

Siemens PLM Software

# LMS Imagine.Lab for landing gear

Assess performance of the complete multi-domain system and its components

## Benefits

- Validate landing gear systems design and integration
- Analyze systems' behavior under operating and test conditions
- Assess multiple design levels, from components to the entire system with control strategies
- Significantly reduce development time

## Summary

LMS Imagine.Lab™ software for landing gear enables you to assess entire landing gear systems, including performance analysis for required functionalities: landing, extension and retraction, braking and steering systems. Based on the multi-domain system simulation approach of LMS Imagine.Lab Amesim™ software, the solution supports the multi-disciplinary nature of landing gear systems design (hydraulics, mechanical, electrical and thermal). It also allows you to consider the integration of the overall system interacting with the structure (coupling with finite element analysis).

Using LMS Amesim, you can now ensure the reliability of landing gear systems even under hard landing conditions, the

robustness of the braking system even in case of a rejected take-off, as well as proper structural integration of extension and retraction systems. The solution helps you design more eco-friendly and cost-efficient systems to improve an airplane's operational performance by reducing fuel consumption and carbon emissions during ground maneuvers, or by reducing the time required to cool down brakes. Moreover, you can significantly improve the aircraft drivability and handling by fine-tuning steering systems controls strategies.

Therefore, the LMS Imagine.Lab landing gear solution helps you address tough engineering challenges posed by physical tests and maintenance cost reduction, sophisticated technologies and materials, and safety and certification requirements.

# LMS Imagine.Lab for landing gear

## Features

- Advanced thermal hydraulic components accounting for variable air/gas content and their dynamics
- Pressure, flow and temperature distribution for various operating points
- Multi-domain coupling (hydraulic, electrical, mechanics and thermal) for overall system analysis
- Advanced analysis tools for design exploration and linear analysis
- Large fluids database of standard and customizable components

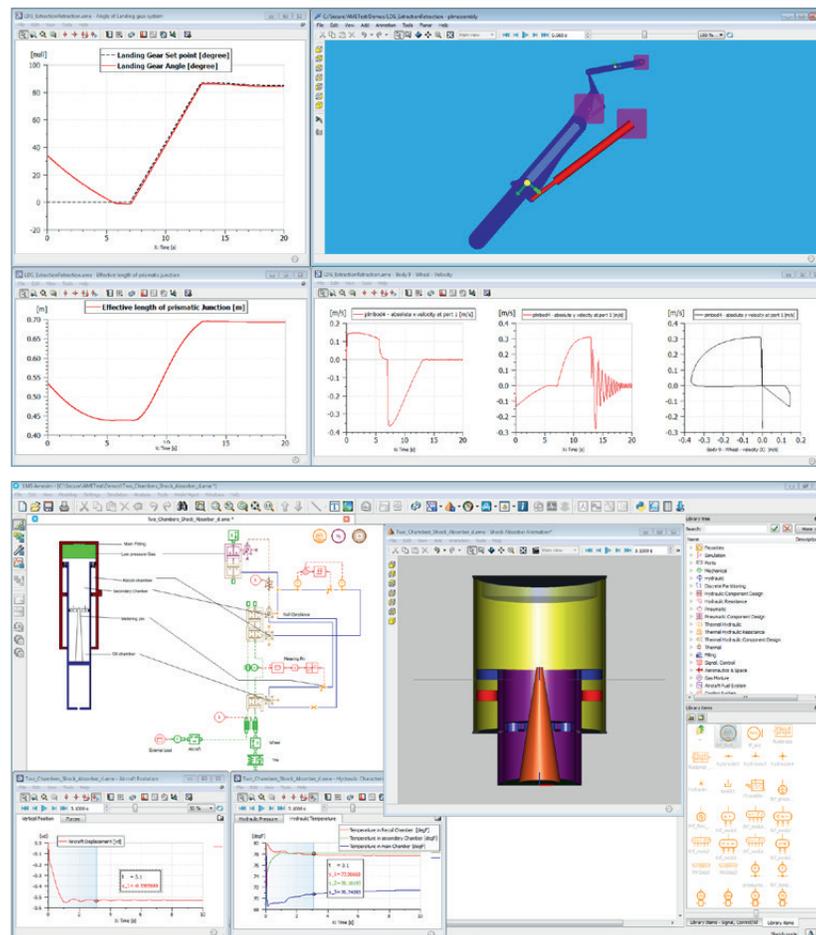
## Extension, retraction and suspension systems

Using the fluid, thermal, planar mechanical or electrical libraries of LMS Amesim, you can easily model multi-domain components when working on innovative extension, retraction and suspension concepts.

You can accurately size hydraulic systems and components to meet dynamic loads envelope requirements while running fewer physical landing gear tests and reducing development time and costs. Moreover, the solution makes it possible to enhance in-life service including maintenance and support, by offering you an accurate virtual test rig representing these systems in their environment.

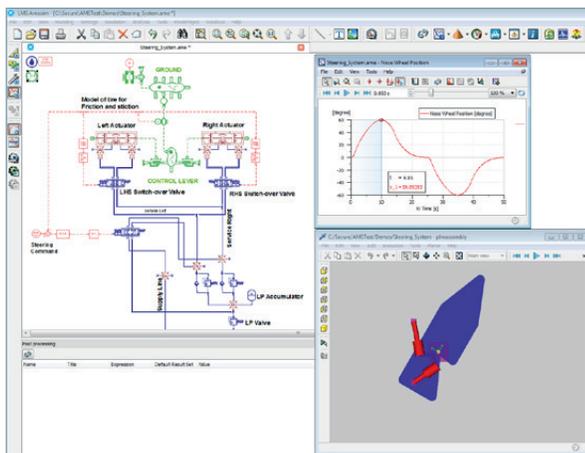
## Braking system

The landing gear solution is also suitable for designing and enhancing aircraft braking performance, such as the reduction of the time required to stop the aircraft and risks like tire bursting. It allows you to assess multiple technologies to achieve the right tradeoff: steel, carbon or ceramic brakes, hydraulic or electric actuation and various design options for pump and electrohydraulic valve design of anti-skid systems. In addition, the solution enables you to reduce the number of physical tests for braking controls calibration.



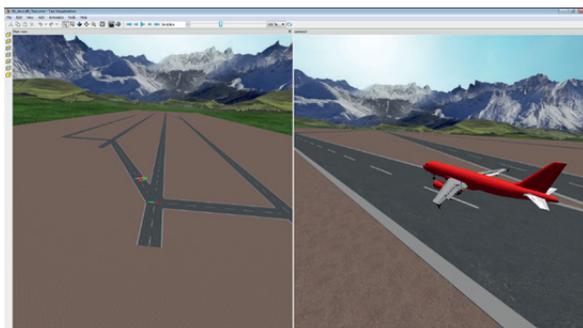
### Steering system

The landing gear solution helps you design and validate the steering system functions with a combination of electrical, mechanical, hydraulic and control equipment. You can design single components such as servo-controls and actuators, and validate component integration and control strategies. Among other engineering challenges, the solution enables you to reproduce and find solutions to tire shimmy issues.



### Taxiing system

With the LMS Imagine.Lab landing gear solution, you can readily optimize aircraft handling and drivability performance at concept phases. The solution helps assess the interaction between the aircraft and its subsystems, design and validate control strategies and perform innovation studies such as the green taxiing concept.



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