

Part Position Detection for Automated Loading and Unloading

Our tray handling solution for position detection enables the automated loading and unloading of components in carriers and trays with high precision and process reliability. The components are fed into the system in an organized arrangement within trays. As the tray enters the station, the AIT vision system detects the exact position and orientation of the carrier within the working area. Even minor positional deviations are reliably detected and converted into precise coordinates for robot guidance.

Based on this data, the robot moves its gripper precisely to the pick-up position and safely removes the components for further processing. At the same time, the system monitors the presence and occupancy of each individual tray position, reliably detecting whether a slot is occupied or empty.

After processing, the position of the carrier is determined again, allowing the components to be precisely returned to their designated slots. This ensures an orderly arrangement for safe further processing or storage.

Optionally, the tray handling vision system can be integrated directly onto the robot. This ensures highly accurate position detection even with varying tray positions and different component geometries. The solution also supports automated tray transfer processes, in which empty carriers are discharged and loaded trays are selectively fed into the unloading process.

For the user, this means stable processes, reduced downtime, and a significantly lower error rate during handling. High repeatability protects components and grippers, increases system availability, and provides the foundation for an efficient, scalable, and cost-effective material flow.



Technical Highlights & Benefits

- **Position Detection:** Detection of the correct position and orientation
- **Mobile Vision System:** Camera system mounted on the robot
- **Status Detection:** Tray loaded / Tray empty
- **Tray Transfer Process:** Empty carriers are discharged, loaded carriers are emptied

We'll show you how you can improve quality while reducing costs at the same time.
Get a no-obligation consultation now: sales@ait.de