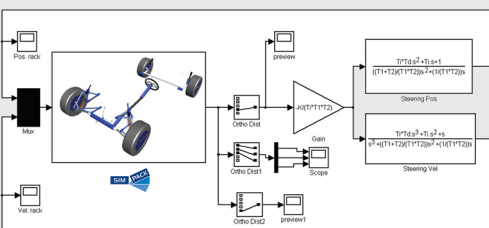




Dr. Alex Eichberger, Managing Director



SIMPACK in the Mechatronic Environment

MULTIBODY MARKET

Hypothesis: In future most of the multibody models will be used in non-multibody simulation environments.

Today most of the multibody models are created and modified in standard MBS-programs with the areas of application diverse. Typical applications in the development of cars and trucks include handling dynamics, ride, comfort, NVH, load data generation, engine dynamics and oscillation investigations up to the acoustic range. Looking at the automotive industry it is evident that most of the innovations today are achieved through the combination of mechanics, electronics and control design. Active suspensions, active stabilisers, active damping, active steering, rear suspension steering by actively controlled parts in a five link suspension, actively controlled wheel camber, and many more active systems determine intelligently the handling dynamics, and ride comfort of modern cars. This development started in the premium car segment and has now reached the middle and economy class cars with the trend continuing.

In the past MBS-programs have been the state of the art for the design of handling performance and ride comfort on the basis of virtual prototypes. A trend was emerging, that more and more of these tasks were being carried out in CAD environments. This is no longer true and the direction has changed towards the usage of MBS-models in

block signal or object oriented design control tools. Mechatronics is the key word, and MBS models, once set up and verified in MBS codes, increasingly find themselves in mechatronic design environments or hardware-in-the-loop systems. Looking at the number of installations of these tools and taking also into account HIL and SIL systems, it might even be true today, that the majority of the MBS-models are being used outside of MBS-programs, with the trend also continuing.

A huge number of parameterised MBS vehicle models have been developed for mechatronic design and HIL environments, characterised by a fixed topology and structure. The focus of those models was the low frequency range for handling dynamics. But the requirements with reference to variability, frequency range and model complexity is increasing. Consequently the look-up table based representation of the kinematics and compliant kinematics of wheel suspensions will be replaced by a modelling approach which keeps the individual parts of the suspension, thus allowing for higher frequency effects. Flexible model topologies are necessary for easily replacing passive parts by active systems. With the module SIMPACK Code Export, INTEC has not been left behind and has created a seamless transition for using MBS models in non-MBS environments.

NEW UNIVERSITY AND RESEARCH LICENCES SINCE JULY 2005

Shanghai Tongji University, P.R. China

PLA University, Mechanical Department, P.R. China

Hochschule für Angewandte Wissenschaften Hamburg, FB Elektronik und Informatik, Germany

Universität Kaiserslautern, Lehrstuhl für Konstruktion im Maschinen- und Apparatebau, Germany

TU Graz, Institut für Fahrzeugtechnik, Austria

NEW COMMERCIAL LICENCES SINCE JULY 2005

TÜV Rail, Germany

Voith Turbo GmbH & Co. KG, Abt. Regelbare Antriebe, Crailsheim, Germany

Voith Turbo Lokomotivtechnik GmbH & Co. KG, Kiel, Germany

Nippon Sharyo, Japan

Helbling Technik AG, Switzerland