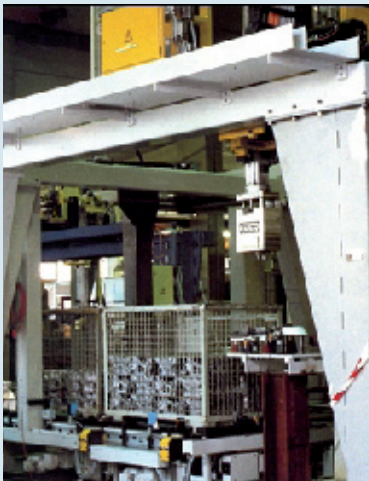


## Depalletizing with position accuracy

### Automated removal of cylinder heads from wire mesh boxes

#### The task

Identical cylinder heads are delivered to the production of an automobile manufacturer. These cylinder heads are piled up in wire mesh boxes in up to five different layers. The robot vision system VIRO automatically provides the



Depalletizing area

handling system with the necessary data for depalletizing each layer of cylinder heads. Once a layer is removed, a signal transfers this information together with the position of the separating layer, which is removed as well.

#### Benefit

The major advantage is the automation of a formerly strenuous manual handling of heavy castings. Due to the varying position tolerances of the cylinder heads an automated depalletization without machine vision technology is impossible. The machine vision system recognizes a possible collision of the gripper before it starts moving. This saves time- and cost-intensive downtime.

#### Implementation

The camera is mounted above the robot and overlooks the entire box. At first the robot vision system VIRO inspects the box for deformations. Then the positions of the cylinder heads in the first layer are detected. Inconsistent reflections of the heads' surface (unpolished or shiny) as well as sources of light interference are compensated by robust software algorithms. Finally, the optimal order of removal is determined by the accessibility of the cylinder heads.

#### Technical data

Cameras: 1 CCD matrix camera

Illumination: Illumination with standard fluorescent lamps

Resolution: Image field:  
approx. 1400 mm x 1060 mm

Speed / Throughput: Approx. 2 - 4 parts / min

Image acquisition: 1 image acquisition, evaluation:  
approx. 1 - 3 s.  
Cycle time equivalent to the movement of the robot

Hardware / Interfaces: Industrial Panel PC, Windows NT  
Connection via Siemens 3964 / RK512