SIEMENS
Ingenuity for life

Aerospace and defense

Allied Aerospace

Making product development run like the wind

Product

NX

Business challenges

Speed the development of complex, one-of-a-kind aerospace systems

Design and manufacture high-precision parts as cost-effectively as possible

Keys to success

Import customers' CAD geometry into NX software

Use Photo Editor to enhance design reviews

Create toolpaths with NX Machining and validate with complementary software

Results

Design cycle cut from months to weeks

Toolpaths programming that took days now completed in minutes

Prototypes eliminated for two-week savings

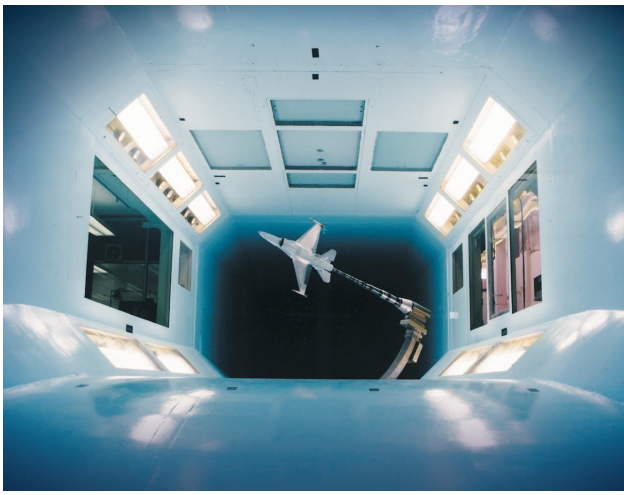
Overall cycle time reduced to meet customers' expectations

Allied Aerospace, a manufacturer of wind tunnel models and other flight systems, uses NX to shrink cycle times

Wind tunnels and more

Allied Aerospace is constantly looking for productivity enhancements to meet demands for faster turnaround. Allied is the only non-government entity in the world that operates wind tunnel test facilities capable of simulating everything from sea level static and low subsonic speeds to tri-sonic (just below hypersonic, or orbital) speed. The company maintains a highly trained and experienced staff of analysts, engineers and technicians to offer customers a build, test and evaluation process. For example, working from a customer's external shape geometry, Allied will design and build a highly precise model, complete with moving parts, that permits a full flight simulation in one of its wind tunnels.

Allied is currently building complex wind tunnel models and engine rigs for the Joint Strike Fighter Program. The company is also the prime contractor for numerous leading-edge flight systems such as the iSTAR unmanned air vehicles (UAVs). It is the "one-stop-shop" for aerothermal rigs for Rolls-Royce. In addition, Allied has several product-oriented initiatives that originated from its own technology development group, most notably a vertical take-off and landing UAV.



From years to months, months to weeks

All of these programs have one thing in common: they need to be turned around faster than comparable programs required in the past. "Customers are asking for faster deliveries," says Robert Slaughter, senior NC programmer at Allied Aerospace. "We don't have a six-month turnaround like we used to. Now they want it in five weeks." There is also pressure to work as efficiently as possible so costs are held down. "Aerospace is a very competitive field so we're always trying to get our rates down so we can bid lower," Slaughter adds. "That means we're always looking for ways to control or reduce costs."

Allied relies on NX™ and NX Machining software to meet these cycle time and cost reduction mandates. On a project such as a wind tunnel model of an aircraft, Allied

Solutions/Services

NX
NX Machining
www.siemens.com/nx

Customer's primary business

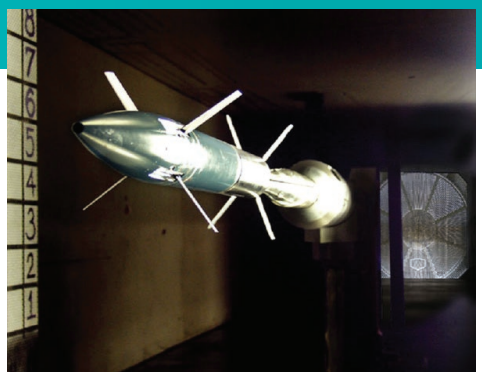
Allied Aerospace is a leading provider of products and services engineered and manufactured for customers serving the aerospace, defense, marine and energy markets.
www.alliedaerospace.com

Customer location

Newport News, Virginia
United States

"We originally chose NX because it was the easiest to use of the advanced software we evaluated. We stayed with it because over the years, it has continually advanced to meet our requirements for higher and higher levels of productivity."

Robert Slaughter
Senior NC Programmer
Allied Aerospace



begins by importing customers' CAD data directly into NX. This eliminates the need to recreate geometry. "Over the years, NX has made it much easier to read files from different CAD systems," says Slaughter. "Now, the same day we get them we are working with them."

Once the customer's geometry is within NX, Slaughter and his colleagues manipulate the data to add the mechanisms and structural components required to make a working model. They use NX to simulate moving parts in software. In some cases, analysts also perform finite-element analyses, using Nastran® software and the NX CAD data. For client presentations, Allied takes advantage of NX to make photorealistic images of products. Once CAD geometry is finalized, it is sent to NC programmers who use the models as the basis for toolpaths, which are validated using complementary software.

Time savings equal productivity

On a typical wind tunnel model program, the use of NX has shrunk the design cycle from several months to several weeks, according to Slaughter. Similarly, efficiencies made possible by the use of NX have significantly reduced both toolpath creation and the overall manufacturing cycle. In the 12 years that Slaughter has been using CAM, he has seen the time required to generate toolpaths decrease dramatically. "A toolpath that took all day to calculate in the past now takes less than an hour," Slaughter says. "Sometimes it takes just minutes. This is a big productivity improvement because there's no waiting for the computer. You can go right on to the next program."

Another key time saving results from the ability to verify toolpaths on the computer. In the past, before cutting a $75,000 block of metal, Allied typically created a foam or wood prototype to validate the toolpaths. The prototype took several weeks to machine and it was then thoroughly evaluated by Quality Assurance. No metal was cut until the toolpaths were perfect. By using NX models in conjunction with complementary software, the process of producing and testing prototypes has been eliminated, shaving weeks off the manufacturing cycle. It has also eliminated "false run" time on CNC machines, freeing them for real work. "After we verify toolpaths on the computer, the metal is on the machine and the chips are flying," says Slaughter.

For Allied Aerospace, the efficiencies attributed to NX span the entire product development cycle. During the design phase, they include immediate use of customers' CAD files, data integration with analysis and NC programming and a fast way to create impressive customer reviews. In manufacturing, NX delivers super-fast toolpath generation and eliminates the need for prototypes. These time savings add up to what Allied must have to compete effectively in the aerospace industry – turnaround times that meet customers' expectations.

Siemens PLM Software

Americas +1 314 264 8499
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3308

www.siemens.com/plm

4598-A5 4/18 B