**fleX** structures
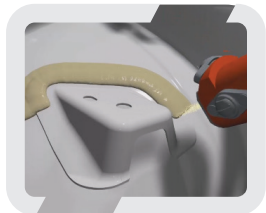
/ Collision free path planning of robot stations
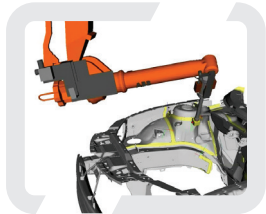
/ Optimization of paint shop taking sealing processes into account

/ Digital mock-up with simulated sealing beads

/ Contact handling of complete robot cells taking dress packs into account

**The Company**

fleXstructures is specialized in developing and distributing innovative high-end technology, developed in cooperation with Fraunhofer research institutions.

The company collaborates in common research projects with Fraunhofer Institute for Industrial Mathematics ITWM in Kaiserslautern, Germany, Fraunhofer-Chalmers Centre in Gothenburg, Sweden, and with various industrial partners.

**Engineering and consulting projects**

We find efficient solutions leading to excellent results with respect to quality improvement and cost reduction.

**Software training and distribution**

In workshops training participants learn how to work with the software and how to achieve efficient results

**Contact**

fleXstructures GmbH
/ Trippstadter Straße 110
  67663 Kaiserslautern
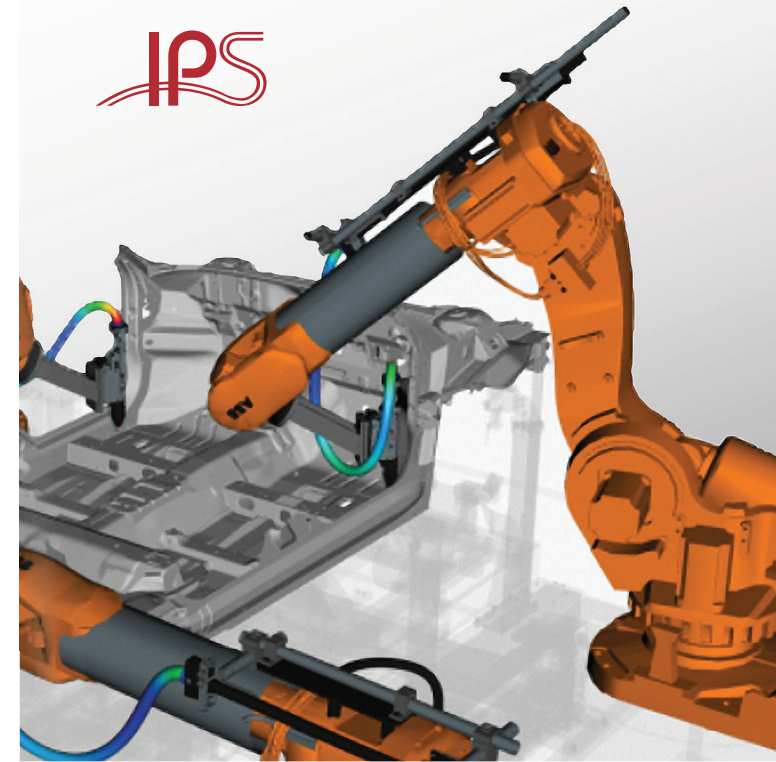  Germany
/ Phone +49 631 680 39 360
  ips.products@flexstructures.de

www.flexstructures.com

# IPS Robot Optimization

Programming of Robot Stations

**IPS**

In cooperation with

**FRAUNHOFER CHALMERS**
RESEARCH CENTRE FOR INDUSTRIAL MATHEMATICS

# Approach

## Advantages of IPS Robot Optimization

## Process Analysis and Optimization

### What is IPS Robot Optimization?

Manually programming robots with correct paths for sealing curves and welding is a complex task without knowing the correct result.

Although great parts of product developments in the automotive industry are already digitized today, a solid mathematical basis is still missing for a wide range of tasks.

IPS Robot Optimization is an intuitive software application used for finding optimized and collision free robot paths for individual or multi-robot stations.

### Features

/ Automatic balancing of tasks between stations and robots
/ Reachability analysis free of collisions
/ Sequencing, coordination and generation of motions without collision
/ Planning of TCP trajectory for sealing applications and welding
/ Setting clearance parameters
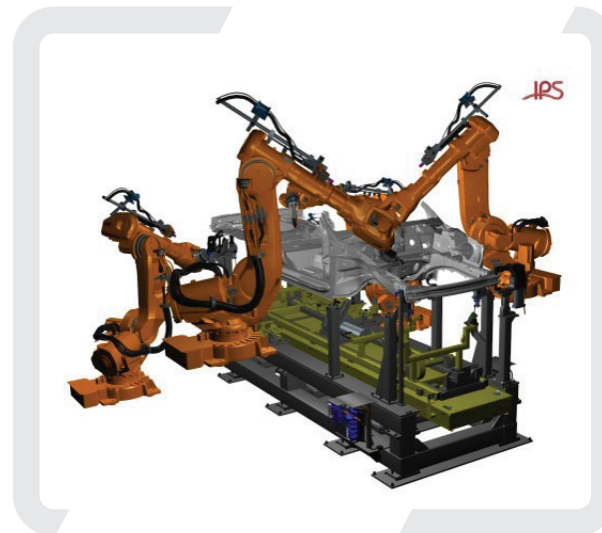/ Coordinating waiting and safety signals of robots (clearance to other robots)

### Benefits of IPS Robot Optimization

/ Power (sealing and welding; programming robot stations with more than 10 robots)
/ Speed (commissioning process is carried out up to 75% faster, while the cycle time is improved by up to 25%)
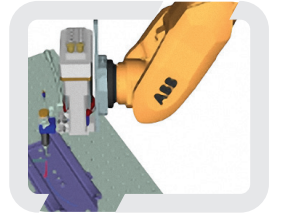/ Easy to use

### Values and significant savings

/ Optimum load balancing
/ Reduced cycle time
/ Automatic code generation
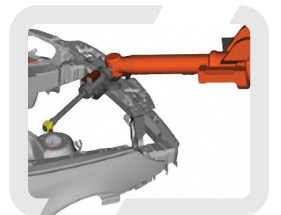/ Optimized "time to market"

### Import sealing curves

Import sealing curves from CAD

### Task planning

Generates solutions free of collisions to perform each sealing tasks

### Sequence and path planning

Determines optimum paths and sequence

### Station load balancing

Optimizes cycle time by automatic load balancing between robots

### Coordination

Ensures minimum clearance between robots

### Results

Optimized paths and executable robot code