

LITENS AUTOMOTIVE GROUP

*ACCELERATING TRANSMISSION SYSTEMS DESIGN
WITH SOLIDWORKS SIMULATION PREMIUM*



Litens Automotive Group engineers rely on SOLIDWORKS Premium Simulation software to more efficiently and cost-effectively perform a range of analyses on their transmission system assemblies, resulting in optimized performance as well as time and cost savings.

Challenge:

Simulate the performance of sophisticated assemblies involving complex contact effects during product design to optimize performance, minimize expensive prototyping cycles, and save time and money.

Solution:

Implement integrated SOLIDWORKS Simulation Premium analysis software to conduct complicated contact, stress, displacement, dynamics, kinematics, fatigue, and thermal analyses during initial design.

Results:

- Saved millions of dollars annually
- Cut solving of complicated contact analyses from days to hours
- Reduced prototyping iterations
- Accelerated new product design and development

Litens Automotive Group is the global leader in the design and manufacture of engineered power transmission systems and components. A tier 1 supplier to the automotive industry, Litens invented the first mass-supplied automatic tensioner/single belt accessory drive 30 years ago and has maintained its market leadership position by continuously developing innovative products that solve vehicle performance and noise, vibration, and harshness (NVH) challenges. Serving a wide customer base, the company enjoys a majority market share, including all major international original equipment manufacturers (OEMs).

According to Dr. Steve Jia, Chief Engineer, CAE Technologies and Materials Engineering, development of Litens products requires the design of sophisticated assemblies with complex contact relationships. "The nature of our products makes modeling and virtual product development very challenging," Dr. Jia says.

Litens began using the SOLIDWORKS® 3D CAD system in 1998 to facilitate 3D design modeling but needed a robust yet intuitive finite element analysis (FEA) solution for simulating, validating, and optimizing product performance. "Our work demands an analysis solution that can handle complicated contact analysis easily, quickly, and effectively," Dr. Jia explains. "Litens products are generally small in physical size but involve assemblies with very complicated contact relationships between components.

"As we design products, we need to be able to run a range of simulation studies—from complicated contact finite element analysis to design optimization, sensitivity, motion analysis, and fatigue studies," Dr. Jia adds. "We needed an FEA solution that can not only handle all of these types of analyses, but also produce accurate results right away. That solution is SOLIDWORKS Simulation Premium."

Litens chose SOLIDWORKS Simulation Premium software because it's intuitive, provides single-window integration inside SOLIDWORKS CAD software, and includes a complete range of analysis capabilities. "The beauty of SOLIDWORKS Simulation Premium software is that it offers a robust mesher, a fast solver, and the ability to handle very large assembly simulations with very complicated contact situations easily," Dr. Jia says. "We've realized outstanding ROI (return on investment) with SOLIDWORKS Simulation Premium and rely on the software for our daily work."



"Time is the critical factor, and with the fast solver in SOLIDWORKS Simulation

Premium software, we can solve a full-assembly contact analysis in a couple of hours. Who else can do that? When you consider the time and prototyping costs that virtual product development using CAE helps us save, it amounts to millions of dollars each year."

**— Dr. Steve Jia, Chief Engineer,
CAE Technologies and Materials Engineering**

INDUSTRY'S BEST CAD/CAE INTEGRATION

Using SOLIDWORKS Simulation Premium software, Litens engineers can conduct very complicated contact analyses—as well as kinematics, dynamics, fatigue, displacement, and thermal simulations—directly within the SOLIDWORKS design environment. This capability enables Litens engineers to quickly apply simulation results as they design, which saves time and allows engineers to optimize designs early in the process.

