

DESTINATION: MY 2022 AIRVENTURE REPORT p.50

CESSNA FLYER

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COVER: Cessna 337A Super Skymaster. Photo Jim Raeder.

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The View from Here

By JENNIFER DELLENBUSCH

Letters to the Editor

Send your letters to
editor@cessnaflyer.org

THE HIGH AND THE WRITEY: LIVING IN THE PAST

Kevin Garrison
September 2022

Dear Kevin:

I really enjoy your style of writing and reminiscing. At age 84, I can relate to almost all the items and issues mentioned in the article. I didn't make it to the airlines but did have a military career.

As a follow-up article for future issues of *Cessna Flyer*, please consider writing about how flying has never been safer for today's generation of General Aviation pilots with the availability of glass panels, ADS-B (In and Out), EFDs, three-axis autopilots, fuel management systems, accurate weather briefings, quality air traffic control, defined airspace for VFR & IFR missions, AutoLand option for some aircraft, flight directors, and high-quality flight instructors.

I clearly remember steam gauges and very scratchy navcoms with small dial wheels. I feel I'm spoiled flying my Cessna 182P Skylane with dual Garmin GI 275s, Garmin GFC 500 autopilot, Garmin GTN 750, Garmin GNS 430, JPI EDM 830, Garmin GTX 345 transponder, and a three-blade Scimitar propeller.

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Michael Klein, MD, MS, FACS
Lt. Col. (ret), USAF, MC

Kevin's reply:

Dear Doctor/Colonel Klein,

Thank you for your note. I think your idea for an article is great, and I will get right on it. It sounds like you have had a marvelous career and post-career life. I am envious of that 182. I don't suppose you would want to trade it straight-up for a nice Cessna 140?

Thanks again,
Kevin Garrison

continued on Page 12 >>

Wisconsin 2022 Wrap-up

THE GATHERING AT WAUPACA and EAA AirVenture Oshkosh 2022 are in the books. It was another good year for getting together with friends new and old. The Gathering was really well attended, and we had some great seminar speakers again this year. Steve Ells was one of those speakers. You can read about his trip to Wisconsin on Page 50.

If you read the July issue of *Cessna Flyer*, you'll know that Steve was contemplating whether he should fly his personal aircraft from California to Wisconsin and was estimating the costs to do so. In this issue, he gives us the details of his trip and how his estimate of expenses compared to the actual cost.

Also in this issue, Kevin Garrison continues his "coverage" of fabric on aircraft on Page 24, Cessna Flyer Association member Mike Davis introduces us to his new-to-him Skymaster (Page 32), and we talk to Owen Bell about available Skymaster mods (Page 38).

Cessna 210 owners will want to check out Steve Ells' recap of a revised Service Bulletin for spar replacement on Page 46.

Until next month,
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Events

Featured Events

August through November 2022

EAA Aviation Museum Speaker Series

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The history of gunships, the first woman to fly an F-16, a Strategic Air Command pilot for the Convair B-58, and others are among the list of additional speakers for the 2022 Aviation Adventure speaker series at the EAA Aviation Museum in Oshkosh.

The monthly speaker series is open to the public, with presentations beginning at 7 p.m. Admission is free for EAA members and just \$5 for nonmembers.

The schedule for these additional speakers includes:

Thursday, Oct. 20 – B-58 Hustler – The Legend of Strategic Air Command: Charlie Hooker will speak about what it is like to take the Convair B-58 Hustler aloft firsthand as an SAC pilot.

Thursday, Nov. 17 – Adventures in Hot Air Ballooning: Mike Beck will speak about how he started his aviation journey with hot air balloons and is excited to share his passion for aviation with those who fly with him.

The EAA Aviation Museum is located just off Interstate

41 at the Highway 44 exit in Oshkosh. The museum is open daily from 10 a.m. to 5 p.m. EAA members receive free museum admission year-round. For more information, call the EAA Aviation Museum at (920) 426-4818 or visit EAA.org/museum.



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Letters

» Continued from Page 8

Dear Editor,

Kevin Garrison is always writing with tongue in cheek, and I do enjoy his humor.

However, I'd like to correct a misconception on his versions of early ADF and VOR radios. ADF was an advance from radio range nav radios that required one to tune a station, fly a "bisector" heading, published for reference purposes, and listen for a building signal or a fade,

Then, hearing an A or an N, the pilot would fly this "bisector" heading until getting a steady tone, which rather quickly changed to the N, or A, requiring a turn to the properly identified course. Next,, the pilot would fly either toward or away from the station. The direction (to or from) was yet to be determined, and could be figured by again waiting for the fade, or building signal.

Only when nav radios were improved to include a "loop" antenna was the pilot able to avoid some of these maneuvers. He could use his "coffee grinder" to rotate the external loop antenna, and from his internal coffee grinder, he could follow his needle (in his panel) to determine whether he was going to or from the station. Basically, the loop antenna was used to sense the strongest signal at that relative bearing.

VOR navigation came years later and this more "modern" form of radio navigation greatly simplified the TO or FROM, and was much easier for pilots to navigate without all the

twisting and turning of radio coffee cranks, as well as twisting of airplanes.

Now, I find the pilot must return to some of the same dial-twisting and button-pushing that VOR navigation sought to avoid!

It appears we have come full circle, and at a time when the skies are becoming more and more crowded, the pilot must also monitor air traffic displayed on his very busy instrument screens.

Progress? Perhaps, if we want to some day eliminate traffic controllers to separate airplanes, and transfer that rather vital function to the pilot.

John Hilton

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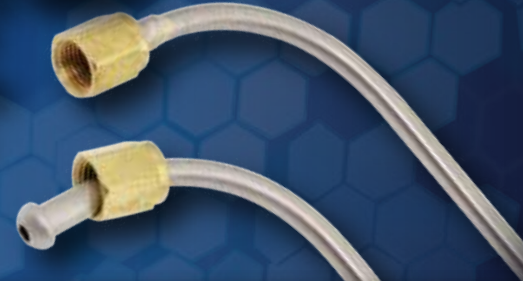
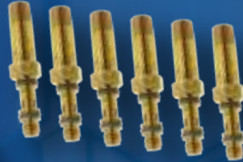
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The High and the Writey

By KEVIN GARRISON

Fever Flight Dreams

Kevin's recent bout with COVID-19 leads to ruminating on the mysteries of aviation.

OK, I'll come right out and say it. I had a great time at our Gathering at Waupaca and EAA AirVenture Oshkosh, but I came home with COVID-19. Now, I'm not blaming anybody (not even you, Chad). I am now doing just fine in the infectious disease department, thank you.

My brush with disease, albeit brief, led to a two-week period that saw me sitting and not soaring—pondering, not piloting. I was napping and fluid-packing, not flying and airport snacking. The mild fever sitting on my shoulder as I traversed the length and breadth of my illness occasionally led to what can only be called weird thoughts.

Before I share some of these fever-induced aviation ideas, do I need to remind you that getting sick is no fun? You do not need to get sick to be exposed to weird and strange ideas about flying. That is what you have me for. "Stay healthy out there" is all I am saying.

Some of these ideas were earth-shattering concepts when my cooked brain cooked them up. Others cover what we pilots and owners call the day-to-day world of flying. I hope all the ones I list here will get you to think a little off-kilter and deeper into your aviation life.

The mild fever sitting on my shoulder as I traversed the length and breadth of my illness occasionally led to what can only be called weird thoughts.

VFR flight plans

Back in the days before the internet, GPS positioning, and space-borne rescue satellites, there had to be a way to look for you if you didn't show up at your destination. Our aviation forefathers and foremothers came up with the idea of the flight plan.

You told the FAA where you were going, how long you thought it would take, and the route you would use. That way, if you didn't show up, they would not only notice that you never checked in and begin looking for you, but they would also know where to start.

If the FAA did start looking, usually you were OK and had simply forgotten to close your flight plan, but if the worst happened and you landed off-airport, you knew they would be on your trail soon.

VFR flight plans still exist today, and there is no harm (and possibly a lot of help) in filing one before you head out to visit your Aunt Maude in Moose Hips, Alabama. But are they really that important in today's world?

Just about anybody can easily access internet flight tracking programs, showing your route in almost real time. When I visit somebody via airplane, I tell them when I plan on being in and what my N-number is. They get the enjoyment of tracking me and later making fun of me for that quick but necessary diversion to an unplanned bathroom break on my way there.

I also use radar flight following when ATC has time to help me, and I carry a portable battery-powered GPS emergency beacon in my pocket when I fly in case my body and the ELT in my plane end up in two different locations.

The thing about flight plans is that they are used as a bludgeon by the media to make pilots look dumb after a mishap. "The Barnburner Eight, piloted by Kevin Garrison, impacted the snowbank 6 feet short of his intended tie-down spot, and there was no flight plan on file! Film at 11."

Airplane camping

I think camping with your airplane is tremendous and is second only to camping with your dog. Heck, camping with your dog and your aircraft must be as good as it ever gets! You can't swing a dead cat (my dog told me to write that) at AirVenture or any other aviation trade show without hitting at least 17 people camping with their airplanes. Pilots love roughing it with airfoils.

Why, then, has nobody developed an affordable airplane camper? I am talking about a plane with bunks, air conditioning, a bathroom, and a microwave oven. It could be nothing fancy, but better than sleeping on the wet, hard ground next to your plane or waiting in line to shower or to poo.

