

Highlights:

Industry standard engine simulation, used by every major engine maker

Wave dynamics captured via robust solution of the Navier-Stokes equations

Applicable to engine of any size, 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

Includes complete controls library for dynamic system controls studies

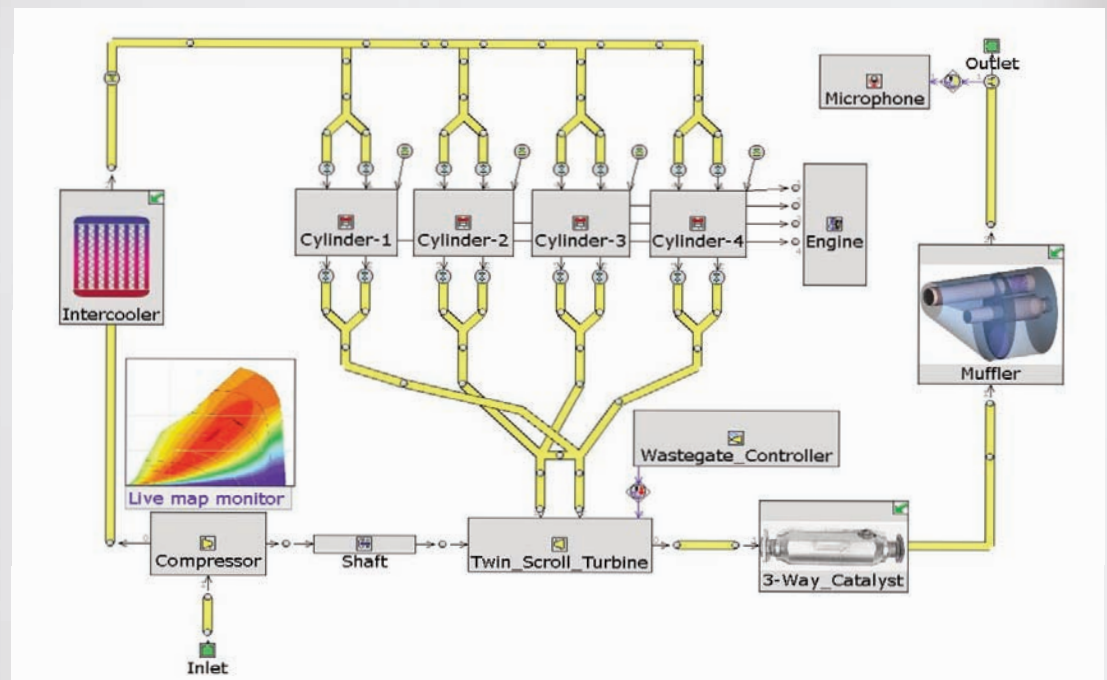
Includes CAD based pre-processors for accurate yet quick and easy model building

Integrates with other GT-SUITE libraries for thermal warmup studies, drive cycle analysis, and more

GT-POWER Engine Simulation Software

Engine Performance Analysis Modeling

GT-POWER is the market leading engine simulation software, used by every major engine manufacturer for the design and development of their engines. It is applicable to all sizes and types of engines, and its installed base includes a highly diverse group of car, truck, motorcycle, motor sport, marine, locomotive, power generation, mining and construction, agricultural, and lawn and garden equipment manufacturers.



GT-POWER contains the industry's most comprehensive and advanced set of models for engine performance analysis, providing the breadth of features required to allow the engineer to analyze a number of engine configurations and performance characteristics, including:

- o Torque and power curves, airflow, vol. efficiency, fuel consumption, emissions
- o Steady state or full transient analysis, under any driving scenario
- o Turbocharged, supercharged, turbocompound, e-boost, pneumatic assist
- o SI, DI, HCCI and multi-mode combustion, multi-fuel, and multi-pulse injection
- o Infinitely variable valve timing and lift (VVT and VVL)
- o Acoustic analysis of intake and exhaust systems
- o Manifold and cylinder component thermal analysis, with included FE solver
- o Controls system modeling, via built-in controls library or Simulink coupling

Advanced Features and Applications:

