyor
- The camera is mounted in a fixed position and referenced to the robot position
- Correct position and angle and part 'handing' L/R required to ensure the robot can pick and place every time to an automated finishing process
- Detect potential collisions if the path to the pick point is obstructed
- Detect 100s of different variants and add more as needed

The benefits:

- Automation of a repetitive, accurate and operator unfriendly process
- Easy selection of parts with graphical interface
- Ability to specify pick point in x,y,z and angle on a per part basis
- Automatic selection of robot program from RoboVis
- High yield



Components used:

- RoboVis software package
- Industrial touch screen PC
- entocentric lens of the VCN-series
- Firewire B/W camera
- 'Monster' ring light
- Kawasaki robot interface