

## An Adventurous AirVenture 2013

by [AIN Staff](#)

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This year's EAA AirVenture started out cloudy, cool and gloomy, but the weather soon matched the crowd's upbeat outlook and the entire week was marked by comfortable low humidity and moderate temperatures.

"First, it was a safe AirVenture," said EAA chairman Jack Pelton, "which is always our top priority, and we were blessed with a week of nearly perfect weather. We also met a number of other objectives this year, including reconnecting with our volunteers and members on the grounds, upgrading the food concessions and options and providing more value and activities throughout the day for attendees. We also received reports that many exhibitors had record sales, showing renewed optimism and enthusiasm in the aviation community."

Last year, AirVenture attendance was 508,000, down from 541,000 in 2011. This year's number was "comparable to 2012," according to EAA, "with more than 500,000 in total estimated attendance." A record 821 commercial exhibitors came to Oshkosh this year, up from 802 last year. Total aircraft numbered more than 10,000 (to Oshkosh and local airports), and 2,341 showplanes arrived, which included 867 homebuilts, 858 vintage airplanes, 343 warbirds, 130 ultralights, 92 seaplanes, 27 aerobatic aircraft and 24 miscellaneous showplanes.

If anything marred EAA AirVenture Oshkosh this year, it was the [FAA's stance on covering costs for air traffic controllers](#). While U.S. taxpayers already foot the FAA's bills through general and aviation fuel taxes, the FAA assessed the EAA \$447,924 for controller travel costs associated with manning the Oshkosh tower. Of course, the agency blamed the levy on the U.S. government's sequestration funding issue. The funding issue was evident not only in the lack of government and military hardware and personnel at the show but also in the almost complete absence of FAA personnel, except for the controllers.

While the FAA Administrator usually shows up for a public appearance at AirVenture, this year administrator Michael Huerta reportedly had a family conflict and was unable to attend. Oddly, this conflict came to light only at the last minute; **AIN** lodged an early request for information about whether the administrator or any FAA officials would be at AirVenture, but the agency declined even to acknowledge the query. As it turned out, FAA deputy administrator Michael Whitaker popped in on August 1, not to meet the flying public but for a private tour of the show. To the average show-goer, it appeared the FAA was afraid to interact with the public, many of whom were extremely upset about the half-million-dollar pill the EAA was forced to swallow to be able to put on the show.

The heads of the various general aviation trade associations participated in a roundtable forum on July 30 to discuss the industry's deteriorating relationship with the FAA. Attendees were asked to sign petitions opposing user fees and the FAA's charging of controller fees and were given "This Isn't Over" buttons, referring to the EAA's continuing legal challenge of those fees.

"User fees are really taxes," said NBAA president Ed Bolen, adding, "The ability to tax is the ability to destroy." Bolen sees a clear and present danger in that ability shifting from elected officials, who are accountable to the public, to non-elected bureaucrats. "These are dangerous precedents," he warned, in clear reference to the FAA's new fees on AirVenture and other airshows.

Speakers took on FAA inertia on a wide variety of topics, from reform of the requirements for pilot third-class medical certificates to aircraft certification. Outgoing AOPA president Craig Fuller related that FAA officials told him that reform of the medical, considered by some essential to keeping an aging pilot population flying, "is not a priority for us at the FAA." Fuller called this "very troubling. We can't keep going forward this way."

“A number of agencies, including the FAA, have really lost the ability to control themselves,” observed Helicopter Association International president Matt Zuccaro. “They are doing things they know they don’t have the authority to do and are taking the attitude, ‘You are going to have to sue me to stop me but we are doing it.’”

General Aviation Manufacturers Association president Pete Bunce was particularly animated in his criticism of the FAA when it comes to new aircraft certification issues and agency inertia. “It costs \$50 million to \$100 million to develop a new piston aircraft and so much of that is because of the FAA,” Bunce noted. This has a wide variety of adverse consequences, Bunce said, including a burgeoning number of airworthiness directives for older aircraft because “the average age of the [general aviation] fleet is 40 years old. [The agency makes] it so hard to introduce new aircraft. This is all the FAA’s doing. If we don’t get Congress to beat the FAA on the head and say ‘stop this madness,’ then we are going to stay in this downward cycle. My members are absolutely fed up with it.”

