L-3 Communications Linkabit

ACCELERATING THE DEVELOPMENT OF DEFENSE COMMUNICATIONS SYSTEMS WITH SOLIDWORKS

The SolidWorks 3D development platform helps L-3 Communications Linkabit develop sophisticated defense systems, such as the M56E1 Motorized Smoke Obscurant System shown here.

CHALLENGE:

Develop cutting-edge defense communications and electronic warfare systems while working efficiently with military and defense contracts, and controlling prototyping and development costs.

SOLUTION:

Implement the SolidWorks 3D development platform to leverage its design, simulation, and product data management capabilities.

RESULTS:

- Increased efficiency by at least 50 percent
- Reduced prototype development time by 200 percent
- Saved money by eliminating costly prototype iterations
- Improved revision control and data management

L-3 Communications Linkabit develops defense communications and electronic warfare systems to protect soldiers and save lives on the battlefield. A division of L-3 Communications, the sixth-largest defense company in the United States, Linkabit focuses on developing systems that safeguard troops in the field by obscuring visibility, jamming radar signals, intercepting communications, and disrupting infrared transmissions. The company recently celebrated the 40th anniversary of its first product – a military modem developed in 1968.

While Linkabit has always concentrated on the design of defense communications systems, the sophistication involved in innovating, creating, and manufacturing electronic devices has changed greatly, ushering in a new set of design and production challenges, according to Thomas A. Romanisko, mechanical engineering manager at Linkabit. “The complexity of the 3D shapes we are involved with today is simply beyond the capabilities of the 2D design tools the company once used,” Romanisko points out. “We switched from the AutoCAD® 2D CAD package to SolidWorks® 3D design software to take our product design to a whole new level.”

Linkabit selected the SolidWorks design platform because it is easy to use, is compatible with all major file formats, offers robust sheet-metal capabilities, and provides seamless integration with productivity-enhancing simulation and product data management (PDM) applications. The company implemented a mix of SolidWorks Professional, SolidWorks Premium, and SolidWorks Flow Simulation software, as well as the SolidWorks Enterprise PDM system.

“The seamlessness and range of tools in the SolidWorks design environment make it the most capable development platform at its price point,” Romanisko stresses. “SolidWorks has provided incredible value, and has helped us to respond to our engineering challenges quickly, innovatively, and cost-effectively.”

SolidWorks

"We are at least 50 percent more efficient since moving to SolidWorks."

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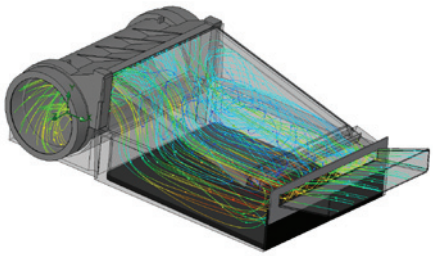
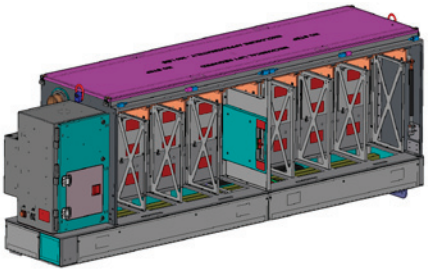
Mechanical Engineering Manager





Using a mix of SolidWorks design, simulation, and PDM tools, L-3 Communications Linkabit has substantially increased efficiency while dramatically reducing prototype development.

Designing a motorized obscurant system

The M56E1 Motorized Smoke Obscurant System is representative of the products Linkabit develops with SolidWorks software. Mounted on a Humvee, the M56E1 includes three types of obscurant systems: 90 minutes of smoke to obscure visual pinpointing, 30 minutes of graphite powder to obscure infrared sighting, and 30 minutes of carbon fibers to obscure millimeter wave location. The system is designed to protect passengers from visual and/or electronic weapons sighting.

"We used design configurations and sheet-metal capabilities extensively on the M56E1 system," Romanisko recalls. "Configurations capabilities and the tolerance analysis functionality really help us design assemblies efficiently. In particular, configurations allow us to create exploded views as well as show different modes of operation, which saves a lot of time. We are at least 50 percent more efficient since moving to SolidWorks."

Simulation minimizes physical testing

Linkabit saves additional time and reduces its prototyping costs dramatically with integrated SolidWorks Simulation tools. "Studying the effects of stress, vibration, and temperature is extremely important when developing electronics packages for equipment used in combat," Romanisko notes. "We also use SolidWorks Flow Simulation to study the impact of airflow on temperature to design cooling systems for electronics."

Having the ability to simulate designs in software allows Linkabit to eliminate costly prototype iterations. The company also utilizes rapid prototyping to produce SolidWorks component models on a 3D printer. "Instead of creating 10 prototypes, we use simulation to complete 10 design iterations," Romanisko says. "This approach has reduced our prototype development time by 200 percent."

Collaborating across the country

With offices in Florida, California, and New York, Linkabit uses SolidWorks Enterprise PDM software to manage design revisions, secure access to sensitive design data, and support collaboration across the organization. The system replicates vaults at all three locations and enables the company to automate its already well-regimented workflows using automatic email notification. In addition, Linkabit used its PDM system to standardize its parts libraries for commonly used components such as connectors and fasteners, which eliminates unnecessary duplication of effort.

"Linkabit is a zero-geography organization, which means we could have individual engineers in California, New York, and Florida who are all collaborating on the same project," Romanisko explains. "With SolidWorks Enterprise PDM managing revisions, access, and user rights, working with someone across the country is like working with someone next door."

Using SolidWorks eDrawings® files, Linkabit has also improved communications with customers. "It's great to be able to share a 3D design with a customer," Romanisko says. "The ability to make cross-cuts, use transparency, and spin the model makes eDrawings a much better format than using PDFs."

SolidWorks

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