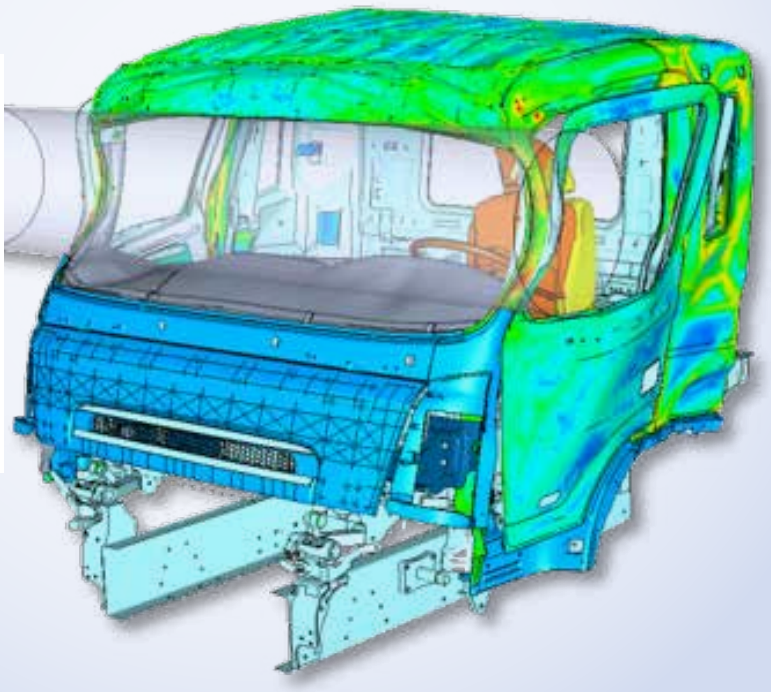
Czech

Add value.
Inspire trust.

Virtual simulations



Virtual simulation of truck (cab, component, superstructure and trailer)

Your Challenges

As current market demands increase volume of work, while time and costs decrease, new approaches are sought. It is imperative to meet increasing safety requirements and customer expectation in both research & development (R&D) as well as certification testing sensitivity and robustness analyses lead to desired objective of having covered all possible scenarios and variants that comply to safety requirements. This does not have to be necessarily related only to crash simulations, but NVH, durability, strength, stiffness etc.

Using the virtual simulation results in development time reduction and often in weak points identification yet before the prototype is made and hence significantly decrease associated costs. Virtual simulations are very often correlated with physical testing to ensure accuracy and reliability. This leads to overall acceptance of the virtual simulations as a suitable tool by customer and authorities.

What is virtual simulation?

While physical test uses usually very expensive sample and prototypes, virtual simulation is based on mathematical reproduction of physical world. For virtual simulation it is sufficient to acquire from business partner only 3D CAD and material definition. Once the virtual model is built it is quick and simple to change any structure, material, thicknesses or just loading and boundary conditions to get an insight into sensitivity of the complete model behaviour to any input parameters. Nowadays virtual simulations are an integral part of both R&D and certification areas and support the partner along the whole development in various industry sectors.

How can we help you?

The TÜV SÜD department of computer aided services (CAS), an integral part of the testing laboratory, uses cutting-edge technology and software and is able to support any partner around the globe. All services (R&D and certification via simulation) are provided virtually and mostly no physical specimen is required. Our experts are able to simulate and identify any potential weak points in the structure and suggest improvement. With new emission rules and limits, there is a high demand on lowering mass while using the down-sized engines and hence decreasing emissions. Structural optimization offers a mass reduction while maintaining or even improving structural performance (stiffness, durability and/or crash performance). The department of CAS provides partners with whole variety of analyses ranging from single point loading to complex crash simulations.

Software available

ANSA/μETA, MSCNastran/Eπilysis, LSTC LS-Dyna, LS-OPT, PAM-CRASH, ABAQUS/Standard, Altair Radioss, MatLAB/Simulink, SolidWorks

Our services

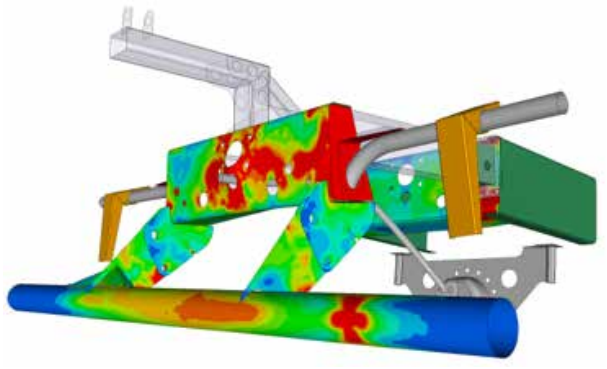
- Development support - all types of virtual simulations (crash, NVH, durability, strength/stiffness and modal) that may be coupled with physical tests lab (strength, vibrations,…).
- Cab strength homologation via simulation according to ECE R29.
- Underrun protection homologation via simulation according to ECE R58/73/93.
- Development support according to ISO 3449 and ISO 3471 (FOPS/ROPS).
- Certification of Load Safety via simulation according to EN 12642 L/XL Code, VDI 2700, etc.
- Weight-to-stiffness/strength optimization (linear, crash, DoE,…).
- Performing sensitivity and robustness analyses and studies based on complex vehicle model in terms of safety performance and structural behaviour.
- Physical material testing and subsequent implementation into analysis (material model development).

The laboratory is ISO/IEC 17 025:2005 accredited and can perform tests against following standards:

- UN ECE R14, R17, R21, R29, R55, R58, R66, R67, R73, R93, R100 (structural integrity), R107, R110, R111, R129.
- Other standards e.g. FMVSS, FIA, xNCAP, ISO (3449, 3471,…), EN (1317,1789,12642, 12767,…), VDI 2700.

Your business benefits

- **Save time and money** – our approach of virtual testing increases the safety of your products, while avoiding costly and time-consuming redesign.
- **Increase efficiency and profitability** – through highly efficient and repeatable tests that enable you to develop high quality products. In short time you can understand the sensitivity of your product to various input parameters.
- **Enhance product marketability** – through our unique tailor-made services which are driven by customer satisfaction.
- **Work with a competent partner** – our one-stop solution combines virtual simulation with physical testing, supported by global experts who can provide additional support in structure development.



Why choose TÜV SÜD?

TÜV SÜD has more than a century-long experience in vehicle safety, testing and certification. Our extensive knowledge and international recognition enables us to work as a partner with our global customers, including top OEMs and their suppliers. Our state-of-the-art testing facilities, combined with our global network of technical experts, can provide your company with a single source solution for achieving compliance with all applicable regulatory requirements, standards and voluntary industry schemes. As an innovative solutions provider, we are directly involved in the development of safety regulations, standards and efficient testing solutions to drive the future of mobility. Besides, our test approach for the simulation of dynamic events can also be extended to support other industries, including aviation, military and rail.

Add value. Inspire trust.

TÜV SÜD is a premium quality, safety and sustainability solutions provider that specialises in testing, inspection, auditing, certification, training and knowledge services. Represented in over 1000 locations worldwide, we hold accreditations in Europe, the Americas, the Middle East, Asia and Africa. By delivering objective solutions to our customers, we add tangible value to businesses, consumers and the environment.

Related services

TÜV SÜD provides the following related passive safety testing services:

- DYCOT – DYnamic COmponent Testing (latest technology sled test facility)
- Static and quasi-static strength tests
- Climatic testing (e.g. extreme temperature, humidity, solar simulation)

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