Flying High

Precision Design survives through diversification

It's no secret that aviation was hit hard after Sept. 11. It was especially tough for smaller manufacturers who operate with ever-thinning profit margins.

"Everyone suffered through a rough winter," said Craig Easter, who heads Precision Design out of facility at Stafford Airport in Weatherford. "It's gradually getting better, but it's going to be a long road back."

Easter's main business is designing and manufacturing custom aircraft. His typical client is a rich, adventurer-type who has a lot of disposable income. "Of course there's been a lot less demand for new aircraft. Our business mirrors what has happened up and down the entire aviation supply chain."

Easter isn't waiting for the demand to return, however. He's taking the skills and equipment of Precision Design and applying them to other areas. He recently was awarded a Small Business Innovative Research (SBIR) grant from the Department of Defense. The SBIR project keeps Precision in the aviation arena—well, sort of.

"We are developing a new Air Crew Bladder Release System," Easter said, adding that it's no laughing matter to the military. During eight-hour flights, pilots must have a clean, efficient way to relieve themselves.

"We are not reinventing the wheel here," he said. "Our system does greatly improve what is now used. We are utilizing our working knowledge of composite materials and applying them to this specific project."

There is one very noticeable improvement on the old device, however. The new system works for both men and women. Currently, pilots must use awkward adapters.

Along the way, Scott Stinson, a Manufacturing Extension Agent for The Alliance, lent a hand. He helped Easter locate suppliers for the various high-tech, "diaper-like" materials needed to create the new system. He also assisted in researching various patent details.

"What makes Scott great is that he takes the time to understand what you are doing and why you are doing it," Easter said. "He and The Alliance have been a valuable asset during this SBIR process—a great help."

For Stinson, it's exciting to play even a

Easter acknowledges the different look of his aircraft is a selling point. It makes an impression on his typical custom—a rich adventurer-type with a lot of disposable income.

small role in helping an innovative, progressive manufacturer. "It's remarkable what Craig and Precision are doing," he said. "Craig is a real mild-mannered person. It may not be apparent at first glance, but Craig is a true genius. His work speaks to the brilliance."

Easter hopes to apply that brilliance and the experience gained in developing the recent SBIR proposal to future projects. In particular, he's looking at two new SBIR awards.

"One is the development of an aircraft that takes off and lands like a hovercraft," he said. "That would mean that no paved runway is necessary. It, of course, would have military applications and is of great interest to the Department of Defense."

Years ago the Soviets had some initial success in this area, Easter said, but the project was dropped after only a few prototypes were developed. "It tends to be ugly and that can discourage whoever is paying the bills," he said. Precision hopes to develop, refine, and perfect the necessary technology. It probably wouldn't manufacture the crafts, though. It would license the specifications to a larger maker.

Another SBIR project, and one the government is seriously encouraging, is the development of a "morphing" wing. "We've given this idea a lot of thought and done some work in the area," Easter said. "A morphing wing is a wing that changes shape depending on flying conditions. Think of an eagle soaring with outstretched wings and then think of him pulling in those wings to dive. Morphing wings would be much more complex, twisting and turning in many directions." It would be an incredibly efficient aircraft, capable of fulfilling a variety of missions. It could collapse to be stored in a large plane then take flight in mid-air, sliding right out of a door. Easter said the short-range capability would be unprecedented.

While other organizations are working on different ways to make a wing change shape—high-tech materials and electro-charged equipment—Precision's idea involves complex mechanical parts.

"NASA is really behind this kind of research," he said. "This will be very big for the person that gets it right…It's interesting that we've come full circle. The Wright Brothers used a very flexible wing. Over the years, wings became stiffer and stiffer. Now we're looking to become flexible again."

And a flexible business is a means to survival for manufacturers, Stinson said. "Precision's use of SBIR grants is great example. The process is rigorous and a company would certainly need assistance if it were its first attempt. You have to know what you are doing, but if you know what you're doing it can open doors."

But Easter isn't ready to shut the door on his custom-aircraft business. He moved to Oklahoma from Texas about 10 years ago, doing maintenance and some rebuilding work. "We eventually transitioned to custom designs and prototypes," he said. "We ran an ad and secured a project from a man in Germany." That first personalized plane is the one Easter flies these days. The German guy eventually traded up.

"Customers usually come to us with certain specifications like speed or range or seating capability," he said. "That becomes our mission. It's usually a two-year process from design to finished plane. We eventually take a rough cut at it and make modifications until we get it to perform exactly the way we want it to."

In general, the cost is about $500 per square foot. That's $300,000 in pocket change for a typical six-seat aircraft.

"So with the help of The Alliance we are surviving today with our sights on the future," Easter concluded.