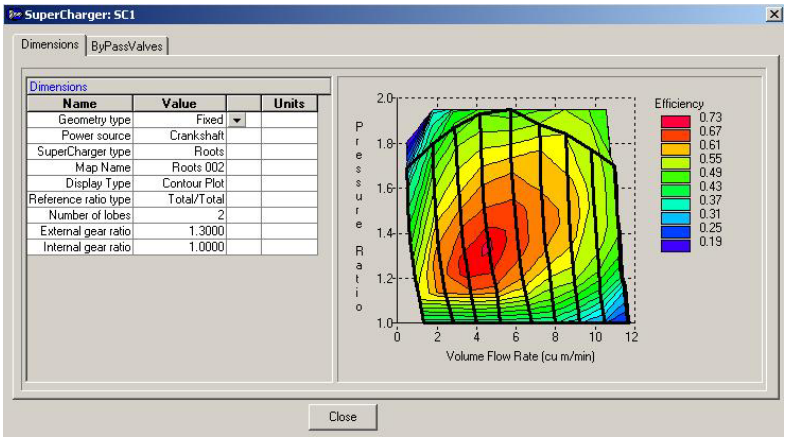
SUPERCHARGING OPTION

OPTIMUM Power Technology offers a major step forward in supercharger modeling within engine performance cycle simulation and design software products with VIRTUAL ENGINES v5.0.

The application of forced induction in engine design is now widespread. The use of this technology in each new engine design poses challenging problems. What capacity of supercharger is required? What will be the impact of a particular supercharger? How best can this be matched to the engine? VIRTUAL ENGINES provides the means to answer all these questions in a robust, user-friendly engine design environment that supports:

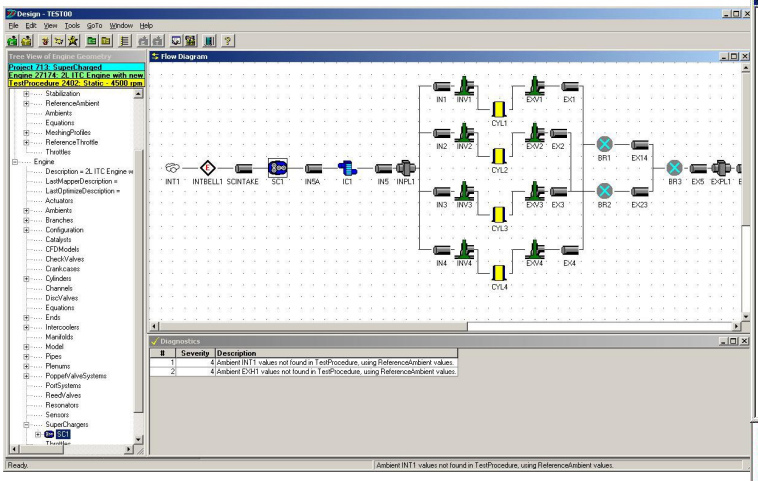
- Easy integration of manufacturer data
- Mechanical and Electrically-assisted operation
- Rapid scalability of input map data
- Integrated boost pressure control

Using a unique, full non-isentropic mathematical solver, VIRTUAL ENGINES is able to predict the impact of a supercharger on the unsteady gas dynamics in both upstream and downstream pipe networks, which directly equates to accurate prediction of engine operation. All common types of superchargers can be modeled.



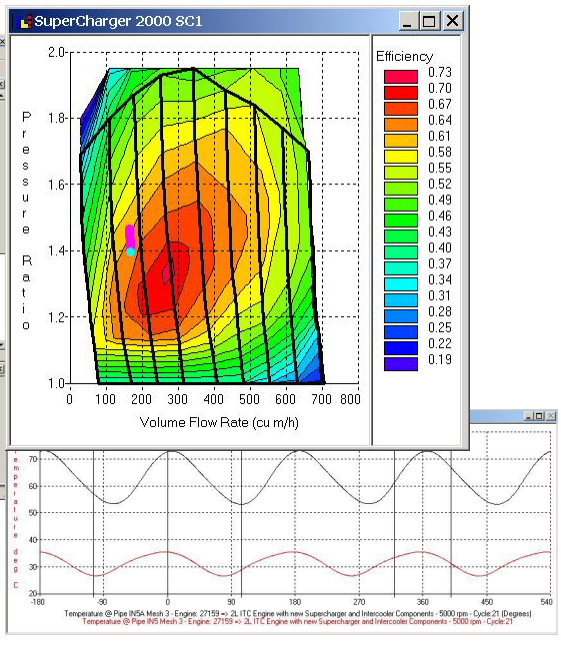
Supercharger specification

Speed, volume flow rate, pressure ratio, efficiency and temperature variations over the engine cycle are computed at every step of the calculation and available to the user through ANIMATE, VIRTUAL ENGINES powerful post-processing application that displays simulation results on a crank-angle basis. Instantaneous operating points over one cycle at a particular engine speed are shown on the supercharger map below. Instantaneous temperatures downstream of the supercharger and downstream of the intercooler versus crank-angle are also illustrated.



Supercharged engine model with intercooler in DESIGN

Supercharger maps can be imported directly onto the VIRTUAL ENGINES database. These can be accessed from any engine model and even scaled to simulate larger or smaller capacity superchargers where maps may not yet be available.



Post-processor supercharger analysis