## **Aircraft**

Two years after demonstrating the JSX-1, a jet-powered single-seater, Sonex Aircraft opened the order book on July 28 for the smallest, lightest and lowest-cost jet-powered airplane: the \$125,000 SubSonex JSX-2. The tiny jet produces 247 pounds of thrust and will be sold as a nearly completed kit, and the price includes everything except paint and avionics. Czech engine manufacturer PBS Velká Bíteš is providing its TJ100 engine for the SubSonex. PBS, incidentally, is a company to watch as it had engines powering three aircraft that flew at this year’s AirVenture: the SubSonex prototype, Bob Carlton’s Super Salto aerobatic jet glider and Justin Lewis’s shiny BD-5J. Next year PBS plans to show off a Vans RV-10 powered by a new PBS turboprop engine.

Deliveries of the SubSonex kit are expected to begin in the middle of next year. The jet comes in an “ultra quick build” kit, which means that Sonex builds the wings, fuselage, empennage and control surfaces and installs the canopy and windshield. The builder just has to install the engine, fuel system, landing gear, avionics, flight controls, upholstery, BRS parachute and paint. The aircraft does not meet the 51-percent rule, which means the owner-builder does not get a repairman certificate, cannot perform the annual condition inspection and has to register the aircraft in the Experimental Exhibition category.

Range for the JSX-2 will be 300 miles with reserve. At lower altitudes, cruise speed is about 180 mph while burning 18 gph. Fuel consumption drops and speed increases at higher altitudes. Stall speed is 59 mph. Maximum weight is 850 pounds and empty weight 416 pounds, for a 434-pound useful load. The SubSonex will be capable of aerobatics, and aerobatic maximum weight is 750 pounds.

While not a new airplane, Redbird’s refurbished diesel-powered RedHawk experiment offers an interesting commentary on the state of general aviation manufacturing. The RedHawk Training Aircraft is a Cessna Skyhawk powered by the Centurion diesel engine formerly manufactured by Thielert, a company that was purchased recently by Continental Motors. The airframe looks new, with fresh paint and interior including all-plastic sidewalls, headliner and seats and Aspen Avionics Evolution 2000 glass displays, Bendix/King KAP 140 autopilot and other new avionics, which will include Bendix/King’s new KSN 770 GPS/navcom. Partners in the RedHawk program include Aspen Avionics, Bendix/King, Brown Aviation Lease, Continental Motors and Starr (insurance).

The idea for the experiment is to put the RedHawk into the flight training environment and see how it performs and holds up to typical student abuse. And to see whether the cost projections are accurate and make sense for a flight school. Project partner Brown Aviation Lease is working on a power-by-the-hour leasing program that includes all costs, so a flight school can start flying quickly and without having to line up a leaseback owner or putting a lot of money at risk on a new airplane for the training fleet.

One of the most eagerly anticipated demonstrations at this year’s AirVenture show was the first publicly planned flight of the Terrafugia Transition flying car.

Terrafugia has received deposits for more than 100 Transitions, with the earliest deliveries projected in late 2015 through March 2016. The \$279,000 Transition is a light sport aircraft (LSA) and thus will be certified under the ASTM consensus standards that apply to LSAs. But as a flying car, the Transition also has to meet federal motor vehicle safety standards, although Terrafugia has received exemptions from certain requirements. Terrafugia has also received an FAA exemption allowing an increase in maximum takeoff weight to 1,430 pounds, 110 pounds more than the normal LSA limit of 1,320 pounds, which helps accommodate airbags and other automotive crash-safety features. An airframe parachute is planned as an option.

The two-seat Transition will cruise at 87 knots, have a range of more than 350 nm, a useful load of 500 pounds and require 1,700 feet to take off over a 50-foot obstacle. The Transition's 100-hp Rotax 912iS engine will burn five gallons per hour in the air and deliver 35 mpg on the ground. No trailer is needed for any part of the Transition on the ground because the wings fold. The rear wheels drive the Transition in road mode, and the driver/pilot will use a steering wheel on the ground and stick and rudders in the air.

