

# SIMPACK

## Multi-Body Simulation

INDUSTRIAL SECTORS

## SIMPACK is used for Mechanical and Mechatronic Design

**SIMPACK is a general Multi-Body Simulation Software which is used to aid engineers in the analysis and design of mechanical and mechatronic systems.**

From initial concept designs, through to production and redesigns, SIMPACK is used to help engineers fully comprehend and optimize systems, vastly reduce the need for physical prototyping, reduce time-to-market and to improve product quality and lifespan. In essence SIMPACK enables manufacturers to gain a competitive edge by offering the ability to create high quality products in a time and materially efficient manner thus reducing overall costs in design, production and maintenance.

SIMPACK is primarily used within the automotive, railway, engine, wind turbine, power transmission and aerospace industries. Within all industries SIMPACK is used for single component design and complete system analyses. Besides taking internal dynamics and control into account, SIMPACK can also consider any external influences on the system, e.g. ground disturbances and aerodynamic loading.

SIMPACK is deployed in the complete frequency range from static and quasi-static investigations all the way through to full transient non-linear analyses, even within the acoustic range. SIMPACK is particularly outstanding in transient high frequency analysis. The very first SIMPACK software specifications called for a three dimensional non-linear Multi-Body Simulation (MBS) software capable of including high frequency vibrations of flexible bodies. Fast linear system analysis methods in SIMPACK aid engineers in understanding small amplitude vibrations.

As a result of applications in the railway industry, SIMPACK's solver is capable of handling "stiff" dynamic systems (i.e. metal to metal wheel/rail contact) and is uniquely suitable for shock contact (running over rail switches). These inherent assets of SIMPACK enable the investigation

of extreme transient phenomena within all application fields, e.g. gear changing, emergency braking, loss of contact or play, etc.

SIMPACK is particularly well suited for analyzing the dynamics of complex systems. Complete combustion engines with over 3000 degrees of freedom and multiple flexible components have been validated by customers up into the acoustic range. Standard interfaces to finite element, control and hydraulic software codes, allows all influences on the system behavior to be taken into account. Not only can data from brand name codes be imported into the SIMPACK environment (e.g. CAD, FE, Control) but also from unique in-house codes, enabling full usability of design of experiments, batch jobs and even optimization of the entire system, within the SIMPACK environment.

All SIMPACK features are 100% compatible. Therefore new software developments for one particular engineering field benefit all SIMPACK users regardless of the application area.

