

A photograph of a man and a woman sitting in the cockpit of a homebuilt aircraft. The man, in the foreground, is wearing a red t-shirt, sunglasses, and a headset with a microphone. He is holding a wooden steering wheel. The woman, behind him, is wearing a black t-shirt with "RA" visible, sunglasses, and a headset. They are both smiling. The aircraft has a yellow wing and a silver metal frame. The background shows a grassy airfield with other aircraft parked in the distance under a clear blue sky.

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Oshkosh: Weird
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Homebuilders at Oshkosh: Weird but Wonderful Airplanes

By Mike Jones

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There's so much to love about Oshkosh. First and foremost, sleeping under the stars with hundreds of Cessna aficionados at the Cessnas-2-Oshkosh base camp is a convivial thrill not to be missed. There's Boeing Plaza, where the heaviest of the heavy metal looms ominously over our heads. The airshows are noisily indescribable, and the seaplane base is a lunchtime delight. The margaritas at *Los Tres Amigos* are almost as saucy as the bartender serving them (mind your manners, she's also the owner).

But my personal and most delicious fetish is investigating the backstories in the Homebuilt Zone. The cautious engineers at Cessna would run away from of these designs, barely ahead of the corporate attorneys. But it's a fact: each homebuilt plane flew itself to Wittman Regional so they gotta be doing something right. My discovery is that in the



This is the six-wing Eagle, a super-efficient two-seater designed in Australia.

Homebuilt Zone you will find the weirdest inventions that have “ever slipped the surly bonds.” These planes are so weird, maybe they’re the ones who made the bonds surly.

Let’s look at an easy one: Eagle N156EA. It’s owned by a guy named Dave McDonald out of Missouri, and while I was not able to track him down at the show I kept returning to admire his glistening, slippery work of art. No, you aren’t seeing double: this plane has too many wings. If wings were red pimples, you’d think this plane had the measles. The design originated in Australia from the sun-fried brains of two blokes named Neil and Deryck Graham. Their triple-threat goal was a nimble plane with decent speed and docile stalls. Equipped with a 125 hp Continental IO-240 engine, the plane rocks along at 125 knots at only 75% power. That 1:1 knots-per-horsepower ratio means the airplane is extremely efficient; comparable numbers for Cessnas and Cirrus are in the 0.85 range.

The Delta Dyke

Just around the corner is an airplane with too few wings: a Dyke Delta. This example is owned by Jim Templeton. Delta wings were stylish in the early 1960s — remember the F-102 and the B-58 Hustler — and the Dyke Delta was a ground-breaking G.A. design that carried three



The Dyke Delta is another homebuilt; this design is all wing and nothing but wing. The book claims 180 mph and a 700 mile range, which was amazing in the 1960s.

people at 180 mph for up to 700 miles. The wings folded for easy storage and the landing gear retracted. So exceptional was its performance, the Dyke Delta repeatedly was featured on the cover of aviation and science magazines. Today these birds are rare but the graceful lines of the plane are undeniably beautiful.

Walking a bit further, I watched Harry Manvel, of Pontiac, MI polish his sparkling white Velocity. Whoops: it's not a Velocity — this plane has two center-line engines. It's a Defiant, he told me proudly, designed by none other than (hold your applause) Burt Rutan. Manvel was so proud of his baby I expected Rutan to step out from behind the tail and take a bow.

The Twin-Engine Defiant

Manvel started building his Defiant in 1985 and completed it, let's see, just about fifteen years later. Totaling 4,800 hours of build-time, a Defiant clearly is a project for a guy with extra time on his hands.

"I wanted the biggest thing I could fit the family in, and this was pretty much the only four-seater you could build," he explained. After all those years I figured the family might already have flown the coop to college or jobs, but that's just me.



The Defiant is a home-built version of the venerable Cessna 337, a twin-engine speedster with center-line thrust. The design is odd in many ways, including the unique "rhino rudder" at the front of the airplane, below the cowl.

Manvel explained he's accumulated 1,200 hours on the airframe, which is the majority of his 1,500 total hours. He's flown the plane west to the Grand Canyon, south to Texas, and even Key West. "My wife and I travel quite a lot," he confessed,

unabashedly. “It flies wonderfully. The easiest airplane to land of any I have ever flown.”

He cruises at 7,500 feet at 165 knots. The normally-aspirated Titan 0-320 engines produce 167 horsepower burning 15 gallons an hour combined. Approaches are at 80 knots and he touches down at 65 knots. If your eyes were closed, you’d think it was a Cessna.

