Product Card

URQC – 200

Ultrasonic Robotic Quality Control by Industrial Cobot

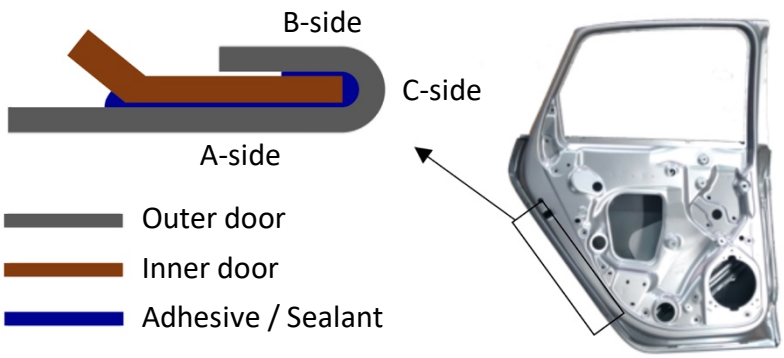
This product is commercially available

The FRS URQC–200 is a fenceless cobot cell which automates the highly sensitive ultrasonic measurements performed on serial-produced parts such as 'body in white' closure panels.

An operator works alongside or together with the cobot during the ultrasonic inspection. The KUKA LBR iiwa cobot is mounted upside-down and optionally extended with an eccentric rotary unit in order to measure larger parts.

By combining force control and feedback of the ultrasonic signal, this product revolutionizes today's manual ultrasonic inspection, which is complex, time consuming and error-prone, turning it into an optimal and reliable quality control procedure.

The picture shows robotic ultrasonic inspection of fold glue joints of 'body in white' closure panels.



Configuration

- KUKA LBR iiwa 14 equipped with real-time FRI interface
- KUKA sunrise controller
- Computer for the FRS adaptive cobot motion control
- Ultrasonic sensor (conventional or phased array), ultrasonic signal processing and display module Olympus Omniscan MX2
- 6D force sensor
- Support for each part to be inspected on manual sliding table
- Graphical user interface for part selection and visualization of results

Features

- Inspects parts up to 1800 mm x 1400 mm x 350 mm
- Allows for scanning speeds up to 20 mm/s
- Accurately controls the contact forces between sensor and part
- Automatically adapts to inaccuracy in part positioning
- Automatically adapts to variability in part geometry
- Automatically guarantees optimal ultrasonic coupling between sensor and surface
- Automatically detects deficit of couplant fluid and signals it to the operator
- Generates on-line visualization of rough inspection results on GUI
- Automatically creates and logs detailed reports of inspection results (optional)
- Guarantees safe operation and interaction with operator
- Robustly deals with disturbances during inspection

Real-time control feedback loops continuously adjust the positioning and orientation of the ultrasonic sensor to ensure a robust and optimal automated measurement. The cobot flexibly deals with small variations in parts, surface, position through adaptive control.

Graphical user interface

- Graphical visualization of inspection results
- Configure inspection parameters