

WESTWIND TECHNOLOGIES, INC.

Lifesaving air rescues use hoist equipment developed with SolidWorks

WTI leveraged SolidWorks design, simulation, and product data management solutions to develop an external hoist kit for the Sikorsky Black Hawk helicopter, which is used by the US Army, US Coast Guard, and other search-and-rescue organizations for air-based rescues.

Whether they take place on land or at sea, aircraft-based hoist rescues are growing in number and saving more lives. Undertaken with hoists that lift a basket suspended from a helicopter, these rescues save the lives of people in areas that are difficult to reach—like the tops of mountains, the chaos of storm-ravaged seas, and the roofs of flooded houses—and have plucked countless individuals from the jaws of certain death.

As a maintenance and systems integration provider to the US Army's rotor-wing aircraft fleet, WestWind Technologies, Inc. (WTI) develops retrofits for the Sikorsky Black Hawk helicopter. Not only is this aircraft the US military's workhorse, it's also the primary helicopter used by the US Coast Guard and other search-and-rescue organizations for air-based rescues.

"When WTI undertook the development of an external hoist kit, we understood the implications the design could have for both military and civilian applications," explains Mechanical Engineer Richard Hall. "The original manufacturer offered to add a hoist system to new or existing aircraft for \$500,000*. For military and civilian use, it needed to be accomplished more cost-effectively. In addition to meeting the Army's needs on the Black Hawk, we wanted to design a hoist arm for use with civilian S-70 aircraft that we could market as our own."

WTI management understood that tackling challenges like improving the flexibility and usefulness of external rescue hoists would require an efficient, integrated development platform. After evaluating available technologies, the company chose the integrated SolidWorks® 3D development platform—including SolidWorks, SolidWorks Premium, and SolidWorks Enterprise PDM software—because of its ease of use and ability to provide design, simulation, and product data management capabilities from a single source.

"With much of our work involving the integration of new designs with existing systems, we understand the value of integrated tools," Hall stresses. "We believed the SolidWorks platform would allow us to multitask, which is a must in the type of design and engineering work that we do."

Challenge:

Service and maintain the US Army's rotor-wing aircraft fleet—including system development and integration and factory modifications—while simultaneously developing private, commercial products.

Solution:

Implement the SolidWorks integrated multi-product solution, including 3D design, Simulation, and Enterprise PDM software.

Results:

- Saved customers \$300,000* by avoiding six-week install
- Reduced assembly validation time by 50 percent
- Cut simulation run times from eight to two hours
- Developed innovative hoist system for air rescues

*Prices noted are rough estimates.

A much-needed design

Using SolidWorks software, WTI developed a hoist arm system and attachment hardware that makes it much easier and faster to add a rescue hoist system to a UH-60 Black Hawk and S-70 helicopter. Instead of paying \$500,000 for an original hoist attachment or taking the aircraft out of service for six weeks for installation, emergency rescue organizations like the US Coast Guard can add the WTI external hoist more affordably in just a few days.

"In the wake of Hurricane Katrina, during which rescue crews couldn't find enough air rescue helicopters or add external hoist arms fast enough, our customers have clamored for a simple, inexpensive way to add a rescue hoist capability," Hall points out. "With SolidWorks, we designed a far better approach. If the aircraft is prewired, it takes just 20 minutes to install our system. Customers ranging from the Army, National Guard, Navy, and Coast Guard to the Border Patrol and foreign military have embraced our external hoist arm system."

Faster simulations save time

To develop the rescue hoist, WTI used SolidWorks Simulation software to validate the design's safety and structural integrity, saving a substantial amount of time by reducing analysis run times. "We used SolidWorks 3D design software to set up our complex assembly models, which we ran through Simulation," Hall notes. "With this integrated approach, we were able to cut the time required for design validation by 50 percent."

"SolidWorks Simulation also runs faster than our previous solution," Hall adds. "Our old NASTRAN/PATRAN approach would run for about eight hours for each model set. With SolidWorks Simulation, we can cut run times to about two hours."

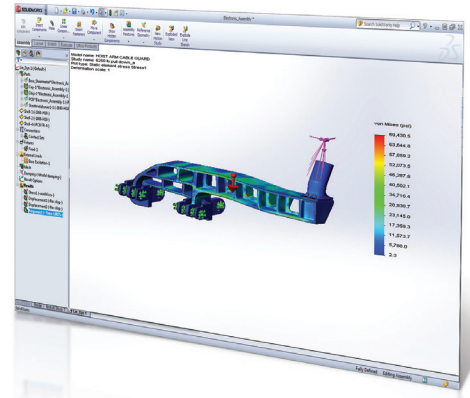
Managing projects with Enterprise PDM

Using SolidWorks Enterprise PDM software to manage design data and automate workflows for its range of diverse projects, WTI has increased its productivity and ensured adherence to all safety standards, ISO processes, and quality procedures.

"We are, by the nature of our business, multitaskers," Hall says. "We move from project to project very quickly and often need to juggle more than one project at a time. Using SolidWorks Enterprise PDM, we can manage different projects and data more effectively. In addition to tightening revision control, the software is also helping us to facilitate compliance and cut down on paper use."

"USING SOLIDWORKS ENTERPRISE PDM, WE CAN MANAGE DIFFERENT PROJECTS AND DATA MORE EFFECTIVELY."

Richard Hall
Mechanical Engineer



WTI used SolidWorks Simulation software to validate the hoist design's safety and structural integrity, cutting design validation time in half.



WestWind Technologies, Inc.
2901 Wall Triana Hwy.
Huntsville, AL 35824 USA
Phone: +1 256 319 0137
www.westwindcorp.com
VAR: ModernTech Mechanical
Huntsville, AL, USA



Dassault Systèmes
SolidWorks Corporation
175 Wyman Street
Waltham, MA 02451 USA
Phone: 1 800 693 9000
Outside the US: +1 781 810 5011
Email: generalinfo@solidworks.com
www.solidworks.com

