



LMS Imagine.Lab AMESim Automotive Industry Solutions

LMS Imagine.Lab AMESim offers a complete 1D simulation platform to model and analyze automotive intelligent systems and to predict their multi-disciplinary performance. An extensive set of automotive specific solutions combines strong simulation capabilities, effective interfaces with leading CAE solutions and advanced tools to study the static/dynamic functional behavior of any component or system in a graphical, user-friendly environment.

LMS Imagine.Lab AMESim provides the unique possibility to integrate subsystems for an efficient evaluation of their interactions, at all the steps of the design process, from energetic approach for multisystem architecture, to design of systems and components, system integration, and control strategies validation.

With LMS Imagine.Lab Automotive solutions, suppliers simulate and validate components early in the design cycle, and also provide models for their customer with IP protection. OEMs simulate the integration of all suppliers' components in order to match the vehicle functions specifications and validate design choice.

LMS Imagine.Lab AMESim has been adopted as the preferred 1D system simulation platform by major OEMs and suppliers in the automotive industry worldwide. The reference list includes companies like Toyota, General Motors, Ford, Daimler, Volkswagen, Renault, Nissan, PSA PEUGEOT CITROËN, FIAT, Bosch, Denso, Delphi, Aisin Seiki, Continental, Valeo...



- **Powertrain Transmission**
- **Internal Combustion Engine**
- **ICE Related Hydraulics**
- **Vehicle Thermal Management**
- **Vehicle System Dynamics**
- **Electromechanical**
- **Fuel Cells**

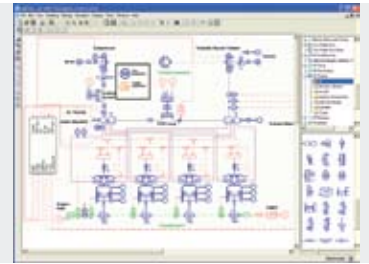
Powertrain Transmission

The Powertrain Transmission solutions provide a generic platform for analyzing and designing optimal transmission systems. The Powertrain Transmission solutions give access to driveline, engine and transmission models & components, and focus on comfort, performance & losses and NVH (Noise-Vibration-Harshness) issues.



Internal Combustion Engine

The Internal Combustion Engine solutions allow users to model and design comprehensive engine systems, from air management and combustion up to engine control. The solutions provide a cutting-edge, flexible environment for designing and optimizing “virtual” engine subsystem concepts. Users get the ability to study the couplings with subsystems for fuel injection, thermal management, powertrain and any other component.



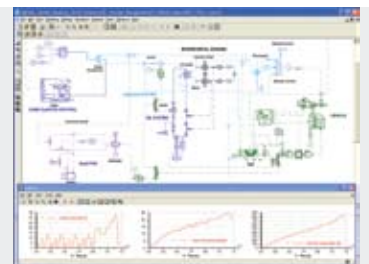
Vehicle System Dynamics

The Vehicle System Dynamics solutions offer dedicated capabilities to design individual chassis system components (brakes, suspension, steering, and the vehicle itself) and to integrate them in a single system model to simulate and validate global chassis control strategies. The solutions offer a unique platform to model and simulate the actuators and the vehicle with different levels of model details, and provide an easy integration with software-in-the-loop or hardware-in-the-loop validation processes.



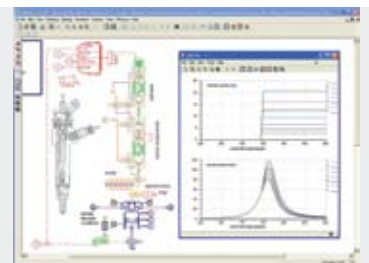
Vehicle Thermal Management

The Vehicle Thermal Management solutions give engineers access to detailed models of sub-systems in vehicle thermal management systems (engine cooling systems, air-conditioning, lubrication system, etc.). This enables them to accurately define and size components, and to study the overall system integration and the interactions between subsystems.



Internal Combustion Engine Related Hydraulics

The Internal Combustion Engine Related Hydraulics solution enables the design and optimization of fuel systems & components from the tank to the injector, as well as the design of valve actuation systems in relation with the engine cylinder. The LMS Imagine division totalizes a strong 20 years expertise in the fluids systems domain, thus enabling to deliver a comprehensive development platform with cutting-edge physical models and components.



Electromechanical

The LMS Imagine.Lab Electromechanical Systems solutions help engineers throughout the design process of electrical or electromechanical systems. The solutions simulate electromechanical components like linear actuators and electric motors, from the specification to the design and validation of control strategies. In addition, the solutions allow different levels of analysis of electrical systems such as power consumption estimation, transient response evaluation or thermal effects.



Fuel Cells

The Fuel Cells solution allows the design and optimization of fuel cells systems and it offers a modeling environment to size components of a system, optimize architectures and geometries, develop and test control strategies. Engineers get the capability to test different gas mixture and material solutions and predict the transient evolution of the produced voltage.

