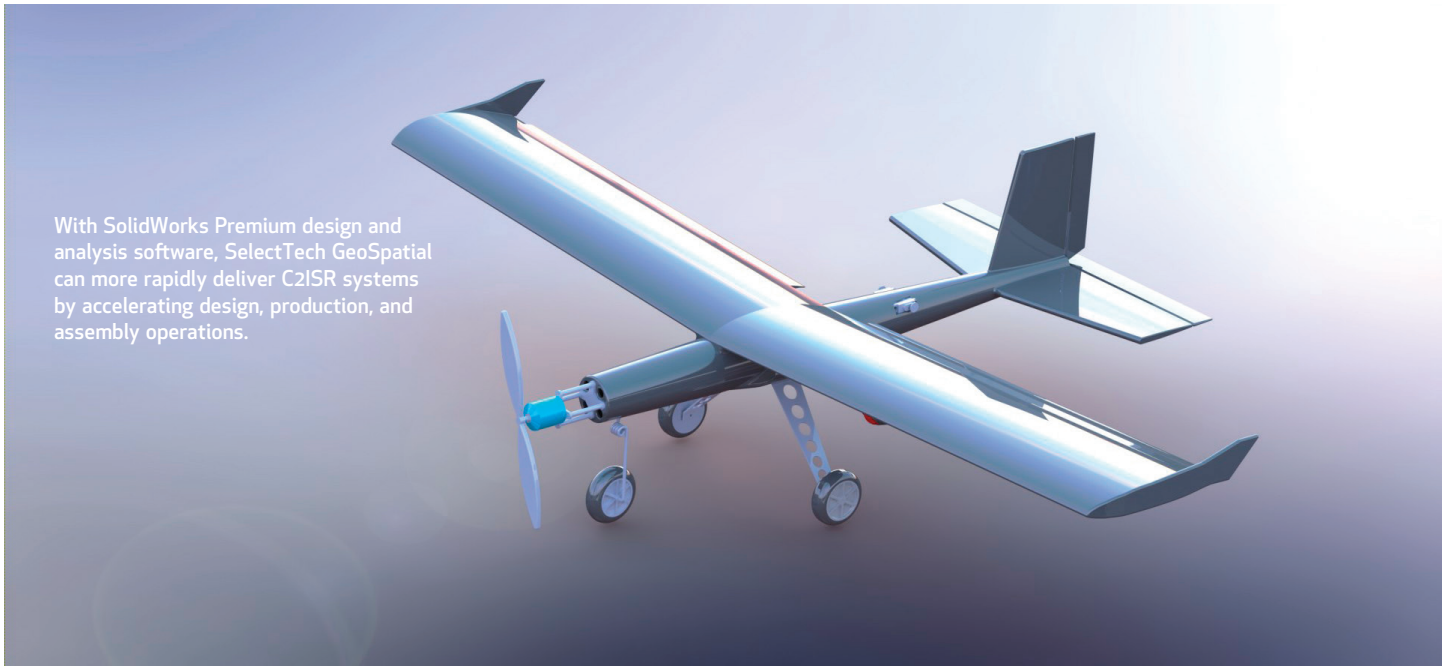
SELECTTECH GEOSPATIAL ADVANCED MANUFACTURING FACILITY

Advancing rapid military systems development with SolidWorks Premium



With SolidWorks Premium design and analysis software, SelectTech GeoSpatial can more rapidly deliver C2ISR systems by accelerating design, production, and assembly operations.

The SelectTech GeoSpatial Advanced Manufacturing Facility specializes in the rapid development, production, and delivery of command and control, intelligence, surveillance, and reconnaissance (C2ISR) systems.

The company was founded to create and manufacture C2ISR systems more rapidly than other defense contractors. To accomplish that mission, SelectTech GeoSpatial needed to use the latest 3D development technologies and lean, flexible manufacturing processes, according to Executive Director Frank Beafore.

