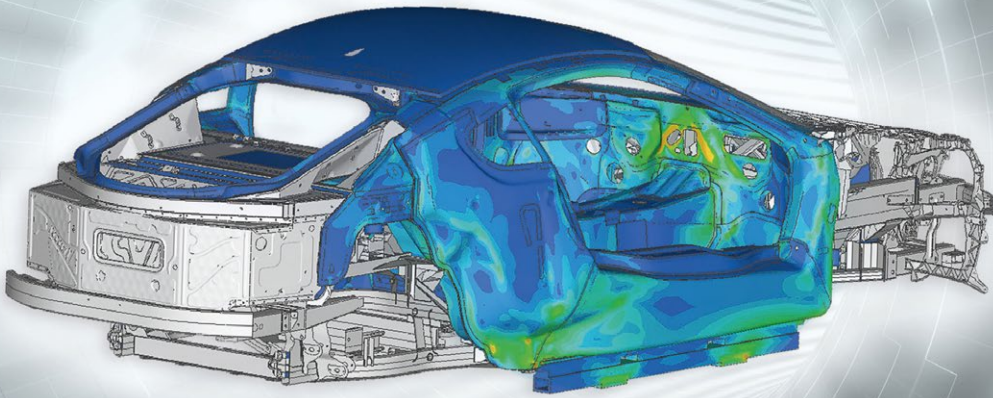


Intelligent Automotive Services.



AUTOMOTIVE

iABG

IABG Automotive | Intelligent Automotive Services.



Vertical dynamic structural test bench:
operational strength analyses, noise
detection, environmental simulation

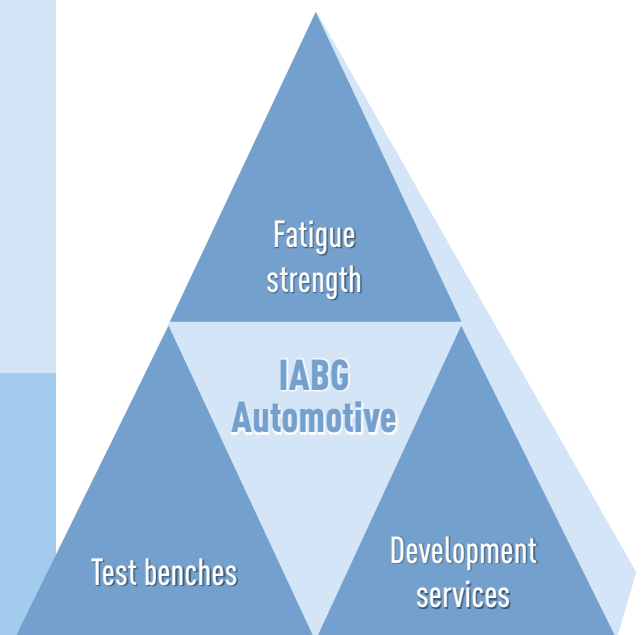


Automotive

IABG has been a partner of the automotive manufacturing and supply industry for over 30 years. Today, we are one of the leading providers of testing and development services in Europe. IABG's state-of-the-art test centre features a modern infrastructure (central supply of hydraulic fluid, cooling water, compressed air, electricity and gas) and numerous test benches for qualification on complete vehicles, systems, components and materials. Our test laboratory is accredited and certified in compliance with common standards. As an independent service provider, we guarantee our customers absolute confidentiality.

We develop and build test benches for our customers. Our portfolio includes standard products such as resonance spring and stabilizer bar test benches, test systems for steering systems as well as HiL simulators and test benches. We also develop customer-specific test systems. As a general contractor, we plan and erect large test benches including all the necessary infrastructure.

We have an interdisciplinary networked pool of experts and also provide our consulting and engineering services externally. Our engineers are deployed on-site as project leaders, consultants, simulation experts and function developers, e.g. for functional safety, and often work as an independent and autonomous team at the customer's location.



