

LMS Imagine.Lab AMESim Aerospace Industry Solutions

LMS Imagine.Lab AMESim offers a complete 1D simulation platform to model and analyze aerospace intelligent systems and to predict their multi-disciplinary performance. An extensive set of aerospace 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 Aerospace 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 aircraft or helicopter 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 aerospace industry worldwide. The reference list includes companies like Airbus, Agusta, Dassault Aviation, Embraer, Eurocopter, Goodrich, Hispano-Suiza, IN-LHC, Intertechnique, Messier Bugatti, Microturbo, Pall Corporation, Parker, GE Aviation, Snecma, Turbomeca, Techspace Aero...



↳ Ground Loads

- Size components and systems at the early stage
- Define impact of actuators on mechanical structures



↳ Flight Controls

- Design and optimize flight control systems and components
- Test and validate control strategies



↳ Aerospace Engine Equipment

- Design gravity and pressure-feed fluid systems in aircraft engines
- Access multi-scale levels from components to complete system



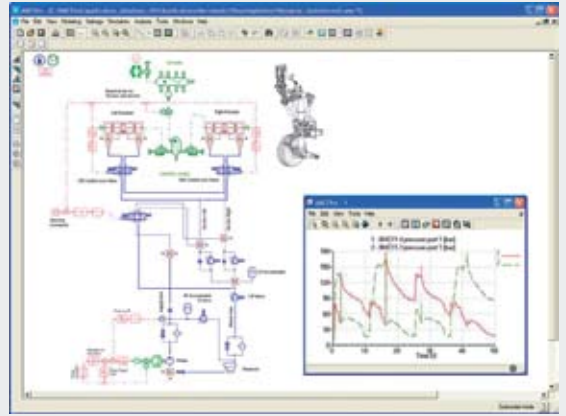
↳ Environmental Control Systems

- Optimize comfort of passengers and crew
- Study the interaction between Human body and ECS

Ground Loads

The LMS Imagine.Lab Ground Loads solution enables users to model and simulate aircraft ground forces systems. The solution delivers tools to handle braking and steering systems, landing gear systems, suspension systems, air-brake and thrust reversers. Users can size and optimize their systems at early stage to reduce costs and eliminate late stage failures.

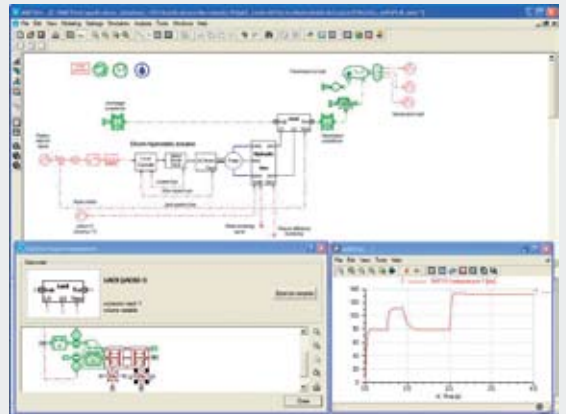
- Multi-domain off-the-shelf libraries dealing with all physics issues involved in ground forces: thermo-hydraulics, electrics, controls, etc.
- Efficient coupling with 3D multi-body software (LMS Virtual.Lab Motion, MSC.ADAMS,...)
- Integrates seamlessly into your current development process/tools
- Size components and systems at the early stage to reduce costs and probable failures
- Take advantage of a truly collaborative and comprehensive platform



Flight Controls

The LMS Imagine.Lab Flight Controls solution supports the design and optimization of flight control systems by using an unparalleled multi-domain system simulation approach. It easily handles the combinations of hydraulics, 2D mechanics, electrics, etc. in one unique modeling environment. The solution provides quick, easy and secure tools for the design of flight control systems.

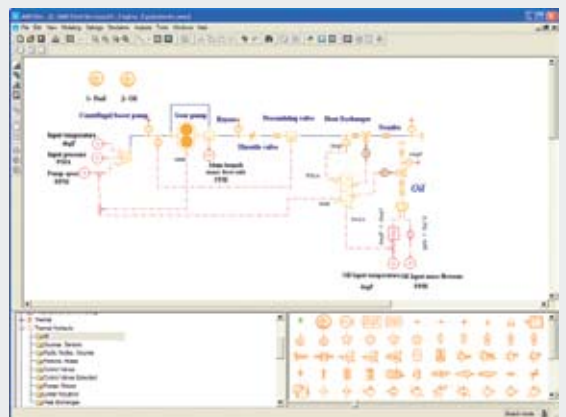
- Physical model at every stages of the process including validation (real-time)
- Facilitates the development of new concepts
- System development time is reduced significantly (from months to weeks).
- Take advantage of a truly collaborative and comprehensive platform



Aerospace Engine Equipment

The LMS Imagine.Lab Aeronautic Engine Equipment solution enables the design and industrialization of aeronautical fuel systems (metering units, pumps, actuators, nozzle, starters) with their control, as well as engine control actuators. It supports engineers in designing market-specific gravity and pressure-feed fluid systems in aircraft engines and in building reliable thermal-hydraulic systems.

- Heat exchangers with different modeling levels
- Pressure/Flow/Temperature distribution for various operating points
- Robustness /Optimization/DOE
- Directly couple pressure and temperature for global system analysis
- Use a large aeronautics fluids database of standard and customizable components
- Access multi-scale levels from components to complete system with control strategies



Environmental Control Systems

The Environmental Control Systems solution helps engineers to design the optimal environmental control system that makes air breathable, comfortable and safe - in terms of pressure, temperature, flow and humidity. Application areas include the comfort optimization of passengers and crew. The solution handles multi-disciplinary systems for advanced design: gas dynamic, thermal pneumatics, vapor cycle (2 phase flow), air conditioning, controls, life & environmental sciences.

- Gas mixture and moist air modeling
- Pressure drops data base including T-junction models regardless of flow directions
- Turbines/compressors, Gate/butterfly/globe valves
- Heat exchangers with different modeling levels
- Accurate modeling of condensation/evaporation
- Human body/ECS System interactions

