



## ASSESSING THE POTENTIAL TO AUTOMATE ASSEMBLY PROCESSES – FEASIBILITY STUDIES IN THE IPA LAB OR ON SITE

### Status quo

You are planning to automate your production facility and have decided on a promising assembly process. When it comes to implementation, if you are asking yourself the following questions, such as:

- Can the assembly process be automated reliably?
- Can the desired cycle time be achieved?
- Which tolerances can be compensated for?
- Which components are suitable for the planned automation process?

Then we will gladly help you to answer these questions with a feasibility study.

### The IPA solution approach

Either on your premises or in our assembly laboratory, our automation experts conduct studies on your behalf to find out if your assembly process can be automated. Firstly, a robot workplace is configured to your individual requirements. In doing so, we choose the most suitable robots for your application, as well as the necessary sensor systems (tactile, optical, etc.). We implement rapid-prototyping technologies to adapt the grippers to the geometry of your product, develop a customized robot program with variable process parameters and conduct defined test cycles together with you using different parameters or tolerances. All test series are documented with protocols, videos and, if applicable, with statistical “Design of Experiment” analysis methods. Simulation tools can also be used in parallel to support feasibility studies.

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### Your advantages

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You obtain reliable information that has been proven in practical tests about the capacity to automate your assembly process. Experienced automation experts perform the tests using the state-of-the-art technology either in our assembly lab or on your company premises. In line with your demands, we examine relevant influencing parameters and evaluate them by applying a standardized procedure to collect data, write protocols and make analyses. Thanks to the short time required for the tests (projects generally take less than four weeks to complete), project results can be integrated directly during the development of the serial process.

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### Our services

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We offer feasibility studies at Fraunhofer IPA from 10 000 € upwards. Ask us for a quote or get in touch with us to discuss your requirements.

We have the following equipment at our disposal to conduct feasibility studies in our assembly lab:

#### Robot cells

- Lightweight robots:  
KUKA iiwa, KUKA LBR 4, Universal Robot UR5, Universal Robot UR10 (if required, on a passive mobile platform)
- Two-arm robot:  
Motoman SDA10
- Robots from various manufacturers capable of loads up to 500 kg
- Small robots from various manufacturers
- Large robots with a working range of up to 4 x 4 x 4 m
- Mobile platform:  
omnidirectional movable AGV (with optional robot arm)

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### Control technology

- Realtime PCs with interfaces for robot control
- NC-based control technology for robots
- PLCs from various manufacturers
- Interfaces and components for field buses (e.g. EtherCAT, Sercos, CAN, DeviceNet)

### Measuring devices, sensors and components

- Force-moment sensors in various sizes
- Laser scanners
- 3-D time-of-flight cameras
- 2-D cameras
- Grippers: Schunk hand, diverse gripper modules from various manufacturers
- Rapid prototyping technologies (3-D printing) for fabricating hardware components as required