Your test partner in the development process

IABG Auto



Testing and fatigue strength

Complete vehicle

- Application and exhaust analyses using roller test benches
- Vibration and fatigue strength testing
- Climate and solar simulation

Vehicle body

- Fatigue strength testing
- Corrosion testing
- Stiffness testing

Chassis

- Wheel testing
- Tyre testing
- Spring and stabilizer bar testing
- Air spring and shock absorber testing

Drive, engine, e-vehicles, hydrogen

- Cylinder head testing
- Powertrain testing (e-mobility)
- High-voltage battery testing
- Component testing



Interior

- Temperature and climate testing
- Solar simulation
- Vibration testing



Electronics

- Control devices
- Vibration testing
- Temperature and climate testing



motive

Your test partner in the development process

Design and realisation of test benches

IABG products

- Spring and stabilizer bar test benches
- Rotating bending fatigue test benches
- Stone chip simulators
- Radial impact simulators
- HiL and functional test benches for steering systems
- HiL and functional test benches for vertical dynamics systems
- HiL and functional test benches for brake control systems
- HiL and functional test benches for electric power trains and generators
- HiL and functional test benches for gearboxes

General contractor for special test benches

- Multi-function shaker for exhaust systems testing
- Test benches for mechatronic chassis control systems
- Road simulator in combination with climate and solar simulation
- Thermo-mechanical exhaust system test bench

Development services

Technical computations

- FE modelling
- Strength
- Durability, fracture mechanics
- Structure optimisation
- Oscillation, vibration
- Non-linear structural dynamics
- Flow analysis, temperature fields
- Process chain simulation
- Mechanics of materials testing
- Method and software development

Vehicle and system simulation

Test management

Function development and integration

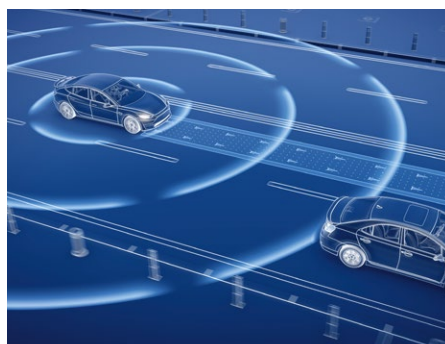
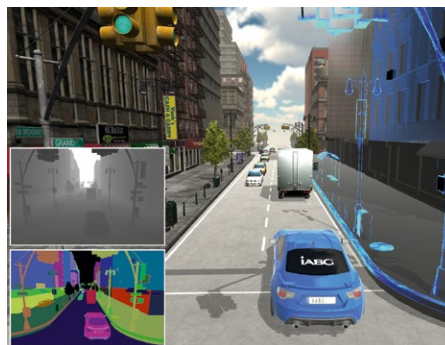
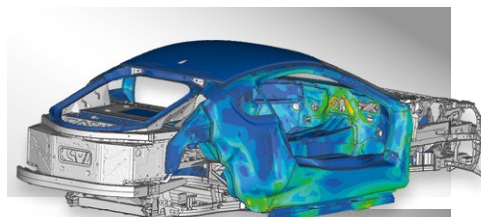
Functional and integration tests

Safeguarding highly automated driving

- Validation of complete vehicles
- Modelling and simulation
- Subsystem verification

Acoustics and vibration behaviour

Materials testing and failure analyses



Testing and fatigue strength



Climatic environmental simulation



Ottobrunn test centre

High-speed external drum test bench

Vibration test bench with climatic chamber



Testing and fatigue strength

Our headquarters in Ottobrunn houses a covered test area of 5,000 m² (halls) with a modern infrastructure, central supply of hydraulic fluid, compressed air and cooling water as well as safety facilities (e.g. works fire brigade). Our standard and special test benches are used to examine, test and qualify complete vehicles, functional units and individual parts and components. We analyse the design, the materials used as well as their behaviour when exposed to defined loads. Furthermore, we develop innovative test equipment. Test results are evaluated using numerical computations, which helps determine and configure the required test conditions. Another advantage of accompanying calculations is that they can underline the validity of a test. IABG leverages highly sophisticated statistical methods when analysing test results. We would be glad to advise you personally – during product development, throughout the product lifecycle or on specific problems.

Our range of services in testing and qualifying covers all the major parts of a vehicle:

- **Complete vehicle**

Not all functions and aspects of fatigue strength can be covered by component testing. This is why it is often essential to test the complete vehicle. IABG uses various test benches and test chambers for this purpose.

- **Chassis**

We test chassis components using established standard methods and test benches. We also develop future-oriented test procedures for specific innovations.

- **Vehicle body**

Test facilities, for example our vehicle body test bench or our temperature, climate and corrosion test chambers, are at your disposal for testing your vehicle bodies and vehicle structures.

- **Engine and powertrain**

We qualify conventional drives, electric drives and hydrogen drives and carry out the necessary examinations in the development process.