Terrafugia has logged more than 50 hours of Transition flight-testing and still has to accomplish spin testing, which is required under the ASTM standards. Transition D-1 (developmental one) was the proof-of-concept version and first flew in 2009. D-2 is the version that has done most of the flight-testing and that flew at Oshkosh, and D-3 is a static-test article. D-4 is under construction.

Icon Aircraft, manufacturer of the in-development amphibious A5 LSA, announced that the FAA has granted an exemption for a max-weight increase for the A5 to accommodate added safety features, including a spin-resistant airframe (SRA). Under Exemption Number 10829, the A5's allowable takeoff weight will increase to 1,680 pounds, though the initial production A5 will weigh 1,510 pounds, according to the company.

The A5 was intended to meet the 1,430-pound weight limit for amphibious LSAs, but the redesign for spin resistance added weight. The company continued developing the SRA, "optimistic" that the FAA would grant a weight increase, company founder and CEO Kirk Hawkins told AIN. Icon applied for the exemption in May last year, and after requesting additional documentation, the FAA concluded that granting the waiver "is in the public interest."

Completion of the first four prototypes for use in certification testing is expected in the spring, with deliveries beginning in the middle to third quarter of next year. The price of the two-place aircraft has risen to \$189,000 from the initially estimated \$139,000. The company has orders for more than 900 aircraft (each backed by deposits), one third of them from prospective purchasers with no aviation experience.

German LSA manufacturer Flight Design selected Garmin avionics for its new normal-category aircraft, the C4, a four-place composite single. The new Garmin suite will feature angle of attack, dual air data heading reference system, synthetic vision and integrated autopilot with one-touch leveling. The C4 features the Continental IO-360AF alternate fuels engine and an integrated full-aircraft parachute system. The C4 will have a 1,200-nm range and a useful load of 1,320 pounds.

Aviat Aircraft and Aviation Foundation of America introduced a dual-fuel piston-powered airplane that operates on either compressed natural gas (CNG) or avgas. The fuel system in the proof-of-concept airplane—N15NG—is installed on a standard Aviat Husky A1-C fitted with a CNG belly tank.

The pilot manually selects the fuel source at the flick of a switch, and the CNG fuel control system automatically compensates for density altitude, engine timing variations and other factors. With the exception of the fuel controls and belly tank, N15NG is a stock Husky, and the only modification to the Lycoming IO-360-A1D6 engine was the installation of new pistons to increase the compression ratio from 8.50:1 to 10:1 to use more of the fuel's 138 octane. The modified Husky can operate entirely on CNG, but the current lack of refueling stations makes total reliance on CNG impractical.

The tank on N15NG holds the equivalent of nine gallons of CNG, and the installation weighs about 135 pounds, including its older-generation 70-pound tank; a current-generation tank would weigh about 30 pounds less.

In a production environment, Aviat estimates the dual-fuel CNG option may add between \$12,000 and \$15,000 to the base price of a gasoline-powered aircraft.

Epic Aircraft unveiled a revised instrument panel for its E1000 single-engine turboprop at AirVenture. The automotive-style panel was designed in-house and features the Garmin G1000 avionics system. The \$2.75 million E1000 is intended to be the certified version of Epic's LT kit aircraft. Epic filed for certification 18 months ago, and CEO Doug King expects to complete the process in 2015 and have the first conforming aircraft flying at the end of this year. More than 35 E1000s have already been sold with fully refundable deposits of one percent of the sales price. King anticipates production of 24 to 30 aircraft annually once the aircraft is certified.

Kestrel Aircraft has selected Garmin's G3000 touchscreen-control suite as the primary avionics offering for its in-development single-engine turboprop. CEO Alan Klapmeier said Kestrel still needs to raise \$125 million to see the aircraft through certification. He said Kestrel hopes to start assembling a prototype aircraft next year, but cautioned that that schedule hinges on the company's securing more funding. "The project is clearly behind schedule because we have not raised the money we needed to or expected to," he said. If the company raises additional funding in the near term, the earliest any aircraft could be delivered to customers would be 2016, Klapmeier said, acknowledging, "That's later than we anticipated."

