

INTEC partners up with IST: EHD–Software TOWER now Available in SIMPACK

Proposed by the Mercedes Formula 1 engine division, IST GmbH and INTEC GmbH teamed up to develop a powerful interface for the precise simulation of hydro-dynamic effects in multi-body applications. The impedance method and the Reynold approach of the IST software TOWER are now available within the new module SIMPACK Engine. INTEC GmbH, along with its local distributors, operates as a worldwide supplier for the TOWER software embedded into SIMPACK.

IST GmbH is a consulting engineer company whose main focus is the numerical simulation of structural dynamics and the elasto-hydrodynamics of combustion engine components. IST develops software tools for the simulation and analysis of elasto-hydrodynamically coupled systems, such as:

- piston - cylinder
- piston pin - piston
- piston pin - con-rod
- crank shaft - engine block
- crank pin - connecting rod
- piston - piston rings - cylinder.

IST has undertaken the task of maintenance and development of the software, as well as offering training in its use. The software is based upon research work carried out at the IMK, University of Kassel, under the direction of Professor Gunter Knoll.

Besides software development and maintenance, IST offers a wide range of engineering services in the field of hydrodynamic bearing calculation and structural analysis, with a focus on combustion engine components.

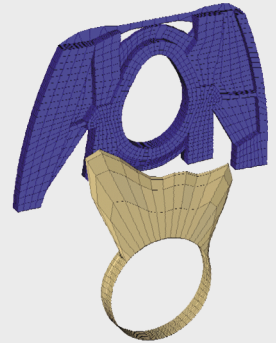
SIMPACK now offers an integrated interface to the IST software TOWER, which is a software tool for the general elasto-hydrodynamic analysis of bearings. It is based on the hydrodynamic lubrication theory of rough surfaces, and uses different lubrication models, dependent upon tribological properties, flow factors and contact pressure. The interface markedly improves the results delivered by multi-body programs regarding the relevant frequency dependent spring

and damping characteristics of the lubrication film, as well as the interaction between the deformations in the bearing and tribological relevant quantities, which include minimal gap, pressure distribution, centre point track and friction losses.

The interface is offered at two different levels. The first level, the so called impedance method, is a table based solution for the pre-design of bearings limited to rigid cylindrical bearing types. At the second level, the underlying Reynolds differential equations are directly solved by a finite element algorithm. This results in a more detailed model of the structural dynamics, including the tribological characteristics, allowing the bearing geometry and global bearing elasticity to be taken into account.

The co-operation between IST and INTEC provides an EHD solution from one source for all SIMPACK users and interested parties. The solution comes as part of the SIMPACK Engine module; the functionality is, however, also available separately. The partnership, and with it the expansion into EHD analysis, further enhances our outstanding technical support, training and consulting service. For those customers who are looking to extend their simulation technology to the limits, the partnership gives them the opportunity to include detailed elasto-hydrodynamic modelling within their multi-body environment.

More information
www.ist-aachen.com
www.simpack.com



Deformed bearing showing the distribution of oil pressure



Dr. Schönen, Director Software Development, iST GmbH