"Our niche is being able to design and build a range of special projects on the fly," Beafore explains. "To succeed, we need to develop, manufacture, and ship C2ISR and related systems for deployment faster than anyone else. The US Department of Defense (DOD) values contractors who can consistently deliver on time and on budget. From the very beginning, we sought out the best design and manufacturing tools available to help our people meet that standard."

After evaluating 3D design solutions, including the Autodesk® Inventor®, Solid Edge®, and SolidWorks® design systems, SelectTech GeoSpatial chose SolidWorks Premium software as its sole development platform. "We chose SolidWorks software because it is designed and packaged well," Beafore recalls. "It has an intuitive user interface and provides access to a lot of complementary tools and technologies—such as finite element analysis (FEA) and rapid prototyping—in a single integrated environment."

"I've used other packages, and SolidWorks is so much easier," adds Chief Designer Beth Galang. "SolidWorks Premium provides all of the modeling tools that we need—like weldments, sheet metal, surfacing, and simulation capabilities—to quickly design, manufacture, and deliver important defense systems."

Challenge:

Respond to US Department of Defense needs for fast development, manufacture, and deployment of command and control, intelligence, surveillance, and reconnaissance systems.

Solution:

Implement SolidWorks Premium design and analysis software to accelerate design, production, and assembly.

Results:

- Reduced development time by 75 percent
- Cut prototyping costs by 83 percent
- Created walk-through animation in two days
- Improved system quality using simulations

SOLIDWORKS

Supporting C2ISR rapid-response demands

Since implementing SolidWorks Premium software, SelectTech GeoSpatial has supported a wide range of DOD projects, including UAS (unmanned aircraft system) ground stations, command and control units, PED modules, secure field facilities, transportable SATCOM stations, mobile data centers, UAS secure field maintenance hangars, and tactical operations control centers. The company's string of successful projects has enabled SelectTech GeoSpatial to expand into the growing UAV (unmanned aerial vehicle) and UAS market.

"We're used to working in tight spaces, integrating electronics, antennas, and other C2ISR system components inside small design envelopes in military aircraft," Beafore notes. "Because we have become so proficient with SolidWorks software and have entered the UAV market, we decided to do something that no one's ever done: design, build, and fly a small UAV plane that was completely manufactured on a 3D printer."

Printing a UAV

Working with SolidWorks Premium software and a Stratasys® Dimension® FDM (fused deposition modeling) 3D printer, SelectTech GeoSpatial set out to prove that an agile, innovative company could produce a UAV quickly and with limited resources. Using SolidWorks software, the company cut development time on the plane by 75 percent and prototyping costs by 83 percent. The plane's successful test flight marked the first time that a 3D-printed UAV took off and landed successfully. The only parts of the plane, which has a four-foot wingspan and weighs less than five pounds, that did not come off the 3D printer are the motor, landing gear, and two carbon-fiber rods.

"The purpose of the project was to demonstrate that we can conceive, develop, and execute complex systems and get them out quickly," Beafore stresses. "We basically built a UAV in a week and a half, and SolidWorks played a major role in that effort. Because of this project, we're now developing a full 25-pound UAV with a 10-foot wingspan. SolidWorks software enables us to rapidly design and build UAVs."

Seeing and testing a system before it is built

One of the reasons that SelectTech GeoSpatial is so much faster than competitors is that SolidWorks design visualization and simulation tools allow the company to present design concepts to customers and simulate component performance before building a single part. "On a recent special project, I created a walk-through animation that virtually showed what the final facility would look like," Galang says. "The rendered system looked so real that the animation alone pushed the project through to the next step in the process.

"With SolidWorks, we can model something up in a fraction of the time of other packages, use integrated simulation tools to make sure that the design can withstand adverse conditions, and use PhotoView 360 to show the system in photorealistic detail," Galang adds. "SolidWorks lets us simultaneously create, test, build, and demonstrate designs, which results in faster deployment."

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Beth Galang
Chief Designer

Using SolidWorks Premium software and a Stratasys Dimension FDM 3D printer, SelectTech GeoSpatial built and flew a UAV made almost entirely of 3D-printed parts.

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