Imagine the next huge fly-in camping shindig in which they have electric hook-ups and picnic tables next to every tie-down spot. Instead of the "Good Sam Club," we flying RV owners could have our camping group. We could call it the "Ramp Camp" club.

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Why, then, has nobody developed an affordable airplane camper? I am talking about a plane with bunks, air conditioning, a bathroom, and a microwave oven.

Flying cars? No thanks!

I fly my airplane to avoid all the yahoos, dweezel-bunnies, zim-dweebies, and people with a decal depicting a cartoon kid making wee-wee stuck on their back window. Why would I encourage the idea of flying cars and end up with those people in my sky?

Flying cars have always been a terrible idea, and it scares me to even contemplate them swarming our airways with their constant honking, too-loud boombox speakers, illegal lane changing, littering, and traffic jams. Just imagine how they would deal with bad weather or presidential TFRs.

Sure, we all remember that George Jetson had a flying car, but he was fictional, and if you remember, he had horrible problems with traffic in the future. Imagine thousands of George Jetsons and zit-ridden teenage drivers like Elroy zooming around and cutting you off when you turn final.

Parachutes on airplanes

I am not trying to disparage any airplane here, but having a parachute as standard equipment on your ride is an implicit statement that you expect your plane to have a problem, isn't it? Also, the airframe and parachute are late 19th and early 20th century items. Why can't we develop an un-crashable airplane, perhaps made of Flubber, and get on with our lives?

Speaking of the 19th century

What is up with aircraft engines? Almost all of us operate powerplants from the late 1800s on our aircraft. Piston engines are incredible waste machines. Even the best of them only provides a small fraction of their power to your flight.

Electric engines are starting to be used in aircraft, but they are limited by batteries. Batteries were invented a very long time ago (by Benjamin Franklin, in 1749), and not by a pink bunny with a drum like many people today believe.

That just about rounds out my fever thoughts for this month. Tune in next month for more!

KEVIN GARRISON'S aviation career began at age 15 as a lineboy in Lakeland, Florida. He came up through General Aviation, retired as a 767 captain in 2006, and retired from instructing airline pilots in 2017. Garrison's professional writing career has spanned three decades. Send questions or comments to editor@cessnaflyer.org.

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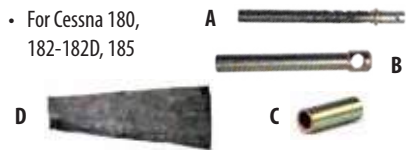
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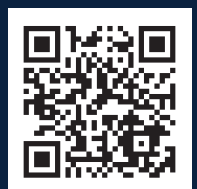
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Questions & Answers

By STEVE ELLS

Jump-starting Airplanes, Proper Rigging, Fuel Additives

Q I have owned a 1962 Cessna 172 Skyhawk for five years. I had it repainted in the original scheme and love the look and how easy she is to fly.

I'm writing to find out if you know of an easy (inexpensive!) way for me to carry along something to "jump" the battery. Either my battery is getting weak, something is sucking it dry, or I'm leaving something on.

My mechanic checked the battery and he said it's good. It's only 18 months old. Anyway, I got to thinking about this and decided I needed something to jump my airplane so I can get it started if I get up some morning and find the battery flat when I'm on a cross-country flight. My airplane does have the socket to plug power into.

Larry

A Let's talk about a couple of things. First off, if you haven't replaced the original clock, that might be what's draining your battery. The clock is electrically powered. To keep it running, Cessna connected it to the battery "+" lead through a 2-amp fuse. It's always on.

You or your mechanic can test to check the clock current draw by locating the fuse holder—it's back by the battery—and connecting an ammeter across the fuse. By that I mean remove the fuse and put one lead of the meter on one contact in the cap of the fuse holder and the other end on the base of the mounted part of the fuse holder. If there's no longer a fuse holder or the fuse has been removed, that circuit has been deactivated.

The correct way to check battery health is by doing what's called a load test. In this test, a battery is fully charged, then the appropriate electrical load for your battery is applied and the time noted. Note how many minutes it takes to pull the battery down to 10 volts (20 volts for 24-volt batteries). The capacity of the battery is derived by dividing the number of minutes by 60. For instance, if it took 51 minutes to pull the battery down to 10 volts, then the capacity is 85%.

As far as carrying something in your airplane to enable you to get a jump when you're away from home with a flat battery, I recommend a "Plug and Jump." This tool makes it possible to jump your airplane with an ordinary set of battery jumper cables. The Plug and Jump slides right into your ground power plug receptacle. Then the jumper cables with one end of the cables connected to a car battery (or another battery of the correct voltage for your airplane) are connected to the Plug and



Jump. I'd wait a few minutes, then turn on the master switch and actuate the starter.

She'll kick right over.

You can also buy a complete plug/cable assembly, but it will weigh more and take up more room. The Plug and Jump lists for \$99. The complete plug/cable assembly lists for \$181. Both are available from Aircraft Spruce (see Resources).

*Happy jumping,
Steve*

(When jump-starting, you need to consider the electrical load demands thereafter. For example, you would not want to take off directly into IMC conditions with a depleted battery. You may need to be using pitot heat, lights, avionics, autopilot, and those kinds of things. Day VFR flight would (probably) be fine. You'll be able to see if the battery is charging on most airplanes by looking at ammeter or

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Questions & Answers

load meter. Caution would dictate not departing on a depleted battery if there's a heavy load or excessive charge rate indicated. —Ed.)

Q My 1959 Cessna 172 Skyhawk is way out of rig. Do you have any suggestions for rigging, or an experienced shop that can do the job?

Bob

A As I'm sure you already know, there are a couple of tests to check whether a Cessna single is out of rig. The first test is a simple straightforward stall. A properly rigged airplane will stall straight ahead if it's not skidding or slipping at the moment of the stall. This indicates that both wings are generating the same lift; in other words, they both have the same angle of attack relative to the longitudinal axis of the airplane.

The second telltale test is: does the airplane make "book" speeds? Cessna Owner's Manuals and the later Pilot's Operating Handbooks (POH) are good references as the speed performance numbers are for a properly rigged airplane.

Hint: Unless you have replaced the original analog tachometer and manifold pressure gauge with a digital setup, your airspeed to power numbers may not match the "book" speeds. This is due to inaccuracy of these old instruments.

The sequence I learned to rig a Cessna is to rig the flaps first. They both need to be snugly "UP." Then the ailerons are rigged. The control wheels need to be level, the aileron

bellcranks need to be in the center of the travel slots, and the inboard end of each aileron should be level with the outboard end of each flap.

All the surface travel and cable tension specifications and limits are in the service manuals.

The elevators need to be checked to make sure that both are securely connected to the actuating bellcrank and there is no damage. Pull the elevators all the way to max up travel, then swing the rudder to max deflection in each direction. The surfaces should not hit each other. The rudder should hit the left and right stop at the rudder before the rudder pedals hit their travel limit.

After checking these things, fly the airplane to check stall behavior and cruise speeds.

If the airplane stalls straight ahead in coordinated flight and makes book speeds and flies hands off, it's in rig.

If one wing still falls off during the stall, there is an angle-of-attack adjustment cam at the rear spar through bolts.

There is a YouTube video by John Efinger, a well-known Cessna specialist from the Texas area, on rigging. It's titled "Everything About Aircraft Rigging with John Efinger." See Resources.

I hope this helps.

Happy flying,
Steve

(Check with your mechanic before starting any work. —Ed.)

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Questions & Answers

Q In visiting with various people at The Gathering at Waupaca, some suggested that it might be a good idea to use Alcor TCP fuel additive in our Cessna 182A Skylane with the Continental O-470L engine. After ordering some from Aircraft Spruce, I started to wonder if it might damage the fuel bladders. I would welcome any thoughts or experience with this additive.

Lyle

A Ronald P. replied in the Cessna Flyer Forum: "I have used it for five years in my 1960 182C Skylane with the O-470L engine, and have not had any issues with bladders."

The most effective preventive measures I know of for preventing lead-fouled spark plugs consist of these steps:

1) Check the internal resistance of each spark plug. If the resistance is greater than 5,000 ohms, replace the spark plug; and

2) Practice aggressive leaning on the ground and learn how to safely lean in flight. Continental printed guidelines say their engines can be leaned to peak EGT whenever the power is below 65%.

I copied the power setting table for my airplane and had it laminated. I have exposed headliner bows, so I stow it there. That way I can always reference it for my power setting.

*Happy flying,
Steve*

IMPORTANT: This article describes work that may need to be performed/supervised by a certificated aviation maintenance technician. Know your FAR/AIM and check with your mechanic before starting any work.

STEVE ELLS has been an A&P/IA for 45-plus years. He is a commercial pilot with instrument and multi-engine ratings and loves utility and bush-style airplanes and operations. Ells was a tech rep and editor for Cessna Pilots Association and associate editor for *AOPA Pilot*. He owns Ells Aviation and lives in Templeton, California. Send questions and comments to editor@cessnaflyer.org.

RESOURCES

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OTHER

CESSNA RIGGING VIDEO WITH JOHN EFINGER
tinyurl.com/cessna-rigging



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“COVERING” FABRIC

PART TWO

A chat with two fabric experts.

By Kevin Garrison



Our last article about aircraft fabric and re-covering projects covered some of the history, basics of the art, and a few recommendations for training. This month we chat with two fabric covering experts, David Bishop, owner of Bishop Air Services in Indiana, and Steve Pierce, owner of Pierce Aero in Graham, Texas.