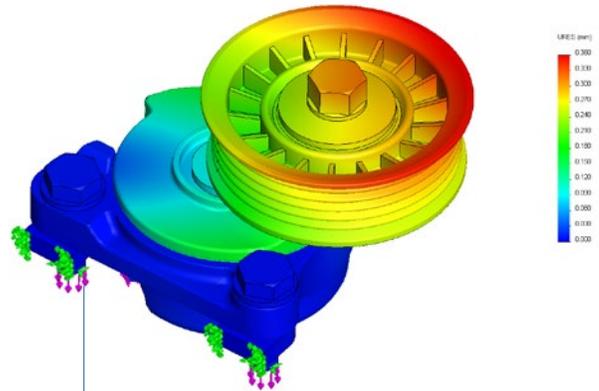
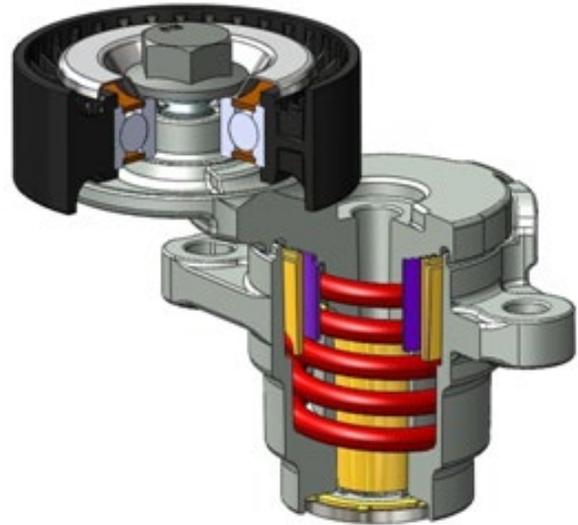
“SOLIDWORKS Simulation Premium provides the best integration of CAD and CAE tools among all the CAE software that we have tested,” Dr. Jia notes. “There’s no need to import or export geometry. Single mouse-click switching between a fully functional CAD environment and a fully functional CAE platform makes the CAD/CAE integration perfectly smooth, truly efficient, and really easy.

“Having access to CAD and simulation tools in a single-window environment is extremely powerful and very cost-effective,” Dr. Jia continues. “For example, we can apply the force vectors generated by SOLIDWORKS Motion rigid-body kinematics analyses as loads directly to our complex contact problems. And because the software is so intuitive and easy to use, we can train new engineers on how to use the tool more rapidly than with any other analysis package.”

FAST SOLVING OF COMPLICATED CONTACT PROBLEMS

In addition to saving time due to CAD integration, Litens engineers can solve even the extremely complex contact problems in a matter of hours as opposed to the days such problems can take in other analysis systems. The combination of the software’s fast and robust solver and complete CAD/CAE integration helps Litens speed up its product development process.

“Time is the critical factor, and with the fast solver in SOLIDWORKS Simulation Premium software, we can solve a full-assembly contact analysis in a couple of hours. Who else can do that?” Dr. Jia stresses. “When you consider the time and prototyping costs that virtual product development using CAE helps us save, it amounts to millions of dollars each year.”



With SOLIDWORKS Simulation Premium software, Litens Automotive Group engineers perform a wide range of part and assembly analyses, including complicated contact, stress, displacement, dynamics, kinematics, fatigue, and thermal analyses.

REDUCING EXPENSIVE PROTOTYPE ITERATIONS

By using SOLIDWORKS Simulation Premium software to conduct simulations as an integral part of the design process, Litens has reduced prototyping iterations and associated costs from the development of all of its products. "Our goal is to reduce and minimize the number of physical tests." Dr. Jia explains. "Physical testing will be used only for design verification, to fulfill customer requests, to validate CAE predictions, and address situations for which CAE is not applicable or available."

"As a CAE professional, I understand just how truly cost-effective SOLIDWORKS Simulation Premium is," Dr. Jia says. "The solution gives us incredible value because it's very robust and efficient for solving the engineering challenges that we face every day."

Focus on Litens Automotive Group

VAR: Javelin Technologies, Inc.,
Oakville, Ontario, CANADA

Headquarters: 150 Courtland Avenue
Concord, ON L4K 3T6
CANADA
Phone: +1 905 760 9177

For more information
www.litens.com

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| The 3DEXPERIENCE Company

Europe/Middle East/Africa
Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes K.K.
ThinkPark Tower
2-1-1 Osaki, Shinagawa-ku,
Tokyo 141-6020
Japan

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA