

Concept

CAE System Partner for Product Development

- Integrating simulation into the development process from the concept phase to the start of production
- Making simulation an efficient resource to optimise the customer's product
- Developing innovative solutions
- Use of the expert know-how provided by **INPROSIM** in a system partnership
- Providing a close and flexible collaboration with our customers, being aware of their individual problems and requirements
- Maintaining a regular communication with the corresponding departments (e.g. construction, assembly and test) in order to successfully merge the various requirements and ideas

Customer Advantages

- Efficient product development
- Innovative solutions
- Saving overhead during the development process
- Saving resources during the development process
- Saving time during the development process
- Earlier time to market
- Better and safer products for end customers



Company

Location

- Kriftel is located in the business and industrial centre of the Rhine-Main-Area (central Germany)

How to get to **INPROSIM**

- By car: From A5 (North/South) or A3 (East/West) via A66 (Exit Frankfurt Main-Zeilsheim / Hofheim)
- By train: From the Frankfurt am Main central station, with line S2, to the Kriftel train station
- By plane: Frankfurt am Main, Rhine-Main-Airport
- Detailed directions are available as a PDF download on our website under "Contact"

Contact

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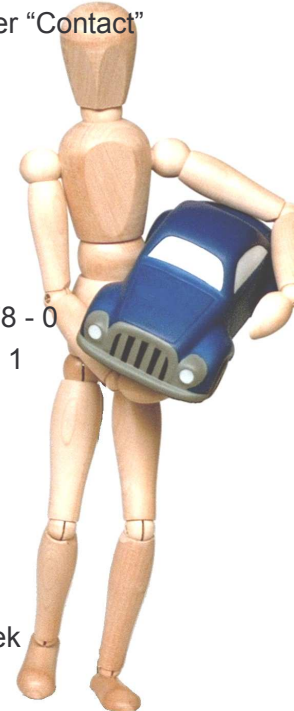
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Info

INPROSIM GmbH

Managing Director: H. Chladek

Date: July 2007



INPROSIM GmbH

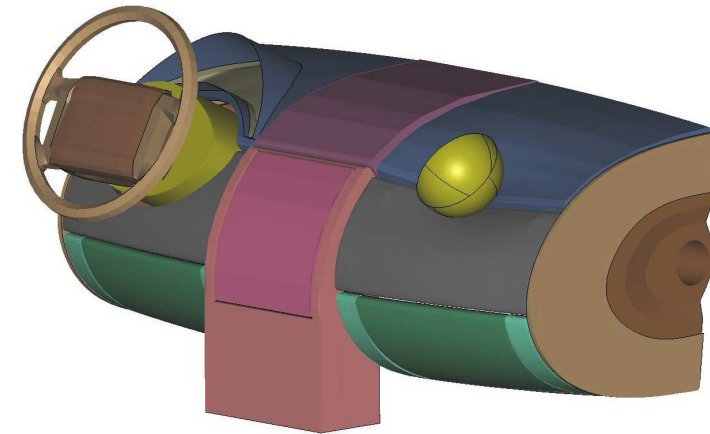
Innovative Product Simulation

Your CAE Partner

For Efficient

Product Development

Interior



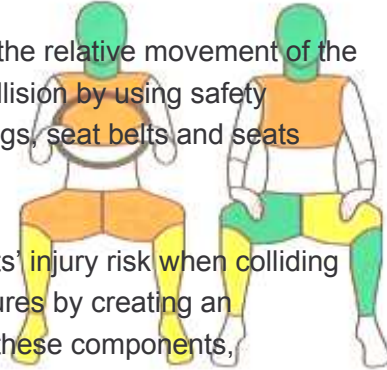
Crash Simulation for the
Safety Concepts in
Vehicle Interior

Requirements

Occupant Protection in Vehicles

Active Systems

- Targeted reduction of the relative movement of the occupants during a collision by using safety systems such as airbags, seat belts and seats

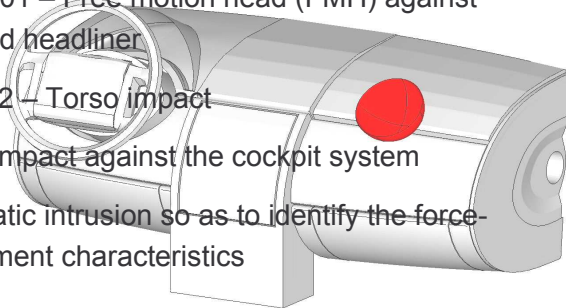


Passive Systems

- Reduction of occupants' injury risk when colliding with the interior structures by creating an appropriate design of these components, particularly the instrument panel and pillars

Head Impact

- ECE-R 21 – Guided head impact (pendulum test)
- FMVSS201 – Free motion head (FMH) against pillars and headliner
- ECE-R 12 – Torso impact
- Dummy impact against the cockpit system
- Quasi-static intrusion so as to identify the force-displacement characteristics



Knee Impact

- FMVSS208 – Knee impact on the cockpit system
- Dummy impact against the cockpit system
- Quasi-static intrusion so as to identify the force-displacement characteristics

Specialisation

Cockpits / Instrument panels

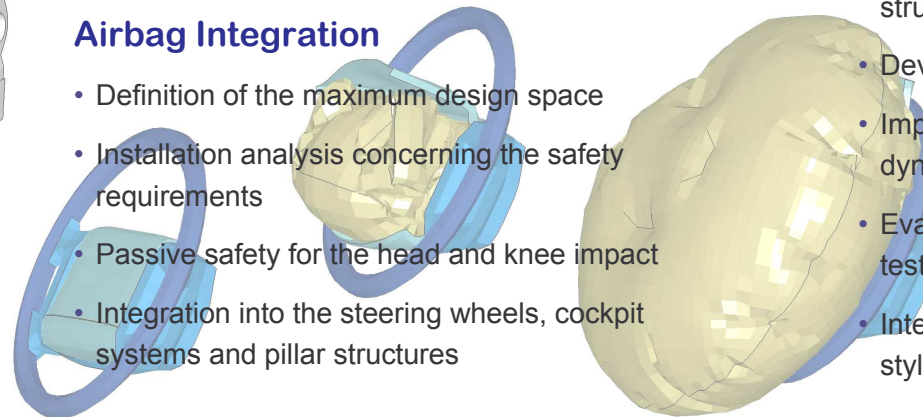
- CAE system partner for the development of cockpit systems and centre consoles
- CAE project management
- CAE support during the whole development process from the first concept studies to the series developments and test phases until the start of production
- Experience with very different vehicle types from compact cars to luxury class vehicles

Seat Systems

- Design for various accident situations
- Concepts for comfort and aid for vehicle entry
- Interaction of the occupants / dummies with the seat e.g. whiplash-effect at a rear Impact

Airbag Integration

- Definition of the maximum design space
- Installation analysis concerning the safety requirements
- Passive safety for the head and knee impact
- Integration into the steering wheels, cockpit systems and pillar structures



Implementation

CAE Simulation

- Development of cockpits and structural components in vehicle interiors in accordance with passive and active crash safety
- Analysis of the static and dynamic stiffness of the components
- Dynamic analysis of the impact of the head and knee impactors as well as the various dummy models
- Early identification of the problematic areas during the concept phase
- Conceptual analysis of the detailed structures in vehicle interiors
- Design and optimisation of the structures in areas related to the occupant safety
- Design of the energy absorbers and damping components such as complex foam and ribbing structures
- Development of the knee bolster systems
- Implementation and validation of the static and dynamic material data
- Evaluation and validation of the simulations and tests
- Integration of the further requirements such as styling, assembly and costs