Re-covering or building an airplane

using fabric is something an amateur can do on their own with basic tools in a basic shop. My airplane and I are proof of that. When should you go to (and trust) professionals like David and Steve to do your fabric project?

Like most things in life, the answer to that question lies somewhere between time and money, with a little bit of your tolerance for doing hundreds of hours of painstaking work blended in.

If you are like me and enjoy flying an airplane more than building one,

you might consider hiring a professional to do the job.

David and Steve are experts in their field. They and their families have been in the business of covering aircraft for a long time.

Let's get to know David and Steve!

Cessna Flyer (CF): What is your background in this business? What got you started?

David: I was basically born into it. It was a family business that took the place



Bishop Air Service

of football, baseball, and everything else after school. I rode my bike to the airport, and we worked on airplanes. It was a daily deal.

I did the line crew work too, and they put me to work doing whatever they needed me to do. Next thing you know, I went from being the line guy and pumping gas to helping turn wrenches in the shop. The more I learned, the more they put me to work.

There was an air charter company there, Rhodes Aviation, and I was able to

get my certificates through them. I built up a lot of time working on different airplanes like [Douglas] DC-3s and all kinds of cargo planes.

My Dad always had something like a [Nord] Stampe, a [deHavilland] Tiger Moth, or a Pitts on the field. We ran an agricultural spraying operation, so during the summer months we'd dust crops and during the winter we'd rebuild planes. And when spray season came around again, we'd go back to the spraying for a few months. We usually

always had an ag plane in the shop being restored and another aircraft to work on for fun.

Steve: Well, I've been doing this work for about 30 years. I did my first covering when I started working at a warbird restoration shop, Ezell Aviation, in Breckenridge, Texas. We did a little bit of fabric work there. Nelson Ezell's oldest son and I bought a [Piper] PA-16 Clipper that we had to travel to Sun Valley, Idaho, to take apart. Neither one of us had a pilot's certificate.



Bishop Air Service

We brought it back, and we dabbled in butyrate dope and painting to restore it. Later, I started my own business in Graham, Texas, which was 30 miles away, and I would fly back and forth when I could.

CF: What fabric covering process do you use most often on projects today?

Steve: We mainly use the AirTech process. We used Poly-Fiber quite a bit in the past, but when two of the reps retired (Jim, and Donny Miller), a lot of the support was gone. Soon after, I met Robby Staten from AirTech and liked his process. I can call him any time of the day or night, and he'll answer the phone. He's a ton of help when you need it.

We've become buddies in the business, and I really liked their product, so we made the change. Both products, in my opinion, are equally good. I just like the customer service that you get with AirTech.

Most people have good intentions, and then 10 years later, their airplane is still sitting unfinished in the garage or basement... I personally think, if you can afford it, just send it to a professional shop. Get it done and get it in the air.

AirTech is user-friendly, and a couple of steps are cut out of the process because of their primer. The process goes from primer right into topcoats, which saves a lot of time. You get all your UV and other protection in one operation instead of doing all the various coats of silver like you do with Poly-Fiber.

David: My preference is Poly-Fiber. Poly-Fiber and AirTech have positive features, and all have negative qualities, too. It would be great if you could take the attributes of all of them and incorporate that into one system, but it's not feasible. We have done enough Poly-Fiber that if something goes south, we know how to fix it or at least realize what we did wrong.

If I mess up some paint, it can cost me money because it will require lots of time to fix. If it takes me two hours to paint, it'll take me four hours to repair and repaint it. With the Poly-Fiber process, we've figured out some tricks that aren't

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in the manual, and we do some things a little bit differently than a do-it-yourself coverer because we've done it for so long.

CF: Manufacturers of new aircraft, like Maule and Aviat, still use the Ceconite process, which some say is getting old and is out of date. Is that just because that's what they've always used, or is there an advantage for a manufacturer to still be using Ceconite?

David: Those manufacturers have an FAA production certificate, and they laid out in their production certificate all the qualities, steps, and procedures of that process. Once they established their certificate, changing to another process would be difficult and expensive. Plus, their workers are very well-versed in their production methods. It would take unnecessary time and money to retrain them.

Because they have a production certificate, American Champion, Aviat,

David, Steve, or others that run fabric repair and re-cover shops might be the right resource for you if you do not want to devote hundreds of hours of work to do it yourself.

Maule, and CubCrafters do not follow the Ceconite STC, which leads repair and rebuild shops like ours swinging in the breeze a little. It's frustrating for us in the field because they don't publish the

process they use. If they published their process in a repair procedure, we could use it as approved data, but since they don't, we are left with a problem.

CF: What advantages are there to using a professional shop instead of doing it yourself?

Steve: Almost every day, I get calls from someone who says, "I've had this airplane re-cover project in my garage for 10 years, and I'm not getting any younger. I kept thinking I was going to do it and fly it. Now, I just want to get it done."

Most people can do this kind of work. It's not impossible, but aircraft owners must be honest with themselves. Sometimes you just say, "Look, will I be able to go from concept to flying with my current workload and my family obligations?" Most people have good intentions, and then 10 years later, their airplane is still sitting unfinished in the garage or basement.



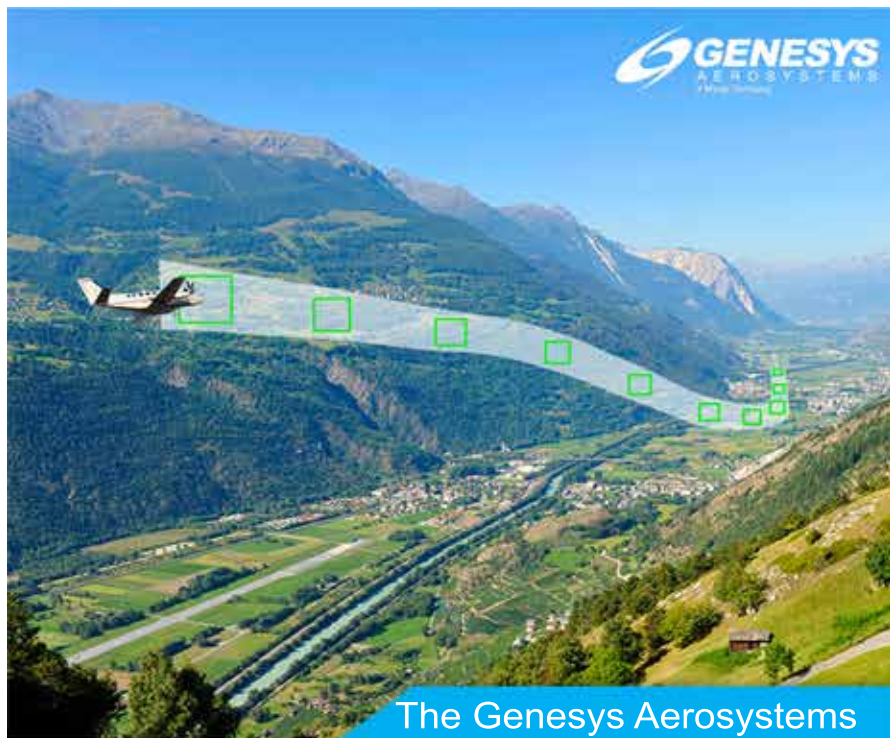
If a man or woman has a profession and a way to make money and is doing OK, many of them are relieved when they finally just say “the heck with it” and send it somewhere to complete it.

I personally think, if you can afford it, just send it to a professional shop. Get it done and get it in the air.

CF: What should potential buyers of fabric aircraft look for during a pre-buy inspection?

Steve: I would ensure that all the paperwork for the fabric is done correctly. I want to ensure the fabric work is properly done according to the STC.

Another critical step is to get up in the inspection holes with a flashlight and just check all the stitching to see if it looks like there have been mice in there. If you see evidence of a mouse anywhere in any part of the aircraft, you can bet mice will have been in more places than just the one you are looking at.



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Rodents are probably the biggest enemies of fabric-covered aircraft. What they don't chew up, they urinate on, causing rot and rust on the interior metal and inside surfaces like wings and stabilizers.

There is something about the wax cord used in rib stitching that mice find very appetizing. We had a plane in the shop a few months ago, and the wings looked great. They looked like you could wash the aircraft and go fly. But after popping some inspection plates off, every single rip stitch cord had been snapped in half by a mouse.

CF: What repairs can a pilot do in the field, and with what material?

Both David and Steve agree that if you find yourself away from your home airport with a small rip or hole in your airplane's fabric, you can do a temporary repair using a little duct tape. David always has a roll of tape stashed in his Piper Super Cub.

When you find damage in the fabric that is too big to be repaired with a small duct-tape patch, you should ask a mechanic to give it a look. This mechanic does not have to be at the airport looking directly at your bird to come up with an opinion. Sometimes a cell phone picture will be enough to assess the damage and devise a plan.

Once you and your airplane are home, a cloth patch repair can be done on smaller fabric holes and tears. Significant damage to fabric might require the entire surface to be re-covered, but that is rare.



David, Steve, or others that run fabric repair and re-cover shops might be the right resource for you if you do not want to devote hundreds of hours of work to do it yourself.

Professionals in this field are hard to find and, once found, are not cheap, but having a quality job done on your aircraft can raise its value while keeping you and your family safe for thousands of flight hours and years of ownership.

KEVIN GARRISON'S aviation career began at age 15 as a lineboy in Lakeland, Florida. He came up through General Aviation, retired as a 767 captain in 2006, and retired from instructing airline pilots in 2017. Garrison's professional writing career has spanned three decades. Send questions or comments to editor@cessnaflyer.org.

