Integrated test environment for mechatronic systems and structures.
Mechatronics
The combination of mechanics, electronics and information technology leads to the development of increasingly intelligent systems with expanded application ranges and to completely new functions. The increasing number of control devices, their version variety, the strong rate of interconnection in networks and the increasing distribution of functionalities require most modern development tools and test systems.

We support our customers in the development of these complex mechatronic systems. From concept design, modelling, simulation and analysis to the optimisation and experimental qualification on test stands and during driving tests – we are your one-stop service provider. Our modern hardware-in-the-loop simulators and system test benches are designed to ensure function optimisation and concept backup, for example of steer-by-wire systems or networked chassis control systems. We test the performance in case of failure of individual components and ensure functionality by means of endurance tests and simulation of failure scenarios.

Our services
- System engineering of complex mechatronic systems according to V-design: definition, specification, simulation, integration, test, application
- Simulation-based design and virtual prototyping of passive, semi-active and active systems
- Function development and rapid prototyping of control systems for chassis, power transmission and assistance systems
- Development and support of customised test systems and test stands: HIL simulators, system test rigs, function test benches
- Test partner during the development process of embedded systems: test and quality management, specification, implementation and evaluation of test scopes, handling of complete test packages
MBS vibration analysis for virtual prototypes at a four poster test rig.
System development: Simulation, systems analysis and function prototyping

Our many years of expertise within the area of system simulation and function design ensure a competent partnership during the product development process. Our Centres of Competence – on the customer’s or on our own premises – provide independent development projects for design and test of passive and active vehicle systems.

We develop and test new functions for your mechatronic systems with the help of efficient simulation tools and experimental platforms. Simulation and test are closely intertwined. Hence experimental results, which we obtain by testing your real prototype, can be implemented in your design and optimisation processes at an early stage.

Our services

- Provision of full service packages during the virtual development process
- Development and test of drive control systems utilising component and entire vehicle models
- Design and optimisation of vehicle vibration characteristics and comfort with multi-body system simulations
- Power transmission and component simulation for the analysis of fuel consumption, load spectrum and emissions
- Parameter identification and experimental model update using test stand and driving test data
- Model-based design and code generation of high level control device functions
- Development of analysis software and interface modules for multiple simulation environments (FE, MKS, 1-D simulation)

Development tools

- MATLAB, Simulink, Stateflow
- ADAMS, SIMPACK
- FlowMaster
- Target Link
- XML

Above: Driving dynamics and comfort simulation on a virtual test track
Centre: CAD package for an active steering system
Below: Function development/rapid prototyping for commercial vehicle master control unit
Hardware-in-the-loop test rig for networked chassis control systems.
Test house: One-stop testing services and systems

We accompany you as test partners during the entire development process of mechatronic systems; from the start of your test specification on the basis of requirements up to the series’ finalisation with driving test supported acceptance tests.

With model-supported methods and efficient tools we develop customised test solutions necessary for the backup process.

Our test managers plan and control all test activities, monitor the test progress and the coverage. And, they take over the complete acceptance and quality management.

Our services
- Test management during the development process of vehicle control systems
- Analysis and optimisation of test processes and procedures
- Integration, component and system tests for embedded software
- Driving test and vehicle integration test backup
- Project engineering and implementation of hardware-in-the-loop simulators and system test stands as turnkey solutions for power train and driving dynamics systems
- Simulation-supported design of test stand components and control systems
- Development of customised test automation solutions for test systems and driving tests

Development tools
- MATLAB, Simulink, xPC-Target
- dSPACE-development tools
- LogiDyn, LogiCad