

Applications

The Hybrid Toolbox for veDYNA (vehicle dynamics simulation) is an Add-on to configure various topologies of battery-electric and hybrid-electric powertrains from micro to full hybrid. It can be used throughout all development phases: from conceptual function design on the desktop computer (MIL, SIL) to operating tests in real-time with hardware-in-the-loop systems (HIL).

- **Simulation of Driving Performance and Fuel/Energy Consumption**
 - In hybrid electric vehicles
 - In battery electric vehicles
- **HEV-specific Function Development and Test**
 - Battery management
 - Torque coordination
 - Engine start/stop function
 - Regenerative braking
 - Thermal management
- **Analysis and Optimization of Operation Strategies for**
 - Efficiency and fuel consumption
 - Driving performance
 - Stability of the electric system

Model Features at a Glance

Mechanical Components

With the mechanical components from our Simulink library you can easily build arbitrary powertrain topologies featuring detailed efficiency models.

- Transmission
- Clutch
- Torque converter
- Differential
- Generic pinion gear

Electric Components

Use the electric components to build various electric system topologies, including two voltage levels and thermal models for hybrid vehicles.

- Electric motors and inverter
- Battery
- DC/DC converter
- Switches
- Electric loads

Vehicle Concept Examples and Parameterization

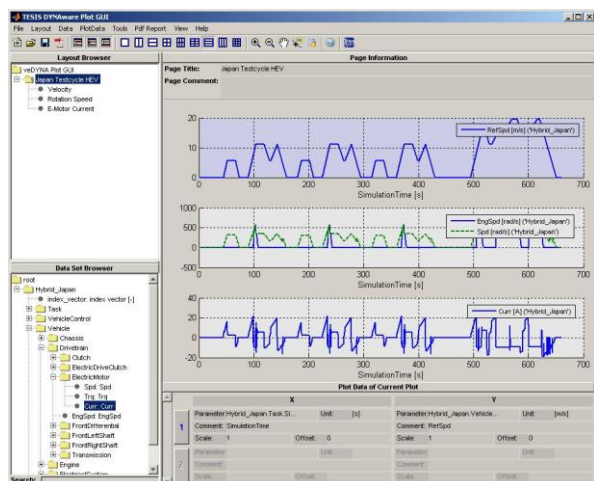
- Full and Mild Parallel Hybrids (HEV), examples for other topologies and BEVs are obtainable on request
- Easily available physical parameters and characteristics

Scenario Catalog

The Hybrid Toolbox comprises all standard driving cycles for consumption and driving performance:

- European, Japanese and US consumption test cycles
- All established driving performance tests (0-100km/h, 0-60 mph, 80-120 km/h,...)
- Various possibilities for gear selection

Extend and customize the scenarios according to your needs, e.g. by user-defined velocity profiles from measurements. The driver model (which is already part of veDYNA) will perform the cycles with your virtual vehicle.



Hybrid Toolbox for veDYNA

Analysis of Powertrain and Electric System in HEVs & BEVs

TESIS DYNAware Product Facts

Based on Matlab/Simulink

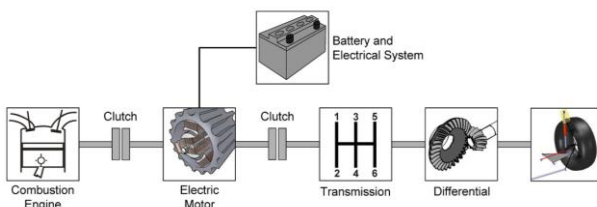
- Matlab interface: Powerful scripting for automated simulation control, model parameterization, result analysis, and report generation
- Fully integrated into Simulink interface for user-defined model extension and integration of control functions

Major Real-Time Platforms Supported

- dSPACE, ETAS, MicroNova, National Instruments, Opal-RT, xPC
- Other targets are available on request

Documentation and Online-Help

- User and reference handbooks, data requirement sheets, tutorials
- Context-sensitive online-help



Additional Services

Take advantage of our engineering expertise from hybrid and energy management projects:

- Integration of your models and simulation tools into a HEV or BEV simulation environment
- Consulting for application and validation of the powertrain and chassis control systems
- Requirement management, design and function specification of the entire vehicle system
- Engineering services for calculation of driving performance and fuel consumption, design of electrical and hybrid powertrains
- Process consulting, e.g. fleet consumption monitoring, CO2 Conformity-of-Production (COP)
- Modeling of multi-body-systems, 1D thermodynamics, hydraulics, fluid dynamics

Your Benefits

▪ Speeding up Your Innovation Process

- Ready-to-use examples
- Framework for an efficient handling of parameters and simulation projects
- Automation tools reduce routine jobs
- Comparison of different variants
- Powerful visualization and postprocessing tools show the key interdependencies

▪ Open for Your Knowledge and Infrastructure

- Model structure in Matlab/Simulink is open for your application specific adjustments
- Smooth integration of your own models
- Free choice of hardware platform

▪ Technical Safety

- Solid professional software based on thorough modeling and real-time expertise
- Successfully employed in numerous projects
- TESIS DYNAware is your independent partner with optimal solutions on all real-time platforms

▪ Cost Reduction

- Use the same model throughout the development process and focus on your applications.
- Frontloading: Reduction of prototype costs through early testing on the PC – get more mature physical prototypes.

Contact us

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