RESOURCES

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SEEING DOUBLE: BUYING A CESSNA 337 SUPER SKYMASTER

Cessna's centerline-thrust twin first caught the eye of **MIKE DAVIS** nearly 40 years ago. He recently acquired one of these unique aircraft for himself and is now using it to turn heads on the ramp.



Growing up in rural, small-town Kansas did not lend itself to a young guy wanting to be an airline pilot. I rode my bike to the airport and hung out for hours, watching and reading old magazines in the office. We could go days without any traffic. We had a local one-man Part 135 charter/flight instruction facility, but the pilot had to work two other jobs to support the flying service.

The owner of the service didn't mind if I sat in his Cessna 172 for hours pretending to fly, and at the age of 12 they allowed me to start taking lessons. The instructor, a high school math teacher, would drive to the airport and give me a 30-minute lesson, which was all I could afford. Good times!

After I soloed at age 16, a local physician purchased a brand-new Cessna 337 Super Skymaster, which he used to fly to other small communities to work in their local hospitals. Graciously, he allowed me to tag along, and (unbelievably) he let me fly the Skymaster. For over 40 years now, I have always looked longingly at the aviation sales brochures for the Cessna 337s. Does anyone remember the big, yellow Trade-A-Plane newspaper? I sure do.

After retirement from the airline, I purchased my first airplane, a beautiful Cessna 182 Skylane (see "Selling my First Airplane" in the August 2022 issue of *Cessna Flyer*) which I equipped with the latest avionics. I loved the Skylane, but I couldn't help watching the internet sites for Skymasters. Unfortunately, nearly

every example I looked at was a woefully tired, run-out, worn-out airframe.

Timing is everything, and I was surprised to see a new listing for a good-looking Skymaster, equipped with new engines, new paint, new interior, and great avionics. Thinking it was too good to be true, I contacted the owner to see if it was still available. His affirmative answer set in motion the purchase of my dream machine: the Cessna 337 Super Skymaster.

Not for everyone

The Cessna 337 is a unique airplane, and I must admit I've had my share of "you bought what?!" comments from pilot friends.

Cessna began development of the



centerline thrust twin concept in 1959. The configuration that would become the Skymaster was approved in January 1960, and the first prototype flew in February 1961. The Model 336 was certified May 22, 1962.

During those days, it was normal during twin-engine training for a CFI to pull a mixture control to cut off an engine at rotation speed. In too many cases, a VMC rollover occurred, and the aircraft was lost—and lives, too.

Looking back, yes, this was incredibly dangerous, and the training technique resulted in many accidents and fatalities. Cessna's goal for the Skymaster design was evident in early advertisements: "single-engine simplicity and multi-engine performance."

The FAA approved the design and designated it with its own class rating. A pilot earning their multiengine rating in a Skymaster has their certificate limited to "centerline thrust" only.

Cessna's first centerline thrust offering was the fixed-gear Cessna 336 Skymaster, powered by Continental IO-360 engines producing 195 horsepower. Only 195 of these "lead sleds" were produced, but surprisingly there are still around 80 remaining on the FAA registry. The Cessna 336 is truly a unique airplane.

In 1965, Cessna produced the first retractable centerline thrust airplane, rebranded the Cessna 337 Super Skymaster. Engine thrust was increased to 210 hp, resulting in a respectable

155-165 knot cruise speed for the normally aspirated model. Development continued with the turbocharged version, and later, a pressurized Skymaster was added to the ranks.

Cessna marketed the 337 to the military and the airplanes saw extensive action in Vietnam as the O-2A and O-2B. The Air Force purchased nearly 500 O-2 Skymasters.

In later years, the 337 served as an upgradable platform for Jack Riley, who developed the Riley Rocket—or more accurately the Super Skyrocket—version of the Skymaster. In one configuration, the aircraft featured dual 310 hp engines, resulting in a 300-mph cruise.

In total, Cessna produced 2,993 Cessna 336 and 337 aircraft.



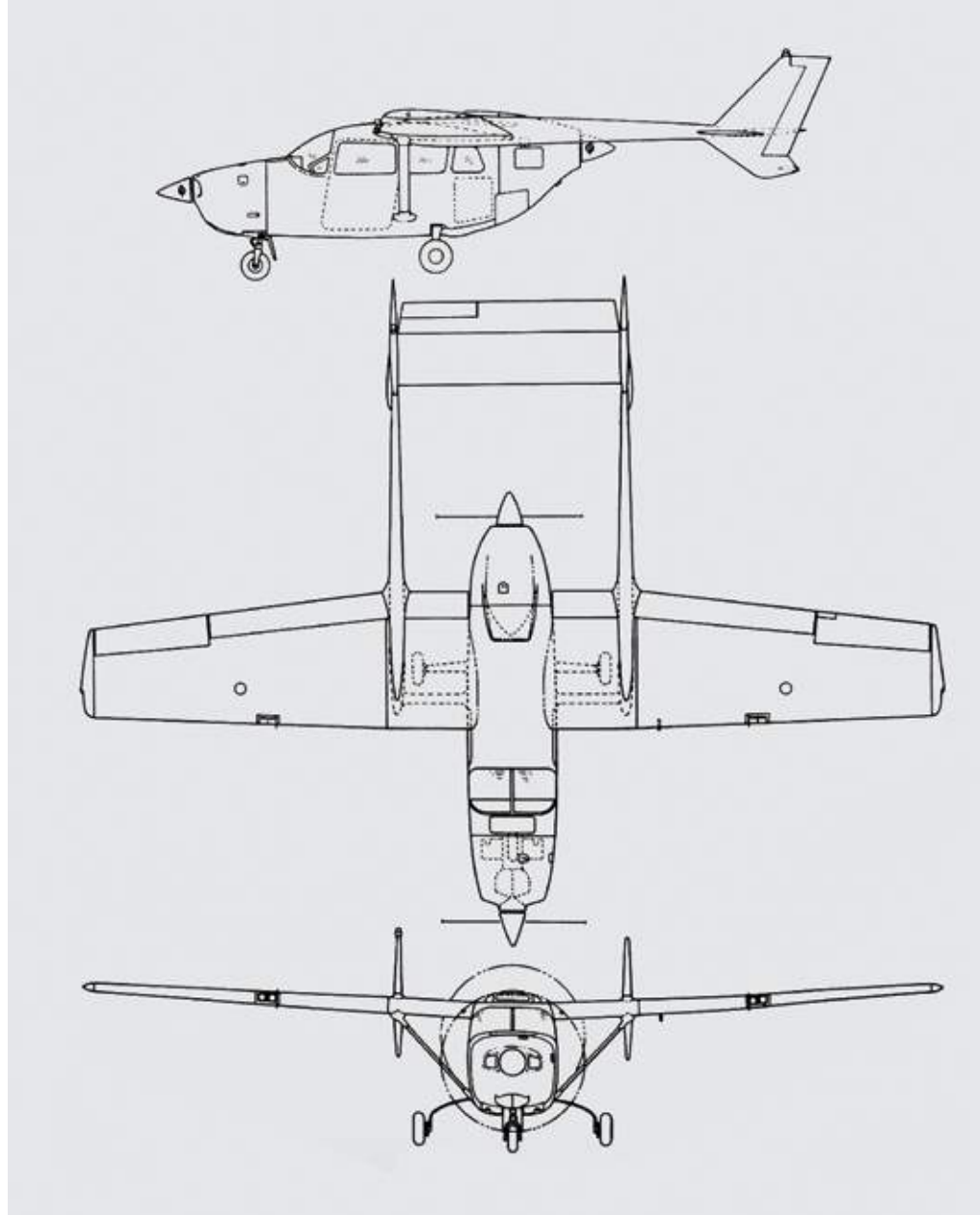
Aircraft specs and performance

Cessna claims the Model 337 is a six-place airplane. I'm not so sure about that. Yes, I have six seats in my Skymaster, but the rear two seats are in my office where my grandkids sit on them while watching videos. I happily removed the fifth and sixth seats out of the airplane and now have a true four-place airplane with ample baggage area. My 1967 Skymaster has newer avionics and has had the vacuum system removed, all of which saved some weight.

Useful load is just north of 1,600 pounds, so with full fuel, I have around 780 pounds for passengers and baggage. Pre-1973 models have a four-tank fuel system. Later aircraft were delivered with a simplified two-tank system.

With 128 gallons aboard and fuel flow around 9 gph per engine, my maximum endurance is around seven hours to empty tanks. For all of my missions, anything over three hours is overkill, as we always plan on a stop.

There have been several mishaps on the aircraft model due to fuel mismanagement issues. One fuel item that caught me by surprise: the Skymaster auxiliary



tanks hold 18 gallons of fuel each. At approximately 9 gph fuel burn, I figured something less than two hours when using the aux fuel.

During a long cross-country, after using the aux tanks for exactly one hour, I found that instead of around 9 gallons used in the aux tanks, it was close to 16 gallons. In other words, the fuel system in the Skymaster bypasses (to the main tanks) about as much fuel as the engine burns, so it's one hour max on the aux tanks for me.

I knew that while using fuel from the aux tank, some of the fuel was returned back to the main tanks, but I didn't realize quite how much transferred over to the mains and how quickly.

Making a deal

After contacting the previous owner, we talked daily for a couple of weeks. I

was able to get copies of the logbooks, and talking to this really good guy selling his airplane left me with a good feeling. My big concern was 1) flying myself and a willing mechanic 700 miles to do a thorough pre-buy, and 2) selling the Skylane. I know many readers own multiple airplanes, but I do not have that capability, nor hangar space.

My maintenance guru offered to help broker the 182, and I sat down with my spreadsheet to determine exactly how much money I had in the Skylane. With prices of 182s skyrocketing, all I asked was that I didn't lose money on the sale. Imagine my surprise when it sold within 45 minutes and at several thousand dollars above my asking price. If you have a Skylane, know that they are valuable.

I made an offer on the Skymaster and we agreed on a price, contingent on the pre-buy. We all coordinated

The author's Cessna 337 Super Skymaster being stripped for new paint.



Useful load is just north of 1,600 pounds, so with full fuel, I have around 780 pounds for passengers and baggage.


schedules, I borrowed a Cessna 310, and we flew down for the pre-buy. Watching my maintenance tech tear into the Skymaster was a little like waiting for a doctor to tell you whether you're healthy or terminal. My guy announced, "The airplane is clean, pay the man," which I happily did.

I was not able to take delivery that

day, as there were some paperwork issues on the title. I highly recommend a title search when buying an airplane. AOPA has a service for that. A week later, my wife and I rode the airline to the airport where the Skymaster lived, pre-flighted, filled it with gas, and brought it home to North Carolina.


Finding the unexpected

I knew there would be issues with a new (to me) airplane, but everything so far has been all pluses. My airplane is unique in that it has the military O-2 door on the right side. It's dark Plexiglas, which makes visibility excellent. Speaking of visibility, the Skymaster's wing sits much further back than the




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Skylane's did, giving my photographer wife unrestricted viewing.

I was pleased to find that my airplane had the optional hydraulic pump on the rear engine for redundant gear retraction and extension, and best of all, the modification that removes the gear doors had been done, drastically reducing drag when retracting the gear.

The avionics package was good, not as good as the airplane I sold, but very nice. Unfortunately, the Garmin GFC500 autopilot is not approved for the 337, but if Garmin is reading, I'd happily volunteer my airplane for testing.

There are several good user groups for the Skymaster; try 337skymaster.com. It's one of my favorites. It's a small community, so sharing ideas is very helpful.

Impressions and myths

Like everyone in the Cessna community, I've heard the stories concerning the 337. Some of the myths I've been able to dispel. The first myth is that the front engine is more efficient than the rear. I find it the opposite: the climb performance, which while not breathtaking, is

better with the rear engine only (versus the front engine only).

I can't speak to the maintenance costs at this point. My airplane has zero-time engines, zero-time props, new paint, new interior, and very adequate avionics, so hopefully I won't have any big-ticket items anytime soon. That's not to say I won't need to spend some money. The fuel gauges are extremely inaccurate, so that'll take some work, and I'm going to install a JPI engine monitor, new visors, new control yokes, and shoulder harnesses. The airplane burns right at 9 gph times two. So far, I've been very impressed with the Skymaster's performance.

In the hangar

No airplane purchase is complete until the bird is secure in the home hangar, complete with a wash and wax job. Owners know this, but there is no way to know your airplane's exterior better than through a thorough wash and wax.

My wife/flying partner and I will continue to report on our flying adventures, but with a little longer range than

the Skylane. Please drop me an email through the editor@cessnaflyer.org email address if you have any Skymaster tips or nuggets of wisdom.

In closing, probably the most fun I've had with the airplane so far has been visiting all the small airports scouting around for cheap gas. Everywhere I go, the airport bums all come out for a look at the Cessna 337 Skymaster.

MIKE DAVIS soloed on his 16th birthday. Since then, his flying has included over 2,000 hours of primary flight instruction, one corporate job, and four airline mergers. He is a CFI/CFII/MEI and is currently instructing in the Beechcraft King Air 350 in North Carolina. Mike is the proud owner of a 1967 Cessna 337 Super Skymaster. Send questions or comments to editor@cessnaflyer.org.

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CESSNA SKYMASTER MODS

Modifications that offer more capability, better comfort, and increased safety for Cessna's iconic inline twin.

**By Scott Kinney
and Owen Bell**

Photos by
Owen Bell

Cessna's inline twin, the Skymaster, comes in several different flavors, including the Model 336 Skymaster, 337 Super Skymaster, P337H Pressurized Skymaster, and military O-2 variants. (see the article on Page 32 for details of the model's history). One thing that's a constant across the models is their owners' desire to get the best possible performance out of their aircraft.

We asked Owen Bell of Skymaster Mods & Parts LLC to pick his favorite modifications for the series, and to explain why Skymaster owners should consider these upgrades. These aren't the only mods that Skymaster Mods & Parts offers for the model; be sure to check their website to see all the options.

For those who have been around the Skymaster community for a while, you might also recognize the company's previous names, Catz Enterprises and Aviation Enterprises. Several of the STCs are still held under these names,

should you want to look them up on the FAA's website.

Here are Bell's picks for the "best of the best" Skymaster mods:

"Firewall-rearward" upgrades

Early Model 336 Skymasters were equipped with two 195 hp Continental IO-360-A engines. The first 337 Super Skymasters had 210 hp IO-360-Cs. The turbo version, the T337B, sported turbocharged versions of the same 210 hp engine.

The Skymaster's rear engine is the focus of the two engine mods that Bell recommends. Remember, the Skymaster's rear engine faces aft, so everything related to the rear engine is technically "firewall-rearward."

310 hp engine

What if you could swap out one of the engines for something more powerful, say, perhaps, 310 hp? That's possible for all Skymaster models with an STC'd



Jim Raeder

upgrade from Skymaster Mods & Parts. The STC permits the installation of a Continental IO-550-N in the aft position.

Bell says “With the extra horsepower, you get faster takeoff and climb, an additional 15-20 mph of cruise speed, and much better single-engine performance (when operating the rear engine only in an engine-out situation). That’s a major safety benefit.”

Rear engine cooling

A mod that Bell recommends for all Skymaster models is the rear engine cooling modification. The rear engines on Skymasters usually run 20-30 degrees warmer than the front engine, as the airflow around the rear engine is less efficient. Excess heat is the enemy of air-cooled engines. Increased airflow with this mod helps keep the rear engine running in the best operating temperature range for engine longevity.

Maintenance access

Like any aircraft, the Skymaster series has nooks and crannies which can make some maintenance tasks

challenging. Bell highlighted a mod that can help Skymaster owners and mechanics gain access to a particularly hard-to-reach corner of the airframe.

Rear firewall engine accessory access door

Bell explains one of the maintenance quirks of early Skymasters:

“From 1963 to 1972, the Skymasters did not have a rear firewall engine accessory access door. This is one reason that mechanics don’t like to work on Skymasters. The lack of access makes it very difficult and time-consuming to service the rear engine’s alternator and magnetos. Perhaps more importantly, it also makes it very difficult to verify that everything is installed properly.

“On the 1973 through 1980 models, Cessna installed an access door, which makes it much easier and less time-consuming to service the alternator and magnetos.”

Skymaster Mods & Parts has an STC for an access door which can be retrofitted to earlier Skymasters, similar to the door in the later models. The door is installed by making a 14-inch by 19-inch



Two additional rear engine cooling scoops provide significantly improved airflow to the rear engine.



Cooling louvers on the lower rear cowl help improve airflow through the rear engine compartment, further enhancing engine cooling.



The factory-installed rear firewall door from a 1977 P337 Pressurized Skymaster.



The STC'd door, as installed on a 1967 337A Super Skymaster.



The rear firewall upholstery, installed over the rear firewall access panel for a clean look.

cutout in the rear firewall. The cut is at the bottom of the firewall, centered side-to-side, and does not cut into any significant structure. Only the firewall itself and firewall stiffeners are cut. Additional stiffeners are then installed at the sides of the opening, as well as a flange around the entire opening containing anchor plates to reattach the cut out with No. 6-32 machine screws, and a door seal to prevent engine liquids or gases from entering the cabin.

The pictures at left show the factory door, the STC'd door mod, and the upholstery over the STC'd door. Note the complexity of the wiring to the alternator and magnetos. Imagine how difficult it would be to get everything hooked up properly without this access panel!

Cabin and cargo

The Skymaster series generally has six seats (although the P337 only has five). The challenge with the Skymaster's cabin layout is that the rearmost seats are not easily accessible, requiring a bit of a climb over/around the center seats. The cabin also lacks luggage space when all seats are filled. And as with any General Aviation aircraft, comfort can always be improved. Here are a few mods to help:



It's easy to see how access to the Skymaster's rear seats is made simpler by removing one of the center-row seats.

Five seats

A simple mod to increase the utility of the Skymaster is to remove the right center seat, according to Bell. The five-seat configuration, combined with a belly cargo pod, makes the Skymaster a more comfortable traveling aircraft. No more trying to position both people and luggage in the limited cabin space. Removal of the right center seat is easy and requires only a new weight and balance sheet.

Air conditioning

The Skymaster's cabin comfort can be further improved by adding air conditioning. Bell provided an overview of the system available for retrofit from Skymaster Mods & Parts under STC. The air conditioning system's main components are installed in the rear of the



Aftermarket air conditioning controls are positioned under the co-pilot's yoke.

Bell highlighted a mod that can help Skymaster owners and mechanics gain access to a particularly hard-to-reach corner of the airframe.



Air outlets on the 1973 to 1980 models.