At its AirVenture press briefing Daher-Socata, manufacturer of the TBM 850 turboprop single, hinted that some new business jet programs will be announced at the NBAA Convention in October. Daher-Socata is a contractor on the two programs (one of which may be Dassault Falcon's new SMS). Orders for the TBM 850 stood at 338 as of July 15, with 316 delivered, and the number of TBM 850s delivered will equal total TBM 700 deliveries in September (324). As it has done for the past seven years, Daher-Socata invited two Young Eagles to France as engineering interns at the Tarbes factory. This year William McAleer of Auburn, Ala., and Kalena Glover of Prescott, Ariz., made the journey.

Cessna's single-engine line is likely to experience price hikes as the company seeks to improve profit margins on all of its aircraft, even as sales of some models slump. "We will be pursuing price increases on a few of the different products primarily because we want to be able to offer the different products in our line-up," said Cessna vice president Jodi Noah. "Over the years we haven't necessarily been profitable on some of them, so we are working very hard to get every product to have profitable space so we know we have the ability to go forward. So there will be some strategic price increases on some of the products coming in 2015." She added that Cessna has "pretty much exercised everything we could at this point" to cut production costs.

Officially, Cessna currently has five new/revised jet programs under way. The company is also continuing to work on a new single-engine turboprop that would compete directly with the Piper Meridian and Daher-Socata TBM 850; however, company executives declined to offer specifics as to the precise state of that project or the extent of the resources being applied to it. At last year's AirVenture, Cessna displayed a concept cabin mockup of the aircraft and solicited potential customer feedback.

Noah said the increased-horsepower Caravan EX, now with 867 shp, has sold well in Africa, Russia and other foreign markets and the company is hopeful that its revised Corvalis TTx piston single, certified in June, will sell well. Cessna continues to pursue "an extensive certification process" for its jet-A-fueled Skylane JT-A piston single announced at last year's AirVenture. Noah said the company expects to receive certification for the JT-A in the third quarter.

Cirrus Aircraft is not ruling out making some parts for its new \$1.96 million (2010 \$) SF50 single-engine jet in China as a way to combat cost. Company co-founder and chairman Dale Klapmeier said that Cirrus and its new owner, China Aviation Industry General Aircraft (Caiga), "are going to figure out how to build the best airplane at the lowest cost—parts made here, parts made there, things shipped back and forth. All of that is something we are going to explore to make sure we are building the lowest-cost, highest-quality airplanes that we can and driving the possibility that someday we will make airplanes over there [in China]. We want to see that market grow to such tremendous potential that we can't supply it all from here.

That is the day we are looking forward to.” The company has received deposits for more than 500 jets.

Beginning next year, Cirrus plans to build and fly three conforming production test aircraft that will carry the company through certification and customer deliveries beginning in 2015. The redesigned jet has a slightly longer nose and higher loft than the prototype currently flying. Range is estimated at 1,000 nm at 300 knots and 1,200 at 210. The five-plus-two occupant layout is retained but options such as weather radar, a “relief station” and upgraded leathers have been added.

Embraer counts the annual EAA AirVenture Oshkosh show as a key element in its business-aviation strategy, especially for the light Phenom 100 and 300 jets, many of which are owner-flown. The Brazilian manufacturer brought examples of each jet to this year’s show, as well as a Super Tucano light-attack turboprop single that participated in the afternoon flight demo with famed aviator Patty Wagstaff at the controls. “We continue to support EAA and its work with the Young Eagles program and view AirVenture as an ideal venue to display our aircraft,” said Robert Knebel, Embraer Executive Jets vice president of sales for North America.

Honda Aircraft brought two of its FAA-conforming HondaJets to AirVenture. The two jets landed on July 28 and made their public debut the next day, flying a demonstration formation flyby before parking in the center of Phillips 66 Plaza. “EAA AirVenture Oshkosh has special significance for me,” said Honda Aircraft president and CEO Michimasa Fujino. “This event is where I introduced the proof-of-concept HondaJet to the world for the very first time [the prototype in 2005]. It was truly the beginning of Honda’s exciting venture into aviation. I am very excited that EAA AirVenture Oshkosh has once again provided the setting for the first public appearance and demonstration flight of not one, but two FAA-conforming HondaJets.”