Highly accurate, multi-pulse diesel combustion model

Tumble sensitive, turbulent SI combustion model

Complete chemical kinetics library

Compressor surge model, turbine map extrapolation

Includes FE solution of in-cylinder temperatures

Vehicle model for integrated engine/vehicle simulations

Directly coupled with Simulink, Star CD, Converge, Fluent and other codes

Acoustics of intake and exhaust systems

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

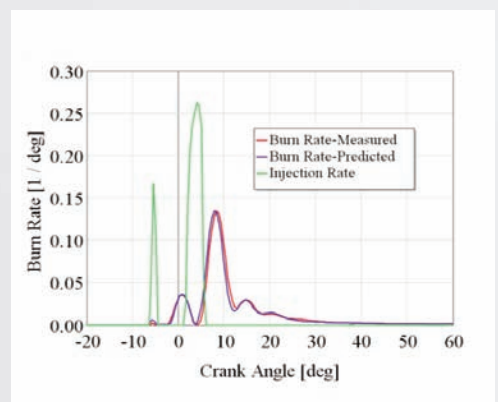
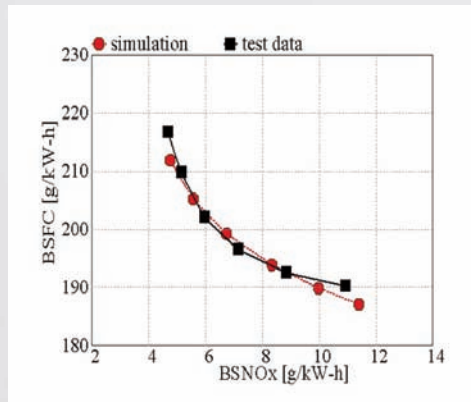
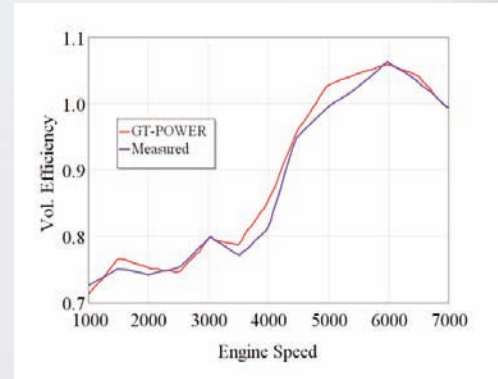
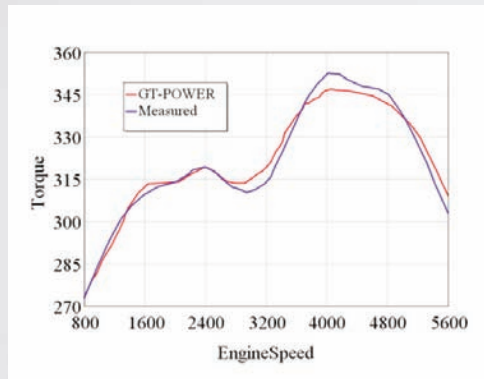
Port injection into wall wetting

Capable of Real-Time execution

These capabilities are included in every GT-SUITE license

Unmatched Model Accuracy

GT-POWER has long been recognized for its high degree of accuracy in predicting the behavior of complex engine related phenomena. At its core, the GT-POWER solver is based on the 1D solution of the fully unsteady, nonlinear Navier-Stokes equations. Beyond this core lie state of the art thermodynamic and phenomenological model solvers to capture the effects of combustion, heat transfer, evaporation, in-cylinder motion and turbulence, and engine and tailpipe out emissions, to name just a few. This combination of solvers provides for unmatched model accuracy for both macro level quantities such as torque, bsfc, airflow, etc., as well as detailed micro level quantities such as crankangle resolved cylinder pressure resulting from multi-pulse injection strategies, as well as emission specie concentrations anywhere in the system.



Beyond Basic Cycle Simulation

GT-POWER is licensed as an all-inclusive package containing many advanced modeling features not found in other engine simulations. A full FE solver for in-cylinder temperature and heat flux distribution, as well as a complete, fully flexible, detailed chemical kinetics and aftertreatment library are just two of the many advanced modeling capabilities included with GT-POWER at no extra cost.

