

## **Sensors and Actuators Library**

The sensors and actuators model library contains generic models of the sensors and actuators used in today's automobile. Models are available as white box, grey box or black box models, that can be parameterized to simulate the behavior of a specific sensor or actuator. These models are implemented in the Matlab®/Simulink® Platform.

Models are currently available for the following sensors and actuators:

- Electrical:
  - Alternator
  - Battery
- Engine Actuators:
  - Electronic Throttle Valve
  - Fuel Injector
  - Idle Speed Control Valve
  - Variable Valve Timing
- Engine Sensors:
  - Air Fuel Sensor
  - Acceleration Pedal Position Sensor
  - Coolant Temperature Sensor
  - Exhaust Gas Oxygen Sensor
  - Inlet Manifold Pressure Sensor
  - Throttle Angle Sensor
- Fuel Line Components:
  - Fuel Pump
  - Fuel Pressure Regulator
  - Fuel Filter
  - Fuel Pipe
  - Fuel Pump Controller
  - Evaporator Purge Valve
  - Tumble Generation Valve

### **Key Features**

- White box, grey box or black box models.
- Can be easily parameterized.
- Choice of models for fault modes such as short to supply or short to ground, etc., and both offset and gain errors.
- Capable of running in real-time.

### **Convenience Features**

- Available as blocks in simulink browser.

### **System Requirements**

- Compute Platform: PC with Windows® 9x, NT, 2000 or XP
- MATLAB®/Simulink®/Stateflow® Versions: R12, R12.1, R13, R13.1, R14SP2

### **Customer Benefits**

Model Usage Scenarios

- Sensitivity Studies
  - Evaluate impact of parameters such as fuel pipe volume, fuel pressure regulator spring constant on system dynamics
  - Investigate impact of various time constants on the system behavior
- Model based control system development
  - Enable design and verification of model based control systems for engine control both for desktop and Hardware-in the-Loop simulations.

**Contact Emmeskay, Inc. for library details, licensing and pricing information by sending email to [info@emmeskay.com](mailto:info@emmeskay.com) or calling 734-207-5562/5564. In Japan, contact Emmeskay's distributor NEAT Company at [www.neat21.co.jp](http://www.neat21.co.jp) for additional information.**