## Avionics

There is growing interest by the FAA and the aviation industry in angle-of-attack (AOA) indicating systems in GA aircraft. Such devices—commonly found in corporate, military and commercial aircraft—have been discussed for years, but the issue received a boost when the FAA General Aviation Joint Steering Committee issued a [Safety Bulletin](#) encouraging use of AOA indicators in smaller training and owner-flown aircraft.

Shortly after that bulletin came out, Icon Aircraft noted that an easily understood AoA indicator would come standard in its upcoming A5 amphibious LSA, which will also incorporate a number of spin-resistant airframe elements. “Angle of attack is likely the single most important parameter that helps a pilot fly safely at all times, and yet this information is not commonly found in small airplanes,” noted company CEO Hawkins.

Further emphasizing the growing importance of AOA information was the announcement that Embry-Riddle Aeronautical University has installed AOA indicators from **Alpha Systems** in its fleet of 61 Cessnas at its Daytona Beach, Fla. and Prescott, Ariz. campuses.

Bendix/King is entering the AOA market with the new KLR 10 lift reserve indicator. The KLR 10 is available now for experimental airplanes. An industry committee is working on a new standard for AOA systems, and Bendix/King hopes that the FAA accepts this standard and will allow the KLR 10 to be installed as a simple standard part without a complex and expensive supplemental type certification process.

Priced at \$1,600, the KLR 10 requires installation of a milled aluminum probe on a standard-size inspection plate on the underside of the wing. Two polyethylene hoses run from the probe to the KLR 10’s remotely mounted IF module, which delivers information to the glareshield-mounted display. The KLR 10’s audio can be fed into an audio panel or directly wired to a speaker. A button on the display unit can be pushed to mute the audio, for example, during slow-flight practice.

Redbird has already selected the KLR 10 as standard equipment in the RedHawk diesel-powered Cessna Skyhawk, although installation will have to wait until the FAA sanctions the system for certified airplanes.

Bendix/King also introduced a new mode-S ADS-B out transponder, the KT 74, which is plug-and-play compatible with the tray mounting system of Bendix/King's KT 76A, KT 76C and KT 78A transponders. Retailing for \$2,999, the KT 74 uses the 1090ES ADS-B out frequency, and it can help meet the [Jan. 1, 2020, ADS-B out mandate](#) if coupled with a qualified GPS. The KT 74 is all solid-state, with no cavity tube, and will begin shipping in November.

Also new from Bendix/King is the KSN 765, a version of the KSN 770 without navcom. Bendix/King has submitted all the required paperwork for technical standard order (TSO) approval for the KSN770 GPS/navcom and KSN 765 and expects final approval shortly.

Avidyne updated the status of new programs, including its integrated flight display (IFD) "hybrid touch" 540/440 system. CEO Dan Schwinn said the company anticipates certification for the system by year-end. He said an iPad learning tool for the new system is "the exact code base" of the 540. Schwinn also said that the company is making good progress on the design of a new stereo audio panel as well as the ADS-B-compatible AXP-340 mode-S transponder. He expects approval for those by year-end.

PS Engineering's new PAR200 audio panel/com radio system is the result of a partnership between PS Engineering and Trig Avionics. The PAR200 is the "world's first FAA-certified audio panel with com radio," according to PS Engineering, which received FAA technical standard order approval just before AirVenture. Retail price is \$2,995, and delivery is available immediately.

The design of the new PAR200 was prompted not only by customer input but also by the fact that more newly built airplanes and older certified airplanes are equipped with large displays that use up much of the panel real estate. The PAR200's com is provided by a remotely installed radio made by Trig.

## **Engines**

This year's EAA AirVenture coincided with the 50th anniversary of one of the most iconic engines ever to power general aviation aircraft: the Pratt & Whitney Canada PT6 turboprop. To celebrate the event, the United Technologies subsidiary held a slate of events and announcements and launched several new features on its PT6 microsite, including a new mobile app designed to provide its more than 10,000 users with access to services on mobile handheld and tablet devices, as well as a new eStore and a documentary series on PT6 engine pioneers.

