



GAMMA
TECHNOLOGIES

MiL, SiL & HiL Solutions

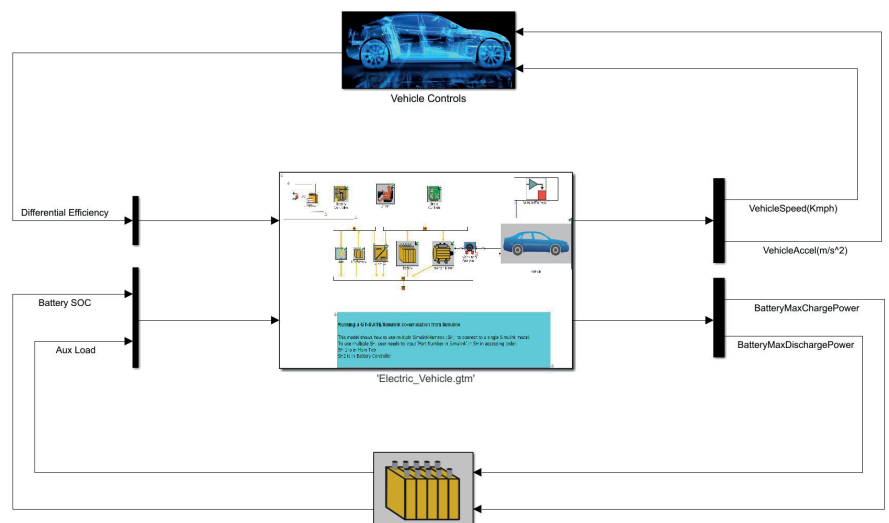
Powertrain Agnostic Virtual Calibration Solutions

ECU TESTING AND CALIBRATION WITH GT-SUITE PLANT MODELS

Whether operating in Software-in-the-Loop (SiL), Model-in-the-Loop (MiL), or Hardware-in-the-Loop (HiL) environments, GT-SUITE offers a streamlined workflow for transferring models with defined I/Os to the target simulation or testing platform. Complex control strategies can be analyzed using state-of-the-art physical GT-SUITE plant models in the environment where controls engineers are most comfortable.

With full access to model parameters, lookup tables, and solver settings, users retain control and flexibility at every stage, enabling faster iteration, improved calibration accuracy, and easy adaptation to design changes. GT-SUITE's S-Function block provides a turnkey solution for Simulink, supporting the entire MathWorks toolchain and co-simulation tools.

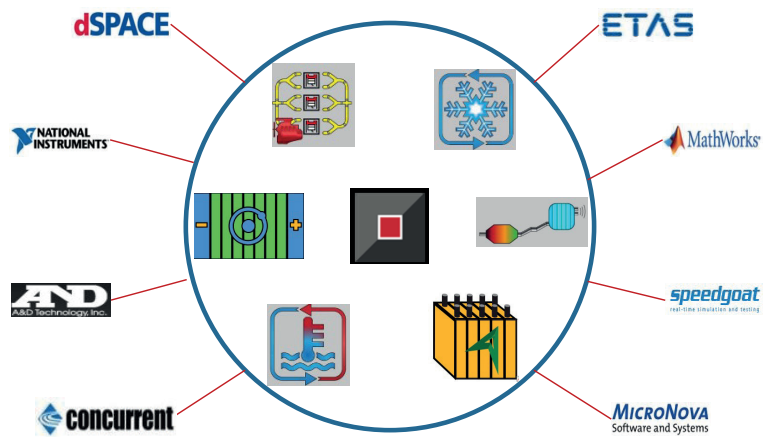
GT-SUITE supports the Functional Mock-up Interface (FMI) and includes a flexible API, enabling integration with virtually any third-party tool, allowing engineers to co-simulate, link GT models into existing toolchains, and collaborate across teams without platform limitations.



GT Simulink co-simulation

REAL-TIME CAPABILITIES

GT-SUITE-RT and GT-POWER-xRT are optimized for real-time applications, delivering fast execution while maintaining high model fidelity. A detailed model may be converted to a fast-executing real-time version with just a few clicks—saving time and resources. Both tools support major HiL platforms like dSPACE, NI, Speedgoat, and more. Multi-core simulators can leverage parallel model execution for even higher performance.

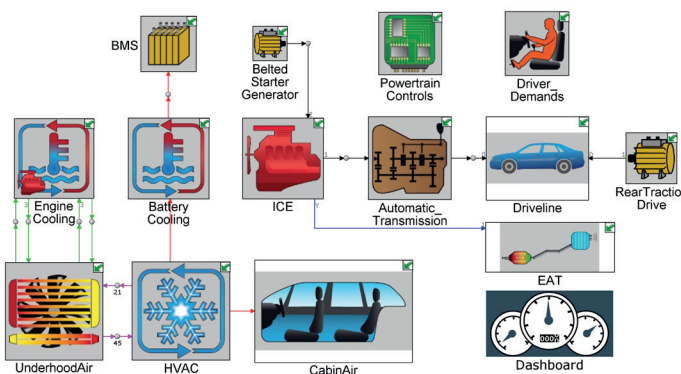


Executing Real Time models on multiple HiL platforms

TAILORED FIDELITY FOR EVERY STAGE

GT-SUITE supports scalable model fidelity to match the needs of any development phase. Users may choose from crank-angle resolved engine models or mean value models driven by neural networks either built from scratch or derived from detailed GT-POWER models.

Subsystems such as the engine, transmission, battery, cooling system, chassis, and cabin can be modeled in high detail or with simplified, lookup-based representations. This flexibility enables fast-running models suitable for SiL, HiL, and even DiL applications, such as VI-DriveSim, with execution speeds approaching real time (0.7–0.8x).

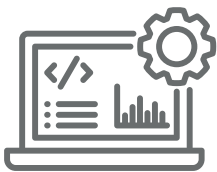


Executing Real Time models on multiple HiL platforms

ONE TOOLSET, FULL DEVELOPMENT CYCLE

The GT-SUITE/GT-SUITE-RT toolchain enables continuous modeling from concept to validation. Benefits include **reduced development time**, **increased accuracy**, **faster iterations**, and **lower cost**—all while maintaining physics-based model integrity.

HIGHLIGHTS:



INCORPORATE PHYSICAL GT-SUITE MODELS DIRECTLY INTO THE CONTROL SYSTEM DEVELOPMENT PROCESS



TRANSFORM YOUR COMPUTER TO A VIRTUAL ENGINE TEST BENCH WITH XCP HARNESS COMMUNICATING DIRECTLY WITH CPU



SPEED UP YOUR PROCESS BY RE-USING KNOW-HOW AND MODELS FROM THE ENGINE OR VEHICLE GROUP



SIL/HIL SUPPORT VIA FMU, SIMULINK API, AND MAJOR PLATFORMS (DSpace, CONCURRENT, NI, MATHWORKS).

To find out more about Gamma Technologies Control, MiL, SiL, and HiL Simulation, scan the QR code >