An air outlet over the pilot seat is standard for installation in later models, and optional for earlier models.



Air outlets over the passenger seats on the 1963 to 1972 models.

aircraft. A control panel is located under the co-pilot's yoke.

Bell detailed the components of the retrofitted AC system: "This is a Freon vapor-cycle system utilizing a thermostatically controlled cycling clutch compressor. The carefully matched components consist of a compressor, condenser, dryer, and evaporator. The compressor is driven by a belt from a pulley mounted on the prop flange of the rear engine.

"It incorporates an electromagnetic clutch, which allows its operation to be controlled by a thermostatic cutoff switch. This control senses evaporator temperature and cycles the compressor



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The elements can quickly get into the seals of an unprotected wheel.



Hubcaps keep wheel bearings and seals clean.



Skis, fishing rods, and other long items up to 86 inches long can be carried inside the Skymaster's cargo pod when an auxiliary door is installed.

The five-seat configuration, combined with a belly cargo pod, makes the Skymaster a more comfortable traveling aircraft.

on and off to control the outlet temperature. The clutch shuts off during full throttle on the rear engine for takeoff and initial climb.

“The evaporator on the 1963 to 1972 models is located above the headliner next to the aft firewall. Air distribution is provided by four or six large vents in the headliner, one for each of the front seats and one each for the passenger seats. These vents can be rotated and aimed in any direction or shut off for flow distribution. The condenser is installed in the rear engine air scoop.

“On the 1973 to 1980 models, the evaporator is located at the top of the baggage compartment and covered with a shroud. On 1973-1980 P337 models, the cooled air is routed via the normal air outlet vents plus additional vents directed forward from the shroud. There is still adequate room under the shroud for passengers up to 6'4" tall.”

The air conditioning system is designed with safety in mind. Bell elaborates:

“This system provides safeguards to protect against abnormal operation or failure. A high pressure cutoff switch disengages the compressor if there is Freon pressure buildup due to a blockage in the system, and there is a low pressure cutoff

switch which does the same if there is a loss of Freon with a corresponding loss of compressor lubrication which may cause it to seize.

“Electrical circuit protection is provided in case of abnormal system operation or circuit breaker failure. Two 5-amp push-pull circuit breakers, or breaker switches, provide independent current for the condenser fan and compressor clutch. Since the circuits are independent, if the compressor circuit should fail, it may still be possible to use the evaporator fan for auxiliary cabin air circulation. On pressurized models, the condensation from the evaporator/blower assembly is drained via a specially designed drain valve which prevents loss of cabin pressure.”

Cargo pod door

Bell recommends that Skymaster owners who have a cargo pod installed consider adding an auxiliary door to the cargo pod. The additional opening allows items over 7 feet long—86 inches to be exact—to fit in the door (think skis, fishing rods, etc.). The standard pod is limited to items 66 inches in length.

Safety

Bell pointed out a few simple mods that can increase the safety of the Skymaster.

Hubcaps

Yes, you heard right, hubcaps. In addition to increasing the curb appeal



In addition to letting the pilot check the position of the landing gear, a convex mirror allows viewing all along the fuselage.

of your airplane, hubcaps protect wheel bearings and seals from the elements.

Low oil pressure warning system

Loss of oil pressure can quickly cause havoc within a piston engine. Originally developed under the Aviation

Enterprises banner, this is a warning system consisting of a sensor (switch) that completes the electrical circuit to ground at a certain oil pressure. A red indicator light and optional flasher are connected in series to the aircraft power system on one side and

through the low oil pressure sensor switch to ground on the other side. A spring-loaded test switch is also wired in parallel with the sensor switch so the circuit and indicator light can be tested during the preflight inspection or during flight.

Wing mirrors

The convex wing mirrors available from Skymaster Mods & Parts mount on the lateral two holes of the forward wing inspection cover. These convex mirrors allow the pilot to see the entire side of the Skymaster fuselage, including the front and rear engine cowling, and the position of the landing gear.

Performance mods

The Skymaster is already a versatile airframe, offering good short-field capability and reasonable cruise speeds. However, with some modifications, the Skymaster can become an extremely capable platform for STOL operations. Bell provided a list of the most important Skymaster mods for STOL performance, in descending order of importance.



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First, he said that modified winglets provide the best bang for the buck and do more for STOL performance than a complete STOL kit from Horton. Second, he recommended tail boom fairings, which help direct thrust from the rear engine straight down the tail, rather than getting twisted around the tail booms. Third, he suggested leading edge cuffs for the wings. Lastly, stall fences can be installed on the top of the wings, one or two per side.

And, of course, the 310 hp engine upgrade already mentioned also provides a huge boost to takeoff performance; who doesn't like an additional 100+ hp over stock?

Winglets

The STC'd winglets from Skymaster Mods & Parts replace the original Skymaster winglets, though they require twice as many screws to hold them on. The reason? Increased lift. The winglets can be used with both Horton and Robertson STOL kits.



A Skymaster modified with the addition of winglets and medium-size tail boom fairings.



Speed brake deployed.

An overall performance boost of up to 5% can be gained with the modified winglets. Approximate improvements include a 100-foot decrease in takeoff roll, 75 fpm increase in rate of climb, 8 mph increase in cruise at 10,000 feet and 10 mph at 18,000 feet, 6 mph decrease in stall speed, and a 6 mph decrease in takeoff and landing speed. Pilots should also expect a significant increase in aileron responsiveness, and an increase in glide ratio.

Bell also says that many people find the winglets to be a

cosmetic upgrade to the already beautiful Skymaster, though that's more a matter of personal taste. But the performance is hard to argue about. He claims, "Once you fly a Skymaster with these winglets on, you won't like the way a Skymaster without them handles."

Tail boom fairings

Two sizes of tail boom fairings (TBFs) are available as STC'd mods for the Skymaster. The fairings attach to the boom and the vertical fin, both on top and below the boom. The fairings can be used with, and do not interfere with, other Skymaster mods.

Winglets and large-size tail boom fairings.



The fairings increase the forward thrust of the rear engine by decreasing the turbulence around the booms and tail fins.

The medium-size TBFs, similar to those provided in the Robertson STOL kit, are primarily cosmetic and enhance the appearance of the tail boom attachment to the vertical fin.

For the ultimate in performance, a large-size TBF, nearly 4 feet long, is available. See the photos on Page 44 for a comparison.

The larger fairings enhance performance, including a 50-fpm increase in single-engine rate of climb when operating on the rear engine only (no change with front engine only) and a 1 mph increase in cruise speed at 10,000 feet. Pilots also report a more effective vertical fin and corresponding increase in crosswind stability.

Speed brakes

With all these performance mods that help Skymasters take off quicker, climb steeper, and cruise faster, it makes sense that there'd also be a corresponding mod to help slow

down. Speed brakes are the answer, says Bell.


Speed brakes for the Skymaster can double the aircraft's normal descent rate, without otherwise reducing power or extending the gear. The speed brakes can also be helpful in reducing shock cooling; pilots can maintain engine power during descents. In the case of an encounter with rough air, the speed brakes can be deployed at high speeds (at or near V_{ne}) to help quickly slow the airplane to turbulent air penetration speed.

But wait, there's more...

The mods that Owen Bell has recommended here are only a few of the upgrades offered by Skymaster Mods & Parts. A visit to their website (see Resources) quickly reveals other mods that might catch the attention of Skymaster owners, including gross weight increases, a STOL leading edge cuff, three-bladed propellers, auxiliary fuel tanks, and more.

For a complete list of STCs for Skymasters from all suppliers, visit tinyurl.com/stc-search and search by make and model.

 **SCOTT KINNEY** is a self-described aviation geek (#avgeek), commercial pilot, and flight instructor. He is associate editor for Cessna Flyer. Scott and his partner Julia are based in Eugene, Oregon. They are often found buzzing around the West in vintage airplanes. Send questions or comments to editor@cessnaflyer.org.

 **OWEN BELL** is an A&P/IA and an instrument-rated commercial pilot. He started working in aviation in 1966 and has specialized in Skymasters for the past 28 years. Send questions or comments to editor@cessnaflyer.org.

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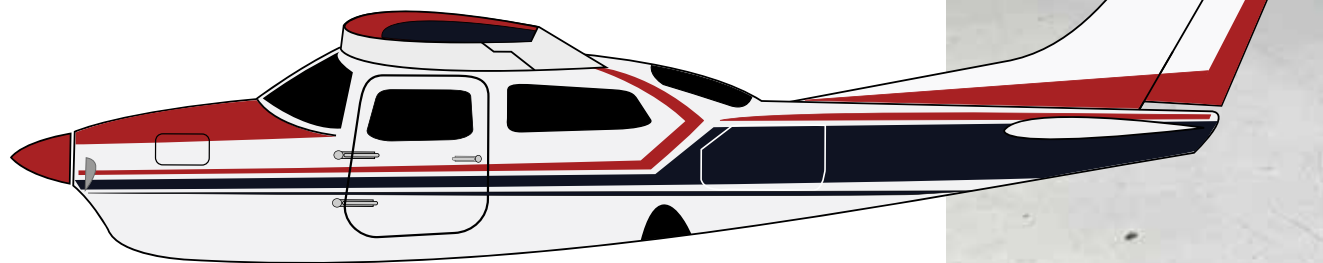
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CESSNA 210 SPAR CARRY-THROUGH REPLACEMENT SERVICE BULLETIN REVISED

Cessna SEL-57-11 R1 provides additional details about spar replacement.