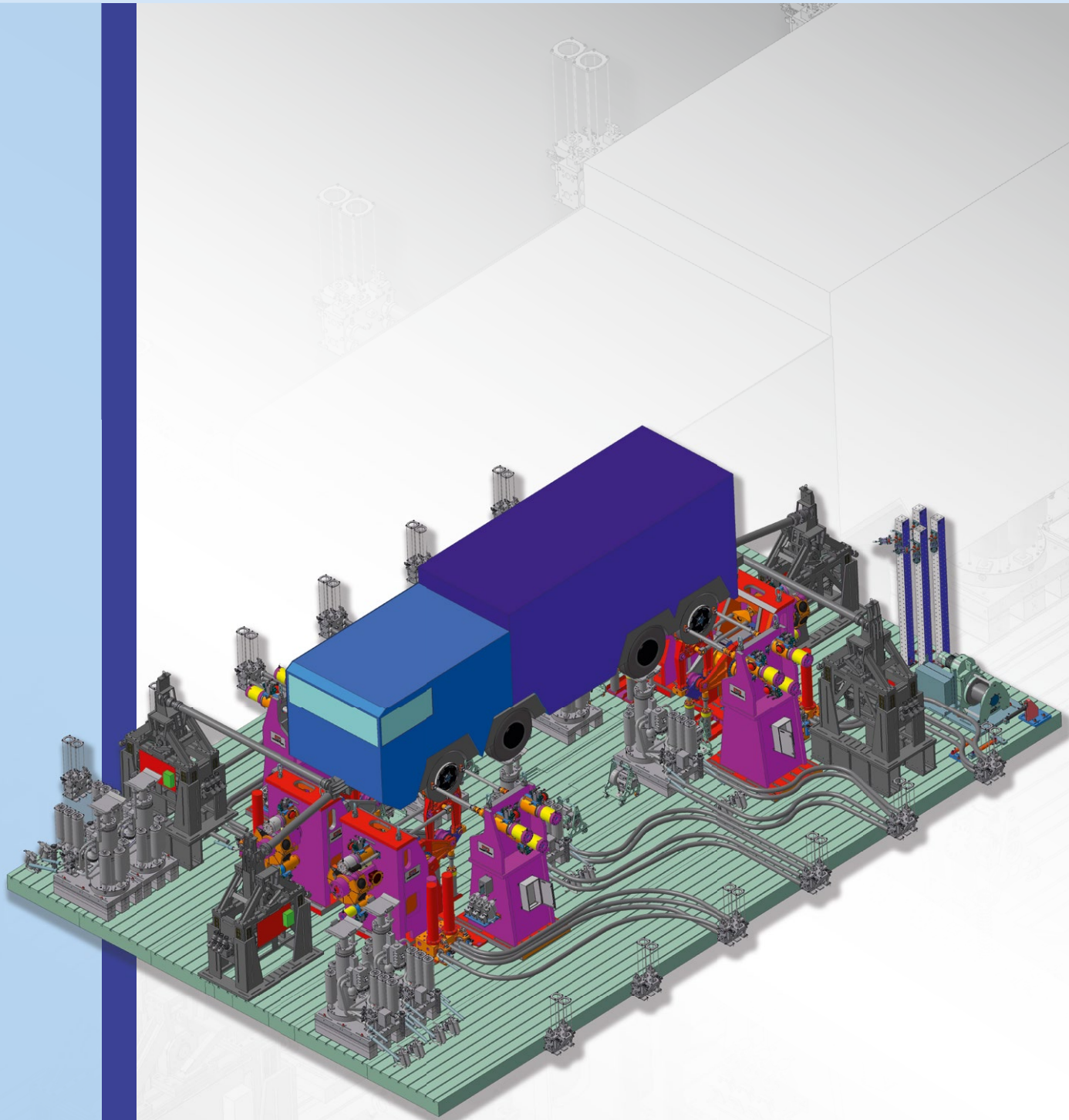
- **Interior**

To ensure that interior components do not fail in service, they must be qualified beforehand under conditions that are as realistic as possible. We have the appropriate test equipment for all the relevant influencing factors: temperature and climatic chambers as well as solar simulation units.

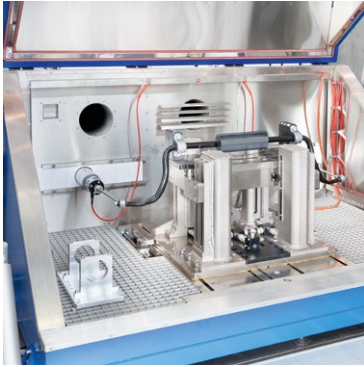
- **Electronics**

Increasingly more control devices and electronic components are integrated in the development and production of new vehicles whose quality is decisively influenced by their reliability. We test your control devices' functionality, failure behaviour and suitability for daily use by exposing them to extreme temperatures, high humidity and mechanical loading, for example.

