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# Popular<sup>®</sup> Mechanics

AUGUST 1992  
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NO. 8



**44 COVER STORY**

**AUTOMOBILES**

**HOME IMPROVEMENT**



COVER STORY

# KITPLANES GROW UP

Kitplanes are a technological leap beyond anything you can buy from a factory.

BY WILLIAM GARVEY  
PM Photo by Rich Cox



KITFOX SPEEDSTER



LANCAIR IV





KIS



BERKUT

● What with Gee Bee racers, Desert Storm air-war vets and a salvaged Lockheed Constellation on display, and an invasion force of World War II fighters, trainers and transports thundering overhead, it was easy to get distracted at last summer's Experimental Aircraft Association Fly-In at Oshkosh, Wisconsin.

But then you'd pass under the main arch and onto the grass infield, and they'd hit you right in the eye. For there, at stage center of the 15,000 airplane gaggle were the latest offerings of homebuilt airplanes, the machines upon which the EAA was founded and the reason for which the fly-in was begun. This display of aeronautical ingenuity and precision craftsmanship never disappoints.

The variety of amateur-built flying machines seems to have grown exponentially in recent years, especially since composite construction came of age. Some of the standouts from last year's gathering follow, and there's every indication that this summer's crop will be even better.

## Seawind

The go-anywhere-and-stay-awhile kitplane, S.N.A., Inc.'s Seawind has strong appeal for those who like to get away from it all—and take some soulmates along for the ride. This big amphibian seats four in a cruiser-size cabin, 4 ft. wide × 8½ ft. long. When fitted with a 300-hp Lycoming, the Seawind will sail off from the concrete straight for your favorite backwoods fishing hole at a landplane-like 191 mph.

And once you put down, just pop the huge canopy and unroll your sleeping bags—a camping configuration can

easily accommodate two in back.

Since it is constructed almost entirely of composites, the Seawind is particularly resistant to corrosion—the principal nemesis of all watercraft. And in the event that the hull is damaged, there's enough foam and trapped air in the plane's design to keep it floating, with the engine high and dry.

Seawind comes in eight subkits that total \$39,900. Add an overhauled engine, new prop, avionics, wiring and upholstery, and you'll have \$65,000-plus invested in your land/sea project. (The only comparable production amphib costs six times as much.) Completion time is approximately 1000 hours, plus 100 to 300 hours for sanding and finishing.

For more information, contact S.N.A., Inc., P.O. Box 607, Kimberton, PA 19442-0607; (215) 983-3377; Fax (215) 933-3335.

## Exec 90

The hands-down champion of the vertical-lift set, Rotorway International's Exec 90 may be one of the fastest homebuilts extant as well—to build, that is. This, the latest iteration of the popular 2-place chopper, boasts a score of improvements, like eyebrow windows, larger rotorshaft and bearings, center console and dual electronic ignition. Plus now a “quick kit” is available which should halve the typical 500-to-600-hour construction time.

To hasten fabrication, Rotorway does all the welding, prefinishes the tail boom and blades, and provides a complete wiring package. This extra service adds \$6000 to the Exec 90's \$45,000 price. Keep in mind that base price buys a complete aircraft, from the skids and seats



# KITPLANES GROW UP



Denney Aircraft Co., Nampa Airport, 100 N. Kings Rd., Nampa, ID 83687; (208) 466-1711; Fax (208) 466-7194.

## Discovery

One of the most noteworthy new airplanes to appear at Oshkosh last summer, Discovery was designed and built by William Shaw, of Pebble Beach, California. This side-by-side, all-composite flyer is a 3-airfoil airplane, with canard, main wings and stabilizer. Particularly distinctive were the airplane's fins joined at the top by the stabilizer and elevator, much like the Rockwell OV-10 Bronco used by the U.S. Marine Corps. The pusher prop,

right through drivetrain, flight controls and Rotorway-built 162-cu.-in. water-and-oil-cooled powerplant—the works. All you need to add is the avionics, paint and pilot.

As for performance, the kit craft can hold its own with the store-bought competition: Cruise speed is 95 mph, rate of climb is 1000 fpm, and it tops out at 10,000 ft. With 17 gallons of fuel on-board, it can stay airborne for up to 2 hours.

Rotorway has thought the building process all the way through and delivers the goods in shrink-wrapped parcels along with step-by-step manuals packed with 750 photos. You also get maintenance, powerplant and flight manuals as well. And if you don't know how to do it vertically, Rotorway conducts a flight school for its buyers.

