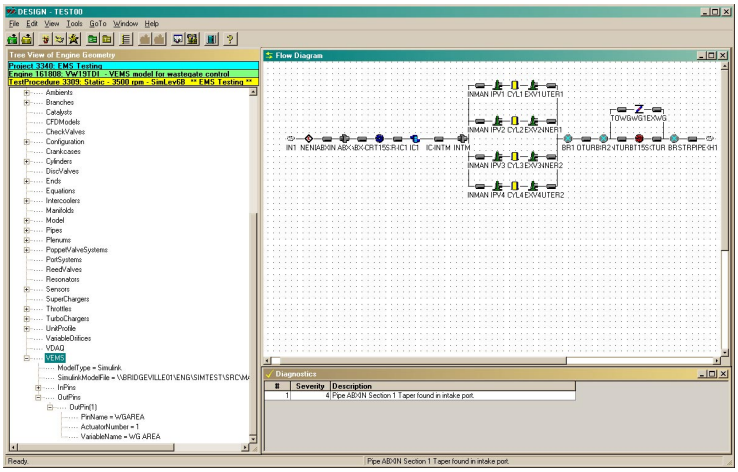
MATLAB/Simulink CO-SIMULATION OPTION

OPTIMUM Power Technology's VIRTUAL ENGINES v5.0 engine cycle simulation software now offers the ability to create a co-simulation process with MATLAB/Simulink™. The VIRTUAL ENGINES simulation and the MATLAB/Simulink model communicate directly on a time-step basis, allowing:

- ❑ VIRTUAL ENGINES to provide a wide variety of simulated inputs to the MATLAB workspace
- ❑ MATLAB to update a wide range of simulated outputs that can be returned to the VIRTUAL ENGINES model

The co-simulation process has been designed to allow maximum flexibility. The MATLAB/Simulink environment can be used for a variety of purposes, including:

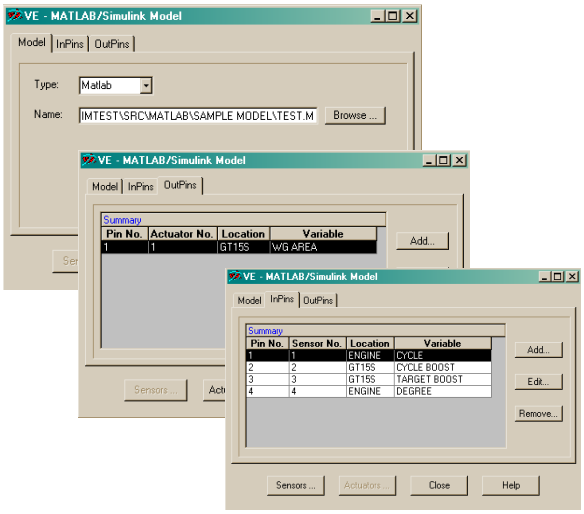
- ❑ Addition of proprietary sub-models to the VIRTUAL ENGINES simulation
- ❑ Addition of external drive-train models to the VIRTUAL ENGINES simulation
- ❑ Control System Design where VIRTUAL ENGINES supplies realistic inputs to the MATLAB/Simulink model



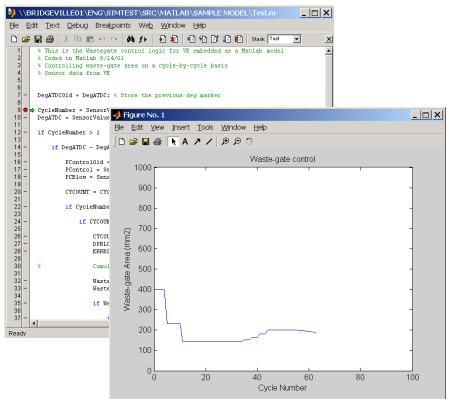
Turbocharged engine with MATLAB-controlled waste-gate

Coupling of the VIRTUAL ENGINES and MATLAB environments is supported through the VRITUAL ENGINES DESIGN interface. Sensors are defined within the engine model that can be connected as inputs to the MATLAB workspace. Actuators are defined in a similar manner to sensors and can be connected as outputs from the MATLAB model.

During co-simulation the full-functionality of the MATLAB workspace and debugger are available to trouble-shoot model design and monitor simulation progress.



MATLAB model specification in DESIGN



Simulation monitoring through MATLAB