VEHICLE DYNAMICS

Develop vehicle dynamics that ensure safety and evoke emotions
Vehicle Dynamics – at a Glance

As an open and extendable platform with many sophisticated interfaces, the CarMaker product family with CarMaker, TruckMaker and MotorcycleMaker offers an unrestricted validation quality as well as rapid performance and automation with an unmatched ease of use.

Non-linear vehicle and system models like a multi-body suspension, the Pfeffer steering model, TameTire powered by Michelin and many more are easy to implement.

The powerful driver model IPGDriver offers self-learning skills and different driving strategies – every task a real test driver could accomplish will be executed precisely and reliably.
“CAE with CarMaker can provide a serious prediction of vehicle dynamics press ratings long before SOP.”

Dr. Henning Holzmann, Opel

Key Applications

- Suspension design and set-up
- Handling performance investigation
- Laptime optimization
- Ride & comfort analysis

Features

- Any combination of open- and closed-loop maneuvers
- Fully non-linear vehicle model – from standstill up to the limit
- Sophisticated Multi-Body System (MBS) suspension in real-time
- Detailed Pfeffer steering model with EPS, HPS or EHPS steering support
- TameTire – thermomechanical tire model powered by Michelin
- Model interfaces for Simulink, C-Code, Dymola, AVL CRUISE, FMI …

- Simulation-based ESC homologation
- EPS & steering feeling optimization
- Virtual benchmarking
- Consumer test rating prediction

- Comprehensive component model structure and library (body, suspension, steering, tire, brake, powertrain, aerodynamics, mounts, sensors)
- 3D road model with configurable obstacles and Curve Regular Grid (OpenCRG)
- Test Manager for automated conduction of huge maneuver catalogs and parameter variations
- Sophisticated driver model IPGDriver with different driving strategies – up to race and rally driver capabilities
SOLUTIONS FOR VIRTUAL TEST DRIVING

As an innovation driver for virtual test driving, the company is a leading global provider of software and hardware products for the automotive and supplier industry. With the areas Simulation Software, Real-time Hardware, Test Systems and Engineering Services, IPG Automotive supports its customers in creating innovations and improving their development process efficiently. The simulation solutions CarMaker, TruckMaker, and MotorcycleMaker, as open integration and test platforms, facilitate great savings in time and cost for customers, in a continuous development process of Model-, Software- and Hardware-in-the-Loop, all the way to the Vehicle-in-the-Loop method. The application ranges from the general vehicle dynamics simulation, developing and testing of chassis control systems, as well as interconnected systems such as chassis, powertrain, and steering in full electric and hybrid vehicles. Another strength of IPG Automotive is the development of future-oriented solutions for the integration and testing of advanced driver assistance systems.