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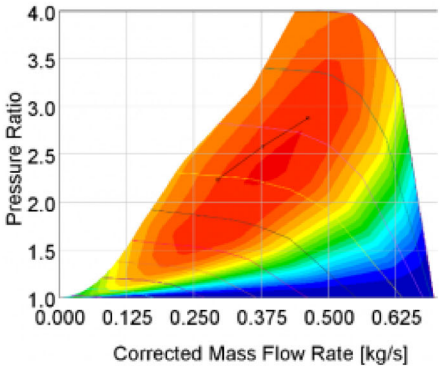
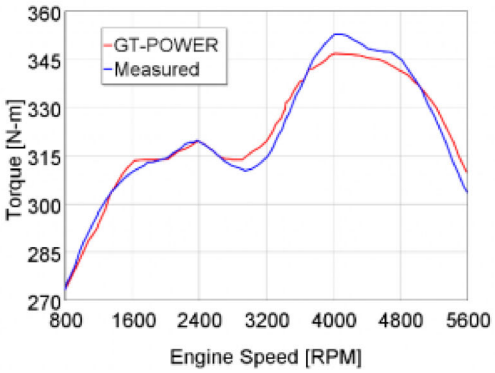
GT-POWER Engine Simulation Software





GT-POWER is the industry standard engine performance simulation, **used by all major engine manufacturers and vehicle OEMs**. GT-POWER is used to predict engine performance quantities such as power, torque, airflow, volumetric efficiency, fuel consumption, turbocharger performance and matching, and pumping losses, to name just a few. Beyond basic performance predictions, GT-POWER includes physical models for extending the predictions to include cylinder and tailpipe-out emissions, intake and exhaust system acoustic characteristics (level and quality), in-cylinder and pipe/manifold structure temperature, measured cylinder pressure analysis, and control system modeling. Standard GT-POWER engine models are **easily converted to real-time capable models (also known as Fast Running Models – FRMs) for SiL or HiL simulations**. These models may also be included in a full system level simulation within GT-SUITE to provide accurate and physically based engine boundary conditions to the rest of the vehicle.

Product Highlights

- Industry standard engine simulation, used by every major engine maker
- Wave dynamics captured via robust solution of the Navier-Stokes equations
- Applicable to any size engine, from smallest utility engine to largest marine application
- Fully flexible to allow studies of advanced and unconventional concepts
- State of the art combustion and aftertreatment models

- Flexible turbocharger modeling to handle all known configurations, including wastegated, VGT, supercharging, two-stage, turbocompounding and twin-entry turbine
- Includes complete controls library for dynamic system controls studies
- Includes CAD based pre-processors GEM3D and GT-Spaceclaim for accurate yet quick and easy model building
- Integrates with other GT-SUITE libraries for thermal warmup studies, drive cycle analysis, and more

Advanced Features and Applications

- Highly accurate, fully predictive, multi-pulse diesel combustion model
- Tumble sensitive, turbulent SI combustion model
- Complete chemical kinetics library
- Vehicle model for integrated engine/vehicle simulations
- Can co-simulate directly with Simulink, Converge, GT-CONVERGE, STAR, Fluent and other codes
- Characterize component pressure drop and heat transfer with GT-CONVERGE, tailored to non 3D-CFD experts
- Input variables may be specified as a map or functional dependency
- Flexibility to study any valving concept, infinitely variable VVT and VVL, as well as cylinder deactivation concepts
- Finite element solution of cylinder structural temperatures, useful for part load and dynamic operation
- Advanced turbocharger features, such as overblown compressor modeling, surge prediction, reverse flow in turbines, pressure wave supercharging, advanced twin-scroll modeling, heat transfer in turbos and more
- Port injection wall wetting
- Capable of Real-Time execution
- Plug-and-Play Engine Controllers: No need to calibrate. Exclusive to GT-SUITE. Examples include: Throttle Controller, Fuel Controller, EGR Controller, Wastegate Controller, Variable Geometry Turbine Controller

Run Integrated Simulations with:

- Thermal Management
- Aftertreatment
- Cranktrain and mounts
- Hybrids, electrics
- Electrical system
- Valvetrain

Related GT Applications

- Combustion and Emissions
- Cylinder Pressure Analysis
- Intake and Exhaust Acoustics
- Exhaust Aftertreatment

- Valvetrain
- Waste Heat Recovery
- Performance, Fuel Economy, and Emissions
- Control, MiL, SiL, and HiL
- Real-Time Engine
- Fuel Cell System Modeling

Ready to try GT-POWER?

Get in touch with our team to learn more about our software

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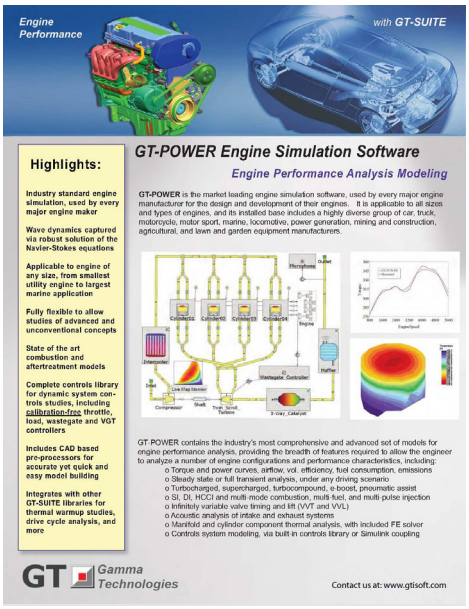
Brochure



Relevant Publications

- Fuel Consumption Improvement
- Predictive SI Combustion Modeling
- Knock Analysis & Prediction
- Mechanically Supercharged 2.4 L GDI Engine

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