The unique communicator technology and the template-based architecture support modular modeling.

With its advanced simulation tool “Virtual Engine” FEV provides:

- In shorter time
- Low cost
- High quality

Powertrain development.

Based on the state of the art SWE solver and post-processing technologies of MSC Adams, Virtual Engine is:

- Easy to use in:
  - Model set up and simulation
  - Post-processing and result reporting
  - Intuitive in workflows, fitting powertrain engineers’ needs
  - Integrated easily into existing processes
  - One for all
  - One environment for all analysis
  - One model for all phases of the development
  - Proven technology: fast, reliable, and validated

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What is Virtual Engine?

Virtual Engine is an advanced simulation software for dynamic analysis of complete powertrain and its components. It provides all building blocks needed to create dynamic models of powertrains including cranktrain, valvetrain, piston and rings, bearings, timing and accessory drive, geartrain and driveline. Virtual Engine uses the core technology of the world leading Multi-Body-Simulation Software MSC Adams® as numerical integrator, pre- and post-processing features. The template-based architecture perfectly combine the advantages of single purpose software - ease of use and multi purpose software - no limitations in extendibility.

Virtual Engine is a truly open system - featuring a powerful scripting language for task automation, the ability to customize the user interface, an integrated 3D CAD interface and a library of pre-defined elements. Graphic and symbolic tools automate and accelerate the creation of complex models. Single and corresponding tools are improved in each version, strengthening data management even for global scale companies. Advanced generic 3D contacts plus fast analytical approaches for powertrain-specific contacts ensure a vast scope of application.

Are you interested in innovative and trend-setting software solutions? Please contact us!

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Virtual Engine supports modeling and simulation of cranktrain types.

Virtual Engine supports multiple variations of valvetrain design.

Virtual Engine predicts dynamics of the piston ring pack, piston, piston pin and connecting rod assembly.

Virtual Engine builds complete, multi-staged timing and accessory drives.

Virtual Engine has advanced 3D simulation features to predict dynamics of the piston ring pack, piston, piston pin and connecting rod assembly. It solves the analysis of the piston secondary dynamics, the impact of the crankshaft and/or piston pin offset on the resulting Wh through piston slap. Boundary lubrication andasperity contact are calculated using the Greenwood & Tripp method. The 2D hydrodynamic (TEHD) approach uses a simplified version of the Reynolds equation, thus providing fast results. The comprehensive FEA 3D electro-hydrodynamic (EHD) solver calculates the high fidelity piston assembly simulation needs.

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Virtual Engine allows building complete, multi-staged timing and accessory drives, comprised of mixed chain and belt drive stages. Building blocks are provided for the Chain/Belt Drive analysis: chain types including linking, roller, silent/inv-ersed teeth, and planetary gear sets. 3D hydrodynamic (EHD) and thermoelasto- namic (TEHD) models. Advanced bearing model types include linear, rotary, and planetary gear sets. Available bearing types include linear, rotary, and planetary gear sets.

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