It may prove to be the most popular of the series. The design goal was to retain the Kitfox's STOL characteristics while upping cruise speed. Thanks to a new laminar-flow airfoil and flaperon, Denney has been able to do even better. Traveling speed is now a respectable 110 mph (an impressive 25% increase), while stall has actually been lowered a couple of notches to a butterfly-like 22 mph.

The spread between these figures becomes even more remarkable when the recently announced Speedster option is added. Shortening the wings and adding wheel pants and other fairings brings cruise speed to 125 mph—without increasing stall speed.

Classic in design and construction—a tandem-seat, high-wing taildragger made of steel tubing wrapped in fabric—the Kitfox assembles in just 500 to 600 hours.

powered by a 180-hp Lycoming O-360, turns within the upside-down U formed by the empennage. The nose gear retracts, but the mains are fixed.

The design delivers speed, stability and visibility. Shaw reports cruise speeds in excess of 180 mph, while stall is listed at 70 mph. And since the canard stalls first, lowering the aircraft's nose when it does, the main wings never quit flying. Visibility throughout is spectacular, thanks to the 190° wraparound windscreen and the utterly clear forward view, because the prop's in back.

Progress Aero estimates build time at between 900 and 1000 hours. Price is \$17,800.

For more information, contact Progress Aero R&D, Inc., 813 Airport Rd.; Monterey, CA 93940; (408) 625-0665.



## KITPLANES GROW UP

PROGRESS AERO PHOTO



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For further information, contact Rotorway International, 300 S. 25th Ave., Phoenix, AZ 85009; (602) 278-8899; Fax (602) 278-7657.

### Kitfox IV

Even though it has shipped over 1800 kits in the past few years, Denney Aerocraft has a new offering, the Kitfox IV. It delivers such improved performance over its predecessors that

it may prove to be the most popular of the series. The design goal was to retain the Kitfox's STOL characteristics while upping cruise speed. Thanks to a new laminar-flow airfoil and flaperon, Denney has been able to do even better. Traveling speed is now a respectable 110 mph (an impressive 25% increase), while stall has actually been lowered a couple of notches to a butterfly-like 22 mph.

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Price is surely a part of the Kitfox appeal as well—a full kit goes for \$9950 (\$11,945 for the Speedster). Add \$7190 to that for a 2-cylinder Rotax 582LC, or \$12,545 for the 4-cylinder, 80-hp Rotax 912. After that, it's a couple of gauges, compass and radio and you're flying in a new machine for as little as \$20,000.

For more information, contact

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### KIS

Richard Trickel thought companies were addressing the high and low performance ends of the kit-built market just fine but had left a wide gap in the middle. So, five years ago he set out to correct that oversight. He flew his answer to Oshkosh in July of last year. It's a side-by-side low-wing airplane of conventional design, simple construction and reasonable performance. He calls his tricycle-gear creation KIS, an acronym for Keep It Simple. (He left off the second S, traditionally reserved for "Stupid," because: "We didn't want to offend anybody.")

Since Trickel runs a company that produces composites for outfits like Lancair and Experimental Aviation (Berkut), it comes as no surprise that KIS is a composite airplane as well. But Trickel says ease of construction was as important

SNA PHOTO





an element in its design as performance.

"We've tried to make it as easy to reproduce as possible," Trickle says. "We use a lot of premolded ribs and spars. There are some minor tape lay-ups to be done, but we've tried to keep that to a minimum. And we've kept the systems simple to build."

The prototype, which first flew in April of last year, is fitted with an 80-hp Limbach L2000. It delivers a 135-mph cruise speed (150 mph tops) and stops flying at 55 mph. Useful load is 520 pounds. The aircraft can also accept other engines, such as the 100-hp Continental O-200 or 108-hp Lycoming O-235, raising cruise speed to 150 mph and 165 mph, respectively.

A simple KIS sells for \$15,500—less prop, engine and upholstery. All inclusive, a VFR machine will go for \$24,000 to \$35,000 and take about 800 hours to build.

For more information, contact Tri-R Technologies, 1114 E. 5th St., Oxnard, CA 93030; (805) 385-3680; Fax (805) 483-8366.

## S-11 Pursuit

One of the most unusual kitplanes to come along in years appeared only in photos at Oshkosh. An accident following an engine failure required design modification and a rebuild of the prototype, and it wasn't ready in time for the show. But a new version has been flying since January, and if it makes it to the show this year, it's going to get noticed.

Reminiscent of the experimental lifting bodies NASA flew some decades back, the S-11 comprises a blended wing design to get more of the airplane flying than just the airfoils. By spreading the lifting "wetted area" across an extensive amount of the fuselage and thus reducing the stress on any one area, the aircraft could be made lighter, have a more voluminous structure and provide a wider envelope of performance than most others in its class.

