

Computers in engineering

Integration for FAI

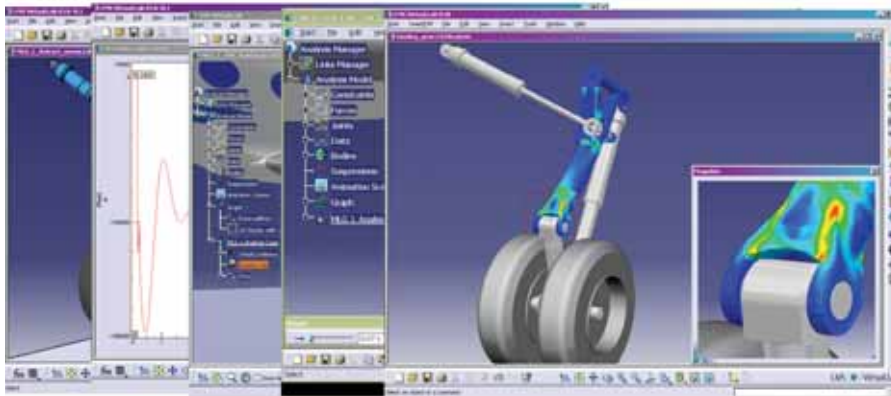
The **First Aircraft Institute (FAI)** of **AVIC-1**, an aerospace research establishment in China, has deployed multiple licenses of **LMS Virtual.Lab** from **LMS International** to support its Advanced Regional Jet Program, ARJ21. Under development by FAI to meet China's growing need for air transportation, the ARJ21 will accommodate up to 100 passengers and will be available in freight, business jet, stretch, and extended-range versions.

FAI recently deployed the **LMS Virtual.Lab** simulation suite to support



Development of the Advanced Regional Jet program at First Aircraft Institute in China has been supported by a variety of engineering software packages.

Source: LMS International



Chinese aerospace research company FAI recently deployed the LMS Virtual.Lab simulation suite to support the design and engineering of the landing gear system of the ARJ21 (generic hardware shown).

the design and engineering of the aircraft body and the landing gear system. The software solutions being implemented by FAI include **LMS Virtual.Lab Structures** for FE pre- and post-processing driving external solvers, **LMS Virtual.Lab Motion** for the dynamic performance simulation of components and subsystems, **LMS Virtual.Lab Acoustics** for the analysis of interior and exterior noise, and **LMS Virtual.Lab Optimization** for the automated evaluation of design alternatives.

Until now, simulation was performed with stand-alone programs, involving considerable time and effort spent on transferring data and models between software packages and reworking simulation models. **LMS Virtual.Lab** streamlines the different simulation tasks, which enhances the reliability and accuracy of simulation results and increas-

es the efficiency of the overall development process.

All through the aircraft development program, FAI also expects to strongly benefit from the seamless integration between **LMS Virtual.Lab** and **CATIA V5**, from **Dassault Systèmes**, which is used in the aircraft design process. This integration allows FAI development engineers to perform a complete range of analysis tasks in the same user environment, starting from the initial CAD model.

Designers now can easily perform simulations on individual component designs without the involvement of analysis specialists. This functionality enables them to identify and correct potential problems, explore alternatives, and optimize their designs early in the development process.

The landing gear for the ARJ21 is being developed by **Liebherr Aerospace**.

It is a twin-wheeled tricycle-type landing gear, equipped with **Goodrich** tires and brakes and a **Parker Hannifin** hydraulic system. FAI is doing analysis on components and will also do the integration of the landing gear into the full vehicle model.

Windchill from **PTC** is used in the ARJ21 project to integrate information and processes shared between R&D departments and manufacturing partners located in various provinces across China, as well as overseas suppliers. This implementation has enabled the development team to adopt a global purchasing and subcontracting model. The collaboration results in faster time-to-market, increased product quality, and reduced total development cost.

Using **Windchill** has enabled the ARJ21 team to provide a collaborative environment among AVIC, two design institutes, and five factories to share product data; manage and track project status; and provide a common portal to support document, CAD drawing, and 3-D model management, including Web-based visualization available to the extended enterprise. Workflow e-Signature inputs digital signatures against critical approvals of documents and changes, enabling traceability and controlled release mechanisms.

Configuration management controls aircraft definition at the product, assembly, and parts levels, with access to the database for suppliers through a Web-based workspace.

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