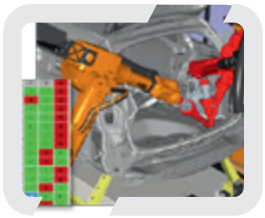
IPS Robot Optimization in Digital Factories



- 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

About fleXstructures GmbH

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

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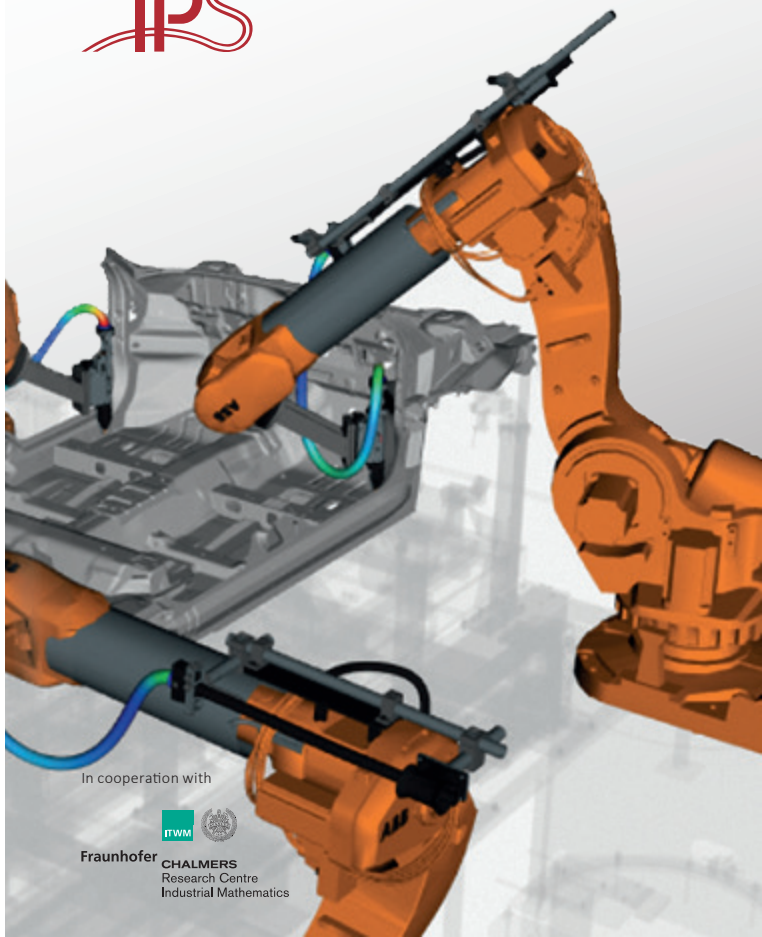
IPS Robot Optimization

Programming of Robot Stations

IPS



Approach

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)

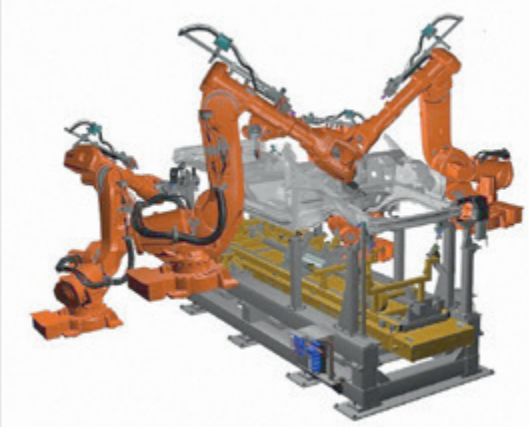
Advantages of IPS Robot Optimization

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

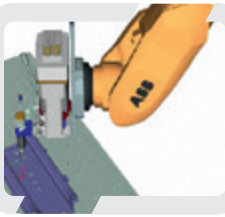
- Optimum load balancing
- Reduced cycle time
- Automatic code generation
- Optimized “time to market”



Process Analysis and Optimization

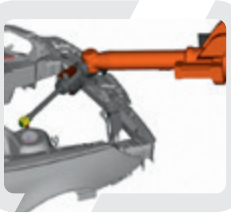
Import sealing curves

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