Mark Bullard/The Enterprise

READY TO TAKE OFF: Brent Regan of Davis poses at the controls of the single-engine airplane he built from a kit.

THE WRIGHT WAY TO FLY

◆ Davis engineer enjoys the freedom of flight after toiling 2 1/2 years to build an airplane

By GLENN ROBERTS Jr.
Enterprise staff writer

Brent Regan made sure his plane was safe to fly. He built it.

"Knowing no one touched it but you — there is a lot less trepidation in flying," says Regan.

He recalls his sister's response when he told her he was going to build it: "Every airplane is built by somebody. I wonder how many somebodies knew they'd be flying it."

And for 2 1/2 years he toiled in a shop next to his Davis home, constructing a flying machine.

"I spoke to my wife about it. I said, 'Would you have any objections to me building an airplane?' " She supported his vision, and he worked long hours, often putting in 12-hour days on weekends, sacrificing some of his family time.

"It takes that kind of dedication," Regan says. "Fortunately, I only need five hours of sleep at night."

A background in engineering didn't hurt.

Born in San Mateo, Regan came to Davis in 1986 to help start Schilling Development, an engineering company he left eight months ago. He spends his time consulting now, mostly in the field of mechanical and engineering design.

The airplane is great for business trips, he says. "It is a good flying resume."

At the age of 18, he opened up a car repair shop. He still ferries a reminder of this first venture: a shiny red Porsche 911, which had 250,000 miles on it before he totally rebuilt it.

He later designed and built cars for high-stress endurance racing, and Regan says this background proved helpful in building a plane to withstand high levels of pressure.

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AIRPLANE

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"It all started when I was 7 years old working in dad's machine shop. For the last 30 years I have been designing and building things," says Regan. "I make Tim Allen on 'Tool Time' look weak."

After taking a ride in a sleek-bodied Lancair IV-P in Oregon, Regan immediately bought a kit and soon learned how much assembly was required. "It looked like a canoe," he says, as there was no fuselage.

He glued all the carbon fiber and Plexiglas parts of the frame together and set out to customize the plane with a non-standard engine and a slew of modified parts.

Using computer-aided design and a robotic parts-making machine, Regan crafted hundreds of pieces for the airplane, replacing some steel parts with titanium parts. Titanium is about one-half the weight of steel but has an equivalent strength.

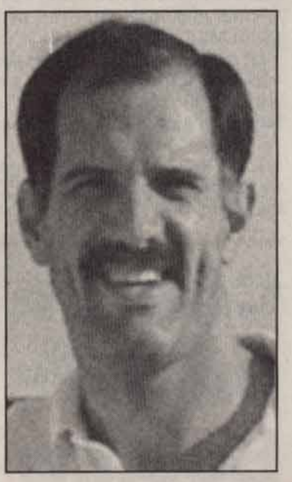
"I'm a fanatic about weight. It's important that you consider weight at every turn," he says.

He figures he reduced the final weight of the plane by about 70 pounds through his use of titanium.

Preferring a non-standard Lycoming engine to a Lancair stock engine, Regan spent over 700 hours fabricating parts to adapt the motor. He has even made parts and helped other builders to adapt Lycoming engines to Lancairs.

"The fraternity of plane builders is very large. I met a lot of people who I call my friends now," he says.

During the nearly 5,000 hours of construction, Regan found some time to learn how to fly the thing. "I started flight training when I started building the plane" by renting airplanes and taking lessons, he explains.



BRENT REGAN
Design skills put to test

A mechanic in Tulsa, Okla., put some finishing touches on Regan's contraption, rebuilding the pistons and testing and calibrating the engine. And then it was time to put the 2,700 pounds of engineering to the final test.

On Sept. 28 the bird was ready for flight.

An FAA inspector arrived the day before and gave the go-ahead for flight testing, and on Sept. 28 Regan followed in the wingtips of the Wright brothers.

The throttle surged and Regan reached into the sky that day, free from the confines of the shop space where his dreams came to life.

"It came together rather well," he says. "The plane does exactly what you tell it to, even if you tell it to do the wrong thing."

But this manual control also makes the airplane handle and respond well, Regain says. "It is the difference between a bus and a Ferrari."

Touted as the world's fastest turbo-charged, piston-powered, single-engine airplane in production, the Lancair IV-P has a cruising speed of 310 mph at 25,000 feet and will eat up less than 20 gallons of fuel per hour at that altitude.

The fuel tanks in the wings can hold nearly 95 gallons, giving the plane a range of nearly 1,400 miles. Usually, the capacity of a pilot's bladder is more limiting than the range of the plane, he says.

"You don't hear about this kind of stuff in Davis — building high-tech airplanes ... but it happens," he says.

Regan has logged more than 15,000 miles in his plane, the 15th Lancair IV kit plane to complete the 40-hour test flight process. He can fly to San Jose in 24 minutes, Los Angeles in just over one hour and Denver in just under three hours.

Black letters spell out "EXPERIMENTAL" in the cockpit of the plane. The designation will stick with the plane because it was modified from the intended design.

Regan received a repairman's certificate for the plane and he said the FAA inspector told him, "If you can build it, you can fly it."

Fully-assembled planes run in the neighborhood of $300,000 to $400,000. Regan estimates that he spent nearly $165,000 on his homemade version.

There are some obvious benefits to buying an already-made plane. "You don't have to wait 2 1/2 years," he explains.

A panel of displays and levers and buttons and switches fills the dash of the airplane, and Regan goes through a series of checks before each flight.

He says the magic words: "Transponder is on. Throttle is adjusted. Wing flaps are set and we're ready to go. Bravo Romeo."

And he is airborne.