

Application Notes

Automated Electrical Connectors Marking



Industry Insights

In industrial automation, laser marking applications often require the reliable handling of multiple component variants within the same production process.

When components differ in type, colour, dimensions and size, an effective feeding and vision system is essential to ensure flexible and consistent production.

In this application, developed by **Samec**, the goal was to automate the feeding and handling of different types of electrical connectors for a laser marking process, while maintaining a reliable and flexible production flow.

Handled Parts



The system handles a wide variety of **electrical connectors**, differing in **type, size and dimensions**.

The components can feature different geometries and configurations, making flexibility in feeding and positioning essential for the automated marking process.

The FlexiBowl® 650 enables the different connectors to be reliably singulated and presented to the robot, while the vision system identifies their position and orientation.

Configuration



FlexiBowl® 650
Standard Mode

The solution developed by **Samec** integrates:

- **FlexiBowl® 650** – feeds and singulates the electrical connectors, presenting them individually to the robot regardless of their different types and dimensions.
- **FANUC SCARA robot** – picks the connectors from the FlexiBowl® and transfers them through the different stages of the process.
- **Vision system** – detects the position and orientation of the connectors, providing the robot with the information needed for accurate picking and handling.

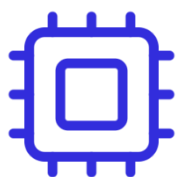
- **External re-orientation system** – re-orientes the connectors when required, ensuring that components are positioned in the correct direction before the laser marking operation.

The FlexiBowl® and vision system work together to manage the variety of components, while the external re-orientation system ensures the correct positioning of connectors when their orientation is critical to the marking process.

Results

- throughput of **approximately 30 ppm**;
- automatic handling of different types of electrical connectors;
- flexible management of different colours, dimensions and sizes;
- automatic component identification through vision;
- correct component orientation when required;
- reliable feeding for the laser marking process.

Key Points



Electrical



FANUC



Pick and Place



30 ppm