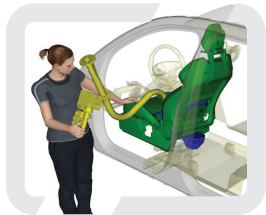


IPS IMMA – Fields of Application

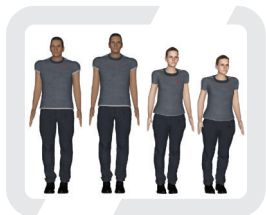
About fleXstructures GmbH



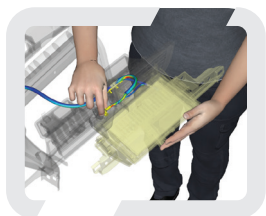
✓ Automatic assembly path planning



✓ Automatic path planning with kinematic tool e.g. seat assembly



✓ Validating the anthropometric differences by setting up only one simulation model



✓ Consideration of flexible components during assembly simulation

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/consulting projects and trainings

flexstructures supports customers with efficient solutions leading to excellent results to improve quality and reduce costs as well as with customized trainings on the IPS products.

Distribution

The company has the global distribution rights to sell the products comprised in the IPS product portfolio.

Contact

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IPS IMMA

Digital Human Modelling –
Evaluation of Assembly Ergonomics
that considers Human Diversity



In cooperation with



IPS IMMA – Human Centered Virtual Product Realization

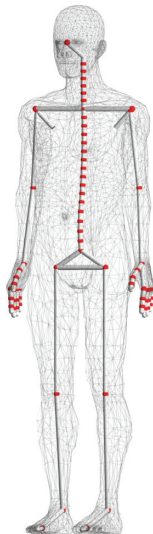
Including humans in virtual product development

The human is the most valuable part in the production process and industrial applications, such as assembly tasks. Therefore, keeping them safe and healthy is essential. In order to reach hidden assemblies with poor accessibility and saving time in iterations and working steps a digital human modelling simulation is a great advantage for the manufacturing industry.

Moreover, the consideration of human factors is an indispensable part of modern design that leads to better products, shorter and more cost-effective development cycles. Inside IPS, the ergonomist is able to validate ergonomic criteria and visualize ergonomic differences in human anthropometrics directly in an analysis diagram.

Features

- ✓ Physic based biomechanical model (always in balance)
- ✓ Anthropometric differences in population are considered by creating a group of representatives
- ✓ 82 bone segments connected with joints, in total 162 degrees of freedom
- ✓ Favourable Human like motions by ergonomic based optimization
- ✓ Generic optimization criteria



IPS IMMA – Intelligently Moving Manikin

Capabilities

- ✓ Ensures collision free assembly motions
- ✓ Performs reachability analysis
- ✓ Automatic ergonomic evaluation of the motions
- ✓ Auto adapts motion strategy depending on the task

Benefits

- ✓ Dynamic Manikin assembly tasks instead of static analyses
- ✓ Easy creation and validation of assembly motions
- ✓ Fast motion and posture computation
- ✓ Easy setup without joint-by-joint definition
- ✓ Consideration of human diversity (automatic simulation of the group of representatives)
- ✓ Automated human like motion generation
- ✓ Weight consideration
- ✓ Minimizes biomechanical load

Values and significant savings

- ✓ Easy handling due to simple instruction language
- ✓ No expert knowledge needed
- ✓ Fast setup (maximizes comfort for each instruction)
- ✓ Time savings due to faster production cycle and less prototyping
- ✓ Easy communication by different departments
- ✓ Quality assurance due to early influences in the production process and possibility of modification

IPS IMMA – Compatible with Path Planner and Cable Simulation

IPS Path Planner

After planning the path of objects with IPS Path Planner, IPS IMMA can use these paths and consider the human inside the assembly applications or ergonomic studies. IPS Path Planner is an integral part of the IPS IMMA tool.

IPS Cable Simulation

In combination with IPS Cable Simulation, flexible components can be taken into account, either for assembly or disassembly tasks or for validations with respect to such parts in the product process.