By Steve Ells

On Aug. 1, 2022, Textron Cessna issued SEL-57-11 R1 to add additional information to the installation instructions in SEL-57-11. The bulletin expands on the information needed when replacing unairworthy Cessna 210 one-piece wing spars. The 12-page revision provides answers to commonly asked installation questions that may arise during the installation of new wing carry-through spars. SEL-57-11 was originally issued in January 2022.

Before the bulletins mentioned above, Cessna issued SEL-57-06, a 10-page bulletin on June 24, 2019. It called for the cleaning and thorough visual inspection of the center wing spar section of all Cessna 210s without wing struts.

Any corrosion found had to be removed following the instructions in the bulletin. After removal of the corrosion, or if no corrosion was found on the spar surface, an additional inspection using eddy current non-destructive testing tools was required.

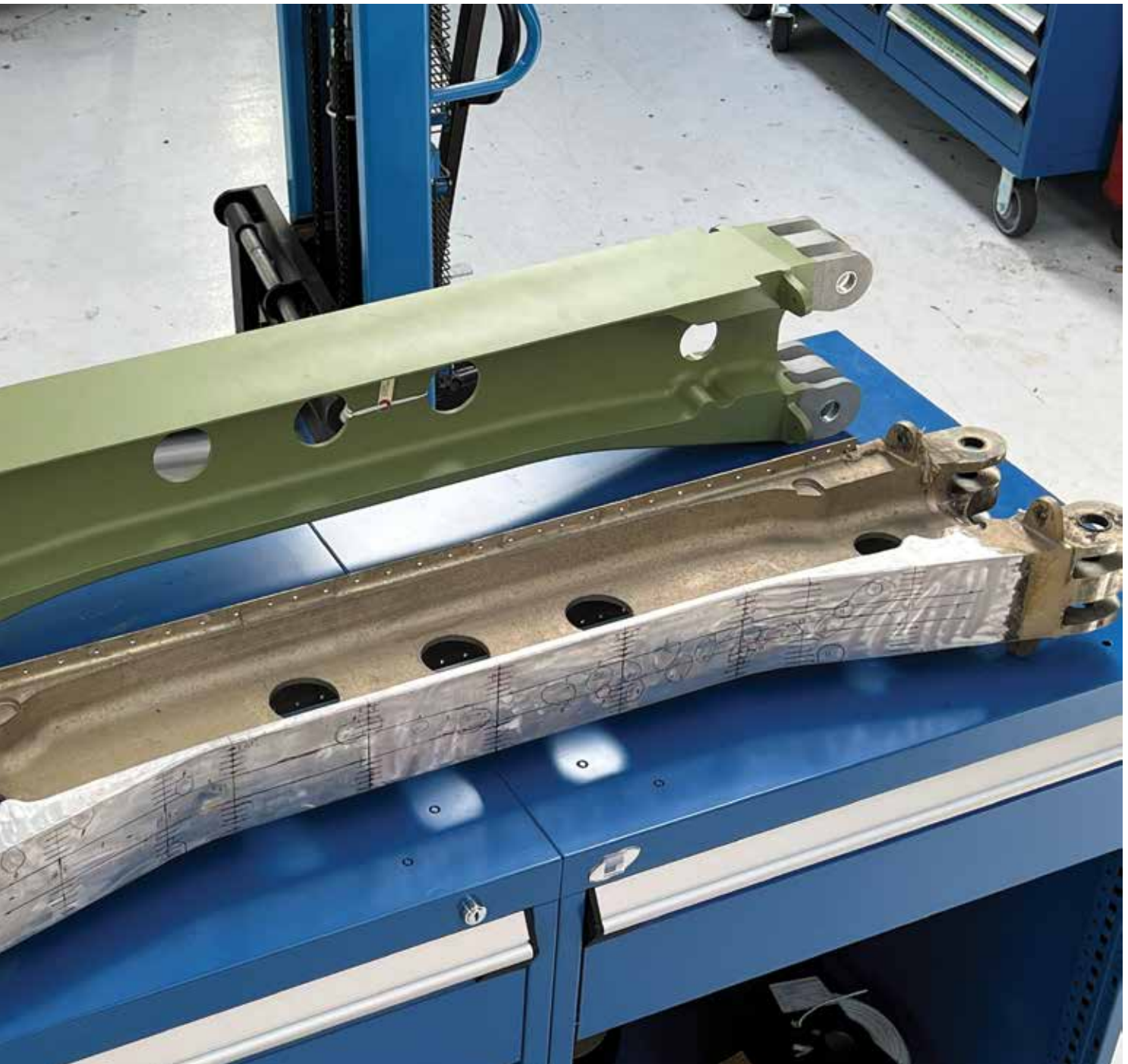
It was followed on Nov. 1, 2019, by



SEL-57-08, a 16-page bulletin. This bulletin was very similar to 57-06, but added specific areas to inspect. It also specified the application of corrosion-barrier coatings. Cessna considered both bulletins mandatory.

Within a few months, the Federal Aviation Administration (FAA) issued Airworthiness Directive 2020-03-16. This AD made complying with the Cessna Service Bulletins mandatory.

According to SEL-57-11 R1, the revised edition of the bulletin, there are two carry-through spar part numbers



that are applicable for the entire cantilever-wing 210 fleet.

Spar Part No. 1210721-1 is for the 210G and 210H models. List price is \$19,123.

Spar Part No. 2110020-1 is for all other 210s (Models 210J and T210J through 210R and T210R, P210 and T210) List price is \$18,847.

Sources say that new spar carry-through parts are available from Cessna. I checked with Air Power for confirmation. I was told they are out of stock on both part numbers right now (as of Aug. 25, 2022)—they expect that

both spars will be available soon.

One estimate of installation labor hours is 120 man-hours.

IMPORTANT: This article describes work that may need to be performed/supervised by a certificated aviation maintenance technician. Know your FAR/AIM and check with your mechanic before starting any work.

STEVE ELLS has been an A&P/IA for 45 years. He is a commercial pilot with instrument and multi-engine

ratings and loves utility and bush-style airplanes and operations. Ells was a tech rep and editor for Cessna Pilots Association and associate editor for AOPA Pilot. He owns Ells Aviation and lives in Templeton, California. Send questions and comments to editor@cessnaflyer.org.

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My 2022 AirVenture Report

STEVE ELLS shares what was hot at EAA AirVenture Oshkosh 2022, and describes his flight there and back (including the associated expenses).

EAA AirVenture Oshkosh must be experienced to be believed. The tagline for 2022 was “Unlike Anything Else,” and it proved to be prescient because the show was one of the best I’ve ever attended.

AirVenture 2022 was a whopper. According to the EAA Press HQ, 650,000 admissions were sold, a record.

Info from the Press HQ also included these statistics:

More than 10,000 aircraft arrived at Wittman Regional Airport in Oshkosh and other airports in east-central Wisconsin. At Wittman alone, there were 18,684 aircraft operations in the 11-day period from July 21-31, which is an average of approximately 121 takeoffs/landings per hour when the airport is open.

Total show planes: 3,226 included: 1,375 registered in vintage aircraft parking, plus 1,156 homebuilt aircraft (up 6% over 2021), 369 warbirds (up 5% from 2021), 137 ultralights, 87 seaplanes, 77 aerobatic aircraft, and 25 rotorcraft.

Camping: More than 12,000 sites in aircraft and drive-in camping accounted for an estimated 40,000 visitors.

Volunteers: More than 5,000 contributing in excess of 250,000 hours.

Commercial exhibitors: 803.

Forums, Workshops, and

Presentations: More than 1,400 sessions hosted throughout the week.

I’ve been attending AirVenture continuously for the past 22 years (back then we just called it Oshkosh, and everyone knew what we meant) and although I seem to have aged, it seems to stride forward with vigor every year.

Before I talk about my trip there and back, I’d like to talk about a few things I saw and heard there.

Industry highlights

There weren’t many industry revelations this year. Cessna Aircraft announced that it was reintroducing its T182T Turbo Skylane, a turbocharged version of its very popular 182. The turbocharger provides full sea-level power (235 hp) up to 20,000 feet msl. It cruises at 165 ktas.

Hartzell announced a new discount program with this press release:

Hartzell Propeller is proud to support the fun and freedom of backcountry flying with a \$1,000 discount on four all-new backcountry propellers for members of the Recreational Aviation Foundation (RAF). The discount may be used on these Hartzell propellers, now through 2022: The Voyager, the Trailblazer, the Explorer, and the Pathfinder.

Modernization of Special Airworthiness Certification (MOSAIC)

By DanJohnson.com, a website that focuses on Light Sport Aircraft (LSA), reported:

The anticipated announcement concerning a preliminary draft of the Modernization of Special Airworthiness Certification (MOSAIC) has been delayed for at least a year. MOSAIC is expected to expand the limits that now form the Light Sport Airplane (LSA) limits. These changes are expected to provide higher weight limits, faster speeds, aerial work privileges, retractable landing gear, and more seats for LSA aircraft.

STINATION





In other words, many older GA airplanes may fall under LSA rules when MOSAIC is enacted. One teaser hints that airplanes weighing less than 1,850 pounds, and that fly at speeds faster than current LSA limits, may qualify for LSA under MOSAIC. (Read more on the history of MOSAIC in “The View from Here” in the September 2022 issue of Cessna Flyer. —Ed.)