Engine Components International (ECI) unveiled its new Titan 340 Stroker at AirVenture. The 180-hp, four-cylinder piston powerplant received FAA STC approval on May 1 and is intended as a direct replacement for existing 150- to 180-hp Lycoming engines. The new engine will cruise at 2,400 rpm with a constant-speed propeller, the company added, and will bolt up to existing cowling, baffles, exhaust and engine mounts in aircraft previously equipped with Lycoming engines.

Engineered Propulsion Systems (EPS) is preparing two recently purchased Cirrus SR22s as flying testbeds for its clean-sheet Vision 350 diesel aero engine. One of the airplanes is located at EPS's New Richmond, Wis. headquarters, while the other is in a hangar at Mojave Airport in California being prepared for flight-testing.

The eight-cylinder Vision 350 is Fadec-controlled, twin-turbocharged and liquid-cooled and is geared for optimum propeller speeds and to keep propeller tip speeds low for quiet and efficient operation. Typical fuel consumption is less than 11 gph at 65-percent power, which the company says is 30 to 40 percent more efficient than equivalent avgas engines. The engine will weigh not much more than an avgas engine, according to the company. EPS is targeting a 2,000-hour TBO for the Vision 350. Certification of the engine should take about 36 months.

Electroair's electronic ignition system is now a factory option for Aviat Aircraft's Husky utility piston single. Electroair added the Husky to its STC approved model list just before AirVenture. Electroair is working with Aviat on certification of the electronic ignition system for six-cylinder Lycomings in the Pitts Special and in Aviat's Eagle biplane kit.

Electroair is also developing an STC for the Continental 470 and 520 engines. The Continental STC will be followed by the Lycoming 540 series, then the larger Continental 550 series and later turbocharged engine applications. The six-cylinder kit will sell for \$5,500.

Electroair's electronic ignition system is already FAA approved for a large number of light airplanes powered by four-cylinder Lycoming engines and most four-cylinder Continental engines. The four-cylinder system costs \$3,400.

On July 30, Caiga signed an agreement at AirVenture for the first network of service centers for the GE H80 turboprop series in China. The agreement covers the H75, H80 and H85 engines and components. Signing the agreement were Yang Zhong, general manager for Caiga's sales, marketing and customer service department; and Jim Stoker, president and managing executive for GE Aviation Czech, which manufactures the company's H80 series.

Safran's SMA announced a new and larger jet-A-fueled piston engine. The turbocharged SR460 six-cylinder engine will have applications in the 330- to 400-hp range, will be available in 2015 and will have a target 2,400-hour TBO interval. The new engine uses the pistons and cylinders of the company's four-cylinder jet-A engine and features an electronic control unit with mechanical backup for engine management.

SMA's four-cylinder engine, the SR305-230E, is slated to power Cessna's JT-A Skylane, due for certification later this year.

### **The New Generation**

This year marks the 20th anniversary of Phillips 66's Young Eagles Rebate program, which aids pilots who volunteer their time, aircraft and money to introduce youngsters to flight. Starting in 1994, Phillips 66 Aviation has provided a \$1-per-gallon fuel rebate to help offset the cost of qualified Young Eagle flights through its nearly 900-strong FBO network, and since its inception the promotion has been used by approximately 5,000 pilots.

"Phillips 66 Aviation is committed to spreading awareness and excitement about the wonders of aviation to the youth of America," said Rosemary Leone, director of the fuel provider's general aviation programs development. Through its support, EAA's Young Eagle program achieved its initial goal of one million flights. "EAA is on its way to taking two million kids flying with the Young Eagles program," Leone noted. "We hope the fuel rebate will encourage more pilots to take more Young Eagles flights and help guide general aviation to a strong future."

The annual Gathering of Eagles Gala and Auction this year raised about \$2.5 million. The top auction item, a one-of-a-kind 2014 Ford Mustang finished in a U.S. Air Force Thunderbirds theme, topped the night's bidding at \$398,000. Long-time Young Eagles chairmen Jeff Skiles and Sully Sullenberger handed over their duties to new chairman Sean Tucker, who promised to help the Young Eagles program introduce even more young people to aviation.