Examining the plane closely, everything seems backward. It has a 24-foot wing on the nose, much bigger than a normal canard. The elevators are mounted on the forward wing, not on the tail. The ailerons are on the main wing, which is normal, but the rudder is *below* the cockpit, which isn’t. This innovation is called a “rhino rudder” and was perfected by Rutan on his VariEze and Long-EZ designs. It improves yaw control while reducing weight and simplifying the internal plumbing of the airplane. But it looks weird.

“The first flight was a thrill, so exciting,” Manvel recalled, and I could only imagine. “I kinda knew what to expect. But you never know how it’s going to handle. Once it was in the air, it felt stable, it was great. It only took a couple of minor iterations until I got it perfect, and that was it.”

The “Long Easy” Ain’t

Parked nearby was Bill and Pam Percival, showing off their Long Easy. “Long Easy” is a misnomer: there is nothing easy about building one.

“It doesn’t come as a kit,” Percival explained. “You start with raw materials and work your way up.” He built it at their Las Vegas home, literally in his garage. “Sometimes I had a wing sticking out the door; sometimes a tail. Good thing I don’t have a homeowner’s association. The neighbors would have been complaining.”

Burt Rutan plans are very thorough and explicit. Percival reported the instructions start with a whole section on training, such as how to rivet and

how to work on fiberglass. “This whole thing is like a fiberglass surfboard; the structure, the spar; there’s actually very little metal,” he said. “Fiberglass is easier to cut [than carbon fiber materials], the dust is less hazardous, and it has almost the same strength.”



The Percival family is based in Las Vegas and built this beautiful fiberglass machine in their garage. The plane now has 1,200 hours and has flown to every corner of the country.

Pam and Bill clearly have caught the homebuilder’s disease, big-time. “We’ve actually sort of built three airplanes in our garage,” Pam said with a laugh. “We built our first Long Easy, and it was a good flyable airplane. But after 30 years it was kind of showing its wear and tear, right? So, we stripped it down, put in new

instruments, a new interior, really new everything. We made it into a brand-new plane. Now it’s wonderful.”

Wandering onward, I stopped at a jumble of scaffolding some construction team had carelessly abandoned on the grass. Wrong again — that’s not scaffolding, that’s a Breezy. Tending to its needs was the sharp-eyed Jeff Point, pilot, builder, 39-year Oshkosh veteran, and retired captain in the Milwaukee Police Department. His pride and joy is Breezy NX1879B, based at East Troy Muni (57C) about 100 miles south of Oshkosh.

“I built an RV-6 back in the ‘90s; I still have it; love it; and I’ll never get rid of it,” he explained. “But I like to have something to tinker with. After a few years I was itching for another project. And, I wanted something completely different.”

The Breezy certainly passes the ‘different’ test. The aircraft’s official designation is RLU-1, which is an abbreviation for Charley Roloff, Bob Liposky, and Carl Unger, the three airline pilots who designed the Breezy in 1964. They had a serendipitous blend of skills: one was a helicopter mechanic, one was a draftsman, and one was a welder; it also is rumored adult beverages were involved. Longing for a return to unregimented flying, they sketched out a simple design on a stack of napkins.

“They had access to a set of Piper wings, so they designed it around those. They got their hands on a C90 engine. They put it all together, and started flying it to airshows,” Point tells the story with a smile. “Apparently, people came up and said, ‘I’d like to build one of these, do you have plans to sell?’ Carl’s response was, ‘Hell, we didn’t think anybody would wanna fly in it, let alone build one!’ So they went back, measured everything, and people started building them.”



Jeff Point is a retired Milwaukee police captain with a passion for flight. His favorite homebuilt is this flying skeleton called a Breezy; the lattice-like structure is light-weight but incredibly strong.

Enormously Overbuilt

There wasn't an engineer among the three, so as spindly as it appears a Breezy is enormously overbuilt. “There's enough steel in this thing to build three Cubs. They just kept guessing, saying, ‘we better add a little bit more here,’” Point explained. “An engineer could probably remove half the tubing from this thing, save a 100 pounds, and it would be just fine. There's never been a Breezy come apart in the sky.”

Point needed about 2,000 hours and nine years to build his Breezy; it first flew in 2017. “It wasn't a race. I was working full-time; I have another airplane to fly; it'll be done when it's done. In fact, I enjoy building them about as much as I enjoy flying them.” You hear that often from homebuilders at Oshkosh.

Breezy plans are rudimentary: they only include the fuselage and the landing gear. “There were no plans at all for the wings,” Point noted. “Basically they said, ‘we used Cub PA-12 wings, good luck.’” This casual design is a feature, not a bug, from Point’s perspective. He gently scoffs at the excessive detail in today’s homebuilder kits. “A modern Vans RV kit has a build manual that’s feet thick. It's got step-by-step instructions for every little thing, including which end of the screwdriver to hold.”