Design and realisation of test benches



Conception, development and delivery of a multi-axial vehicle test bench for fatigue testing of wheeled vehicles



Test bench for active roll control systems

Flat track tyre test bench

Spring testing machine



Design and realisation of test benches

We configure and implement test facilities at the highest of technical standards. They offer reliable operation, easy handling, flexible use, cost-effective maintenance and can be adapted to solve specific problems. In this way we ensure cost-efficiency and a guaranteed future.

Our services

• Test benches for chassis components and mechatronic systems

Our test facilities embody our many years of broad experience in dealing with fatigue strength, the development and fine-tuning of test procedures as well as the development and validation of mechatronic systems. Our portfolio includes the following test benches:

- Resonance test benches for springs and stabilizer bars
- Test benches for rotating bending
- Stone chip simulators
- Impact simulators for wheels and steering columns
- HiL and functional test benches for steering systems, vertical dynamics systems, brake control systems, electric power trains, generators and gearboxes

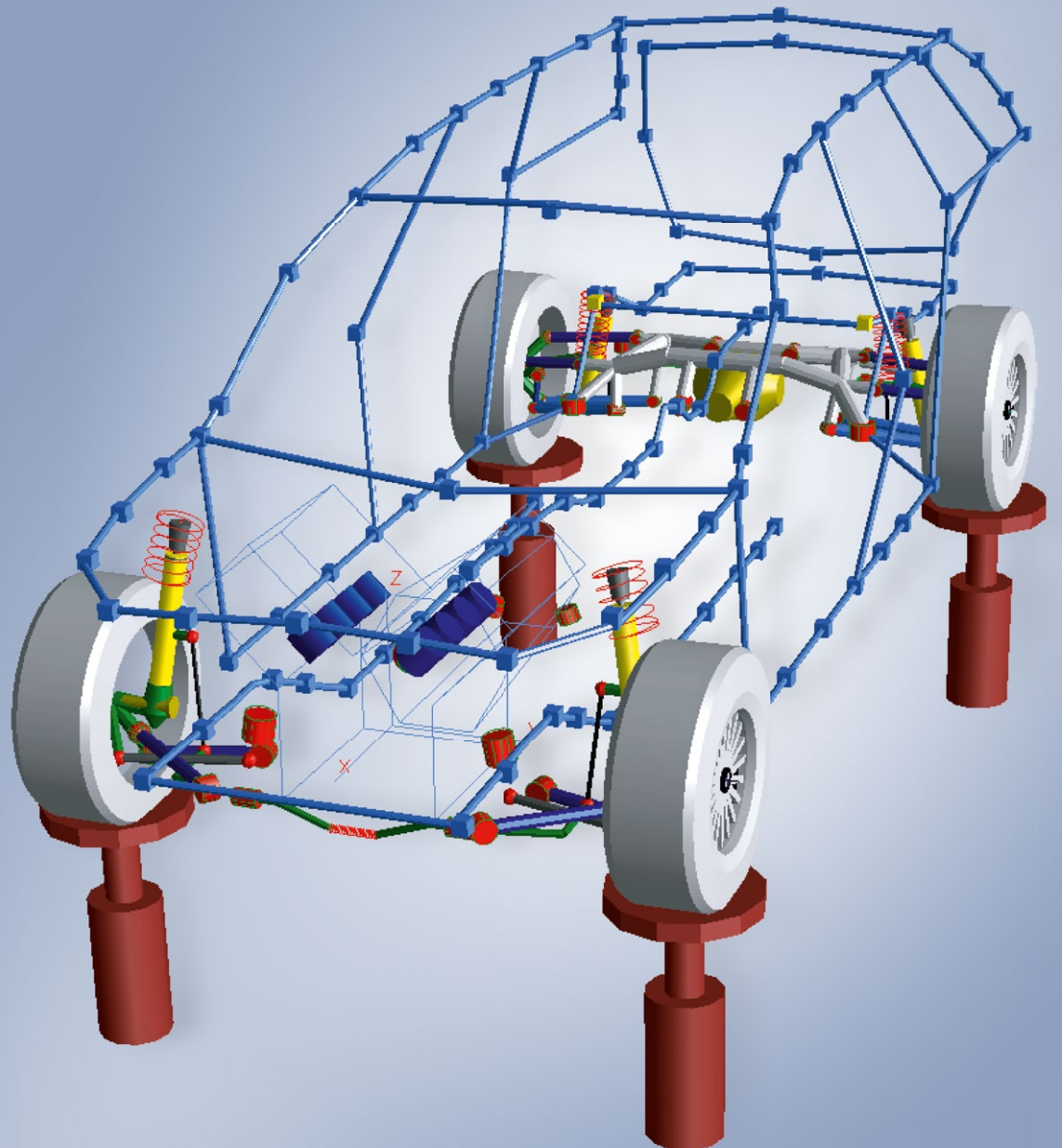
We also develop customized test systems.

• Customer support and advice

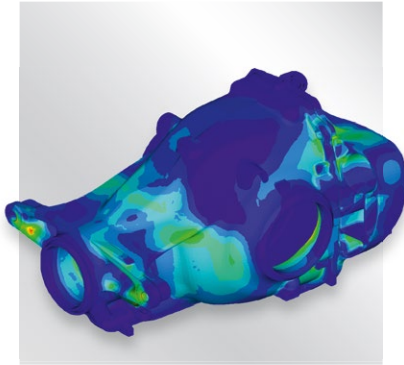
A feasibility study is always the first step towards implementing an innovative test bench. We analyse the task, develop and evaluate different solutions and accompany their implementation as requested. As part of the feasibility study, we offer consulting and/or take care of drafting specifications and invitations to tender.

• Test bench and test centre planning and realisation

We plan your test benches and test centres for you and help you with the realisation and implementation within the existing infrastructure on site. If desired, we can act as your general contractor and deliver a turn-key test facility. We focus on building innovative test facilities featuring a unique network of different technical systems.



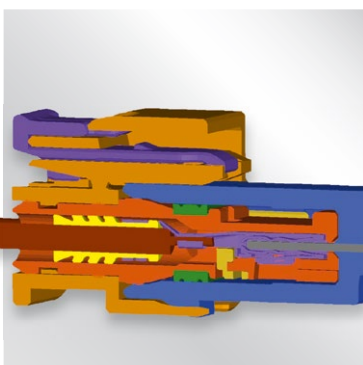
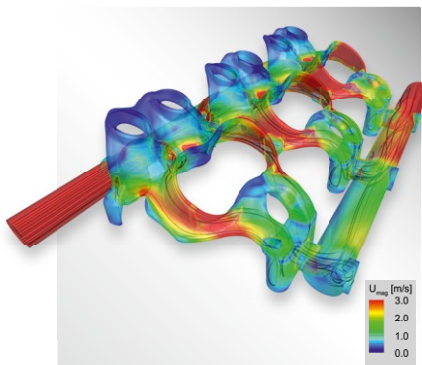
MBS vibration analysis for a virtual prototype on a four-poster test rig



Strength analysis

CFD simulation of the cooling fluid's flow through the cylinder head

FEM dynamic analysis of a electrical contact system



Development services

Increasing demands on new products in terms of functionality, quality, costs, functional safety and development time can only be met by employing state-of-the-art methods. Applying a wide range of methods is essential for virtual product development. IABG can support you in this respect with its many years of experience. We offer analyses, optimisations as well as production and functional simulations. Our experts support your development departments with consultancy and own hard- and software as well as on-site. Our engineers serve at the customer site in efficient, self-responsible and autonomous teams.

These **Centres of Competence** work in the following areas:

- System integration and test management for steering systems
- Configuration of a comprehensive simulation environment for chassis
- Simulation and modelling of a complete vehicle during preliminary development
- Conceptual car design for vehicle body development
- Gearbox calculation supported by our own tools
- Functional safety

Our services

• Technical calculations

By applying advanced CAE methods, we improve the functionality and quality of your products, reduce costs and shorten the development time.

• Vehicle and system simulation

We assist you in the development of complex mechatronic systems. We provide you with services including concept drafting, modelling, simulation and analysis or optimisation during tests – all from a single source.

• Test management, functional and integration tests

We accompany the development process of your mechatronic systems – from the initial test specification to final release testing.

• Function development and integration

We develop and test new functions for your mechatronic systems. You benefit from the tight link between simulation and testing.

• Functional safety

We care for an early qualification of safety critical electronics and the related control software. Thereby we minimize risk.

• Safety Engineering

We ensure the validation, modelling and simulation of complete vehicles and subsystems.

• Acoustics and vibration behaviour

We run experimental and numerical analyses of the dynamic behaviour of units, components and systems liable to vibrate.

• Material and failure analyses

Structural, fracture surface and other analyses help identify damage causes and define corrective and optimisation measures.



AUTOMOTIVE

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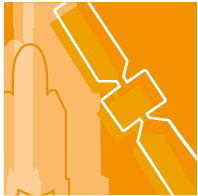
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DEFENCE & SECURITY

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