Fitted with an 80-hp Rotax 912, the S-11 has an empty weight of just 575 pounds and a useful load of 500 pounds. It can take off in 300 ft., climb out at 1000 ft. per minute, cruise at 140 mph and stall at 65. As we go to press, the new prototype is still undergoing tweaks that the manufacturer believes should wring considerably better performance out of the blended wing design.

Despite its light weight, the

airplane is hardly weak. In fact, the S-11 will be fully aerobatic, stressed for 9 positive and negative g's.

The S-11 airframe can accommodate both single or side-by-side twin seats, but RANS expects to offer the single-seater first. All models are comprised of a welded chromemoly superstructure, with some aluminum ribs and spars, and covered with a fiberglass shell. Parts are prepainted and prepunched and the plane assembles quickly—RANS estimates a builder should be flying in 400 hours. Cost for the kit, which should enter production in about six months, is expected to come in at a little more than \$20,000.

For more information, contact RANS, 4600 Hwy. 183 Alternate, Hays, KS 67601; (913) 625-6346; Fax (913) 625-2795.

## Berkut

A kind of LongEze on growth hormones, the prototype Berkut arrived at Oshkosh just days after its maiden flight at Camarillo Airport in California. Designed to provide more performance and room than the first generation of canard/pushers, Berkut does that precisely.

Powered by a 205-hp Lycoming IO-360, the 1-ton Berkut (nearly half of that is useful load) will carry two adults and 11 cu. ft. of baggage cross-country at 240 mph, and it will carry them far—some 1400 miles on the 53 gallons of fuel stored aboard. Design-

er Dave Ronneberg stresses that these performance figures are conservative.

The cockpits in this 17.6-ft.-long machine are wide and tall, and each is fitted with a separate canopy, F-4 Phantom style. The tricycle gear is fully retractable.

Comprised of a core of balsa or divinycell foam, sandwiched between three layers of fiberglass, plus carbon-fiber spar caps and wing skins, the Berkut is built tough. In a step typical of the care Experimental Aviation appears to have lavished on the plane's development, the first seven kits are being built by their owners at the factory, so that hidden glitches can be ironed out before full-scale production begins.

The kit is expected to enter production within three to six months after this year's Oshkosh Fly-In, which begins July 31. Expect to pay \$22,000 to \$25,000 for the kit alone, and to spend a total of \$42,000 or so by the time your project's complete.

For more information, contact Experimental Aviation, 3021 Airport Ave., Hangar 109, Santa Monica, CA 90405; (213) 397-0803; Fax (213) 391-8492.

## Lancair IV

No matter whether its medium is earth, sea or sky, if it's a going machine, going faster gets the gold. And in kitplanes, the glory these days goes to the Lancair IV, the breathtaking answer to the question: "How ya gonna beat the (2-place) Lancair?"



RANS S-11 PURSUIT

RANS PHOTO



ROTORWAY EXEC 90

ROTORWAY INTERNATIONAL PHOTO



# KITPLANES GROW UP



BERKUT



BERKUT

The IV has a combination of lines, capacity and capability that's unmatched by any other kit or production airplane.

Four numbers tell the story: 350 hp, four seats, 342-mph cruise, 1450-mile range. Some toy, huh?

But there are other numbers behind the IV's story. Like a 2000-to-2500-hour build time, a \$44,900 kit price and an all-up-and-running IFR-ready tag in excess of \$125,000. But then speed has never come cheap, even when you torque the lugs yourself.

Even though there's still only one Lancair IV flying, the manufacturer has already come up with some significant improvements.

Most noteworthy is the announce-

ment that a pressurized IV is now being offered—a first in the kitplane arena. Its 5-psi system will provide a 10,000-ft. cabin at 25,000 ft. Pressurization will require reinforcing the door and adding more carbon layups

to the cabin, and all that will add about 60 to 70 pounds to the empty weight while lightening your wallet of another \$14,500. But in return, you'll get an additional 35-to-45-mph cruise, and more than a passing familiarity with speed restrictions.

Said one Lancair executive, "We're turning the world on fire with that airplane." He was excited, but not surprised.

For those interested in additional information, be advised that Lancair International, Inc., has relocated to a new 27,000-sq.-ft. state-of-the-art manufacturing, R&D and customer service facility. The new address: 2244 Airport Way, Redmond, OR 97756; (503) 923-2244; Fax (503) 923-2255.

PM



KIS



LANCAIR



KITFOX