

Grantec Engineering Consultants, Inc.

ADVANCING THE EFFICIENCY OF SOPHISTICATED STRUCTURAL ANALYSIS WITH SOLIDWORKS



Grantec uses SolidWorks Simulation analysis software to analyze structures that must withstand substantial forces, such as the Canadian Navy's Maritime Coastal Defence Vessel.

- Increased analysis productivity by a factor of 40
- Expanded range of analysis capabilities
- Enhanced handling of analysis of complex geometries
- Improved communication of analysis results to customers

Grantec Engineering Consultants, Inc. provides advanced analysis services to clients that develop complex structures for a wide range of applications. Richard M. Grant, company founder and president, has built significant expertise over the past 25 years in analyzing structures that must withstand substantial forces — including his work as the principal structural analyst on the Canadian Navy's Maritime Coastal Defence Vessel, a sophisticated minesweeper. When he founded Grantec, Grant realized he would need a robust, flexible, and affordable set of analysis tools in order to meet his client's diverse engineering challenges consistently, efficiently, and cost-effectively.

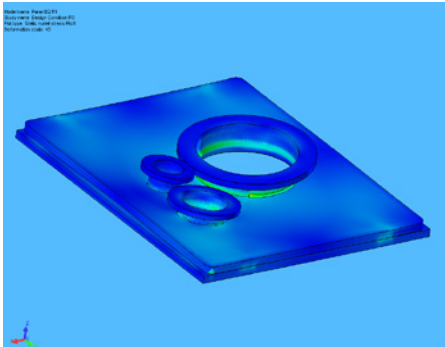
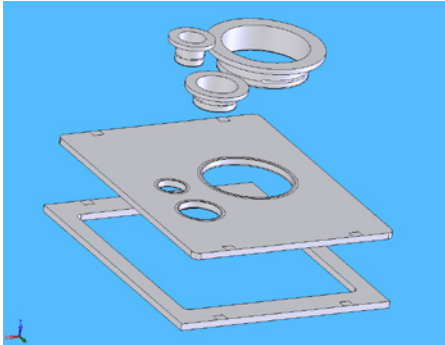
"I had used several finite element analysis (FEA) packages throughout my career, including ALGOR®, ANSYS®, NASTRAN®, and SolidWorks® Simulation," Grant explains. "When I selected an analysis system for my consulting company, the decision was easy because I had assessed different analysis packages and made recommendations on the best system for advanced structural studies for my former employers. I had always considered SolidWorks Simulation software my preferred FEA tool because it is the most versatile and represents the best value. With SolidWorks 3D CAD software, I have the full range of capabilities I need to conduct sophisticated nonlinear analysis at an affordable price."

Grantec selected SolidWorks Simulation, COSMOSDesignSTAR™, and SolidWorks Simulation Premium, including SolidWorks Motion, to support its advanced structural analysis needs because of the software's ease of use, complete set of capabilities, integration with SolidWorks Premium CAD software, and value.

"SolidWorks Simulation software is a very robust, well-established code that provides more bang for the buck than other analysis systems," Grant stresses. "Using SolidWorks is a more efficient approach because we can handle more complex geometries. This allows us to conduct advanced analyses faster and more cost-effectively."

“Essentially, we could not conduct the types of analysis we do without SolidWorks assembly analysis capabilities.”

Richard M. Grant,
Company Founder and President



Using SolidWorks Simulation software, Grantec performed weldment redundancy analysis on the Trident Enhancement Vacuum Chamber for the laser research facility at Los Alamos National Laboratory.

From offshore structures to high-level research

The productivity gains Grantec has realized using SolidWorks Simulation software are significant. The software has benefited projects ranging from large, flexible marine riser systems used for offshore drilling, which must withstand the forces generated by ocean waves reaching 22 meters and higher, to large research pressure vessels, which must withstand seismic shocks.

“We used SolidWorks analysis tools on the design of the Trident Enhancement Vacuum Chamber for the laser facility at Los Alamos National Laboratory,” Grant explains. “The chamber provides confinement for weapons and physics research. The Fast Finite Element (FFE) solver was a big advantage in analyzing the stability of the chamber under external loads. We performed seismic, thermal, deflection, and nonlinear buckling analyses to assure a high level of integrity for the chamber.

“We conducted similar analysis and design efforts, including fatigue analysis, for a large research vacuum chamber used in conjunction with the US Department of Energy’s Neutron Acceleration Project,” Grant adds.

“The combination of modeling and fast-solving capabilities in SolidWorks enables us to do more analyses because we can change a model, remesh, and re-analyze very efficiently. This approach boosts our productivity by as much as a factor of 40 and allows us to provide a higher level of service in a shorter period of time.”

Gap, contact elements advance assembly analysis

Grantec makes heavy use of SolidWorks gap and contact elements because the vast majority of the consultancy’s work requires advanced analysis of assemblies. “It is very rare to get an assignment that does not require assembly analysis,” Grant notes. “Essentially, we could not conduct the types of analysis we do without SolidWorks assembly analysis capabilities.”

The firm relied heavily on SolidWorks gap and contact elements to conduct detailed assessments of the response of a range of specialized welds on the Trident Enhancement Vacuum Chamber for Los Alamos National Laboratory.

Greater data compatibility, better communication tools

In addition to providing Grantec with a full range of analysis capabilities, SolidWorks CAD software expands the firm’s ability to handle various forms of compatible design data and improves its ability to communicate analysis results to customers.

“Most of the people we deal with are using SolidWorks CAD software and come to us for advanced SolidWorks analysis capabilities,” Grant points out. “Our solution is also compatible with other design platforms because we can import all of the leading CAD formats into either SolidWorks or COSMOSDesignSTAR.

“We use SolidWorks eDrawings® to communicate analysis results to our customers,” he adds. “On a recent project for a large 500-ton desalinization unit, we sent our SolidWorks analysis results to our client in Saudi Arabia via email as eDrawings, which was very effective.”



Dassault Systèmes SolidWorks Corp.
300 Baker Avenue
Concord, MA 01742 USA
Phone: 1 800 693 9000
Outside the US: +1 978 371 5011
Email: info@solidworks.com
www.solidworks.com



Grantec Engineering
Consultants, Inc.
53 Lakefront Drive
Hammonds Plains, Nova Scotia
CANADA B4B-1L4
Phone: +1 902 835 6982
www.grantec.ca