According to Point, scrounging parts is an essential skill in building a Breezy. His yoke is from a 1946 Cessna. The nose wheel strut is from a C-150. The over-sized fuel tank was salvaged from a Decathlon. With 18 gallons on board, Point figures he has 45 minutes of fuel “and three hours of reserve.”

Nobody really knows how many Breezys are clogging the skies. The problem stems from the FAA registry: there are no rules for naming homebuilt aircraft. “You could call it a Breezy, or an RLU-1, or a Jeff Point Bugsmasher 2000; whatever you want,” Point declared. “Teasing out exactly how many fly is difficult. The best I've been able to determine is that about 100 have been built, but I can’t even guess how many are still flying.”

Point clarifies that you never ride in a Breezy; like a motorcycle, you ride on one. “In terms of flying characteristics, you're essentially flying a Cub. It's a Cub wing, a Cub tail, and a souped-up Cub engine. It's a docile pussycat. It's got no bad habits.” In fact, airspeed is less important than the ambient temperature, which Point sets at no less than 60° F. Density altitude worries? No, he said, frostbite. “Dressing for the wind chill is an important consideration,” he cautions seriously.

The statistics for a Breezy are pretty impressive, especially given the lack of aerodynamics. It will jump off the ground in 450 ft. and climb at 400 fpm. Point rotates at 45 mph when flying solo but closer to 55 mph with a passenger. He climbs at 60 mph to keep away from the 41 mph stall zone. Best glide is 52 mph solo. Stalls are exciting, not because of the airplane but because of the view. “At five degrees nose-down you feel like you’re falling out of the sky.”



Jeff Point heads for the runway at Oshkosh in the Breezy with a brave young lady along for the ride. The rides are slow, thrilling, and chilling, he reports, and are particularly popular with Young Eagles eager for a real flying adventure.

“It's anything but sleek. If you pull the power back it just about stops. It's got the glide ratio of an Oldsmobile,” Point described this feature with a touch of pride in his voice. “If you lose the engine, in 30 seconds you're gonna be on the ground. I practice dead-stick landings all the time just to stay proficient, because there is so much drag.”

“If I'm just tooling around giving rides, cruising at 60 to 65 miles an hour is fine. If I'm trying to go somewhere I'll bump it up to about 70 and just grin and bear it,” Point explains. “I've had it up to almost 100 in flight testing. That's just uncomfortable, like it's a motorcycle with no fairing.”

The airplane is an exercise in simplicity. There's no GPS, no transponder, no ADSB. The instrument panel is between the pilot's legs and consists of a radio, Foreflight for navigation, and a MGL Avionics Xtreme EFIS for engine gauges. The EFIS also records the flight's operating parameters, which is handy because “writing things down in a Breezy is a challenge.” No kidding.

I asked about passengers' reactions to the seating; it's basically a flying beach chair. He admitted some people had been concerned. “I give a lot of rides to the volunteers here. There was one, it took me years to convince her to go for a flight,” Point reminisced. “Even this year, there was another one, Teresa. She said, ‘No, absolutely not.’ But when I saw her the next morning she's like, ‘Let's do this’! From zero to hero in 18 hours — that's the quickest I've ever seen somebody change their mind.”

Mary Ellen Gonzalez-Harman was prepping for her ride in the Breezy. She and her husband Jerry, a helicopter pilot, live outside of Anchorage. Jerry had been on a Breezy and wanted Mary Ellen to try it even though she's admittedly “not much of a flyer.” Jerry persuaded her that flying on a Breezy is a lot like riding on their 2007 Harley-Davidson. “I was a little skeptical but then thought, heck, why not give it a shot?” Mary Ellen told me. “I think I'm really gonna like it. If we do, Jerry's going to get one and we can fly it around Anchorage. We're getting older, you know. We don't want anything over the top, just something we can handle and play with.”

Getting their Breezy to Anchorage may be their biggest problem. Breezy's generally don't migrate far from home; the longest flight for Point is to Oshkosh, roughly 100 miles. “I do pancake breakfasts around Milwaukee, so I

get around locally,” he smiled. “Plus I do quite a few Young Eagle flights, but it's gotta be the right kid. An 8 year-old who’s never flown is not a good choice, but a 14 year-old who’s really into it and coming back for their third flight, that's the kid I'm looking for.”

About the Author

Dr. Mike Jones is an entrepreneur who uses his business expertise and academic training to improve the management of our G.A. airports. He also strives to protect them from avaricious developers and reverse the damage caused by ineffectual politicians. He’s been writing for this magazine for nearly a decade, flown 800 Young Eagle missions, and put 4,000 hours in his logbook. He’s always accessible at PilotMike2012@gmail.com.

