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Fraunhofer Institute for Large Structures in Production Engineering IGP

Contact

Dipl.-Ing. Maik Dörre
Mechanical Joining Technology
Tel. +49 381 49682-239
maik.doerre@igp.fraunhofer.de

Fraunhofer Institute for Large Structures in Production Engineering IGP
Albert-Einstein-Str. 30
18059 Rostock

Mechanical Joining Technology

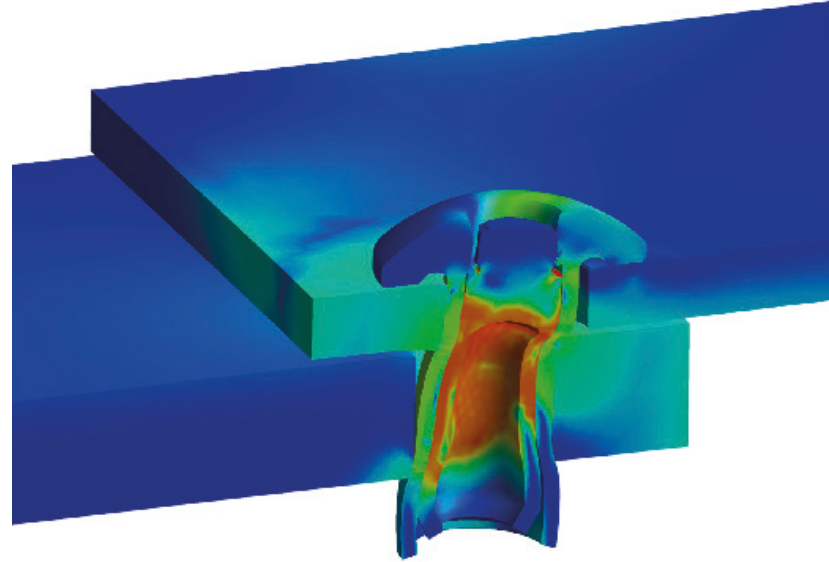
Overview of our services

Mechanical Joining Technology

Growing demands on the manufacture of energy and resource efficient products and environmental aspects are leading in many branches to an increasing use of lightweight construction concepts. The associated use of new types of material has given rise to a renaissance in particular of mechanical joining technologies in recent years. In order to give due consideration to this development, the Fraunhofer IGP is developing innovative and cost-effective solutions to the associated problems.

The field of mechanical joining technology involves various research focuses in light alloy and steel construction, in rail vehicle construction and in general motor vehicle and machine engineering. We elaborate branch-specific solutions together with our clients. The right choice and command of the joining methods go a long way to determining the functionality, reliability and safety of a construction right from the start of the product development. At the same time, the optimum joining technology for the particular application helps to save costs and material during production and use. The scope of activities extends from the advice on the choice of the optimum joining technologies through the analysis of the load-bearing strength right up to the derivation of suitable dimensioning rules, depending on the demands of the particular application.

The theoretical considerations are supported by the accredited test laboratory of the Fraunhofer IGP that, with the most modern testing technology, is able to carry out extensive experimental studies into materials, fasteners, joints and coating systems under standardised conditions



Services

- Consulting on current trends and developments in joining technology (screws, rivets, lockbolts, blind fasteners, functional carriers/elements)
- Preparation of expert opinions and testing concepts for connections in light metal alloy and steel construction (ZiE, abZ/abG, ETA)
- Determination of static friction coefficients according to DIN EN 1090-2 appendix G and TL/TP-KOR steel structures
- Numerical simulation (FEM) with parameterised model building
- Investigation of the fatigue strength of materials and fasteners according to DIN 50100 and DIN 969
- Wöhler tests for the determination of FAT classifications in line with DIN EN 1993-1-9 and FKM guidelines
- Development of measuring algorithms and test methods for non-regulated joining processes
- Derivation of maintenance concepts from preload-force-time behaviour („mechanical maintenance-free“)
- Performance of torque/tension force tests according to DIN EN ISO 16047
- Seminars on the calculation of bolted joints according to DIN EN 1993-1-8 and 9 (Eurocode 3) and VDI 2230 (Part 1)
- Certification/external monitoring of building product manufacturers in the capacity of officially recognised test station in accordance with the German state building regulations.