Eliminate Aviation Gasoline Lead Emissions (EAGLE) Initiative

The Federal Aviation Administration (FAA) announced that it has formed the Eliminate Aviation Gasoline Lead Emissions (EAGLE) Initiative. The EAGLE Initiative “is a comprehensive public-private partnership consisting of aviation and petroleum industry and U.S. government stakeholders, working toward the transition to lead-free aviation fuels for piston-engine aircraft by the end of 2030, without compromising safety or economic health of the General Aviation industry.”

The kick-off for the EAGLE Initiative is tentatively scheduled for mid-March 2023.

Other news from Oshkosh

Electroair announced its approved battery system, which is designed to be a backup power source for

I don't know about you, but on cross-country flights, my attitude improves when I get within 100 miles of my destination, especially on the last leg of a long cross-country.

Electroair electronic ignition systems. This unit meets the requirements of a backup system when installing the Electroair EIS 62000DM in place of the original equipment single-drive, dual-magneto system.

Numbers posted on the General Aviation Manufacturers Association (GAMA) website showed that piston aircraft production numbers in the first quarter of 2022 for both Piper Aircraft and Textron Cessna aircraft are way up compared to 2021.

Published numbers showed that the entire 2021 production of

piston-powered airplanes totaled 18 for Piper and 33 for Textron Cessna. The first quarter sales in 2022 were 47 for Piper and 37 for Textron Cessna.

I stopped by the EarthX Batteries booth because I wanted to know more about this new technology. The ETX 900 TSO lithium-ion phosphate (LiFePo4) batteries meet the standards for the Technical Standard Order (TSO) for aircraft batteries. These batteries pack the same cold cranking amps (CCA) power as a lead acid battery. Yet they weigh only 5.4 pounds, while lead acid batteries weigh around 30 pounds. This weight savings comes at a cost, as the ETX 900 TSO lists at \$699 versus \$375 for the lead-acid battery. EarthX batteries holds an STC for the installation of its batteries in the Cessna 182 series for models 1962 182E through the 1980 182Q, and the Piper PA-28 series.

EarthX batteries have an internal monitoring system that, when connected to a single light on the instrument panel, will alert the pilot about battery health and operating limitations.

Getting there and back

In the July 2022 issue of *Cessna Flyer*, I wrote an article wherein I attempted to determine how much the increased costs stemming from the inflationary

cycle we were experiencing would affect the final bill on my annual roundtrip cross-country flight from the West Coast to AirVenture.

The results are in. I underestimated the trip's total cost by about 25%.

To the big airshow: my favorite eastbound routing

My total flight time from Paso Robles (Paso Robles Municipal Airport, KPRB), California to Waupaca (Waupaca Municipal Airport, KPCZ), Wisconsin was 12.2 hours over two days. Waypoints and stops were KPRB direct BIH (Bishop VOR), direct Wendover Airport (KENV), then direct Evanston (Evanston-Uinta County Airport, KEVW), Wyoming. There's a VFR corridor west of Salt Lake City between Restricted Areas R-6404B and D to the north and R-6406A to the south. To avoid the restricted areas, I flew to Wendover, which is at the west end of the corridor.

Tach time at the beginning was 445.0; when I touched down at Evanston, it read 449.5. It took me four and a half hours to cover 573 nm. My average ground speed was 129 knots (148 mph).

Due to my need to get over the high mountains in the southern Sierras in California, I climbed to 13,500 feet msl for this route. My Electronics International CGR-30P showed a manifold pressure of 17.5 inches and 2,390 rpm, which it translated into 49% power or 88 hp.

The outside air temp (OAT) at 13,500 was 43 F, or a full +32 F above standard atmospheric conditions. In simple terms, the OAT was much hotter than normal. *(A quick check puts the density altitude at approximately 15,600 feet! —Ed.)*

The low power output and the higher-than-normal temperatures caused the lower-than-normal speeds.

Trust in my 180 hp Lycoming engine (and patience) was required, as it took a full 48 minutes until top of climb (TOC). After I crossed the Sierras, I stayed high because I had a tailwind and because I still needed to get over the Rockies. I have a portable 17-liter Precise Flight oxygen tank that I mount on the back of the co-pilot's seat. That, combined with one of the company's demand conservers, gives me well over 25 hours of oxygen.

Fuel at Evanston was \$6.87 per gallon. I bought 38.1 gallons. My average fuel burn was 8.46 gallons per hour.

Due to very high density altitude at Evanston, and feeling wrung out (I'd been





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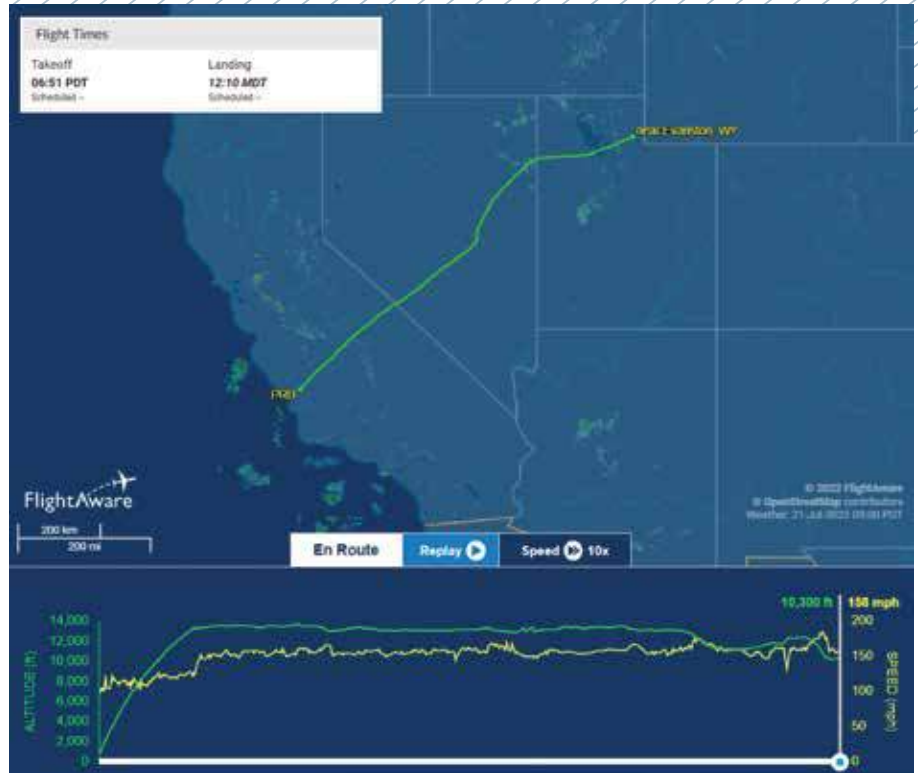
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working hard for days prior to launch- ing to get ready), and the winds on the east side of the Rockies that affected my airplane's performance, I decided to turn around and spend the night of Thursday, July 21st, in Evanston. I got a good last-minute rate at the Days Inn through Expedia for \$91.02.

That evening, I checked the weather forecast between Evanston and Waupaca and loaded up the inflight meal service with a couple of Subway sandwiches. The weather was good, I'd gotten past two moun- tain ranges, and I planned for an easy flying day into Waupaca.

Day Two—easing in to Waupaca

I was off the Evanston airport in the morning twilight at 0608 MST; thanks to the kind folks at Evanston Aviation who loaned me the crew car for the night. The air was calm, and I was fully rested and ready for what turned out to be a 7.7 hour flying day.

90 minutes after takeoff, I was abeam Rock Springs (Southwest Wyoming Regional Airport, KRKS), Wyoming, and at 0804 MST we passed Laramie Peak (10,275 feet msl), which marked the last of the high ground. Aside from a slight diversion to Wyoming's Camp Guernsey Airport (KGUR) to avoid Restricted Area R-7001A and B, it was almost a straight shot to Valentine Municipal Airport (KVTN) in Valentine, Nebraska, for gas, a pit stop, and a quick turn. That leg totaled 476 nm. Tach time for that leg was 4.2 hours. The fuel purchased totaled 44 gallons at \$6.70 per gallon, for a total of \$268.

The fuel consumption average was high for this leg, owing to my takeoff and subsequent return to the airport at Evanston the previous afternoon. Takeoffs and climbs do ratchet up fuel consumption numbers.

The last leg was lots of fun. I don't know about you, but on cross-country flights, my attitude improves when I get within 100 miles of my destination, especially on the last leg of a long cross-country.

It felt like a downhill ride into Waupaca that Friday afternoon. Only 508 nm to go; and lo and behold, a good tailwind. My ground speed peaked at 177 knots, which got me into Waupaca in 3.5 hours flight time. I bought 30.7 gallons of 100LL Avgas at the great price of \$5.85 per gallon (\$179.60).

Going home; a two-day trip

After spending Friday, Saturday, and Sunday with my Cessna Flyer Association friends at this year's "Gathering at Waupaca" and catching up on the normal issues—flying, health, flying stories, supply chain issues, and flying—and spending four days at AirVenture, which I now call *The Big Airshow*. I headed home on Friday, July 29th. Course? Steer 264 degrees to Valentine, then 255 degrees to Evanston.

The gas fill at Valentine totaled 40.06 gallons at \$6.70 per gallon. Total was \$268.40. Time en route was 4.1 hours tach

The trip east took 12.2 flight hours. The trip west took 13.5 hours. My total flight time was 25.7 hours.

time. This fuel consumption is right in line with the specifications in the Owner's Manual, but quite a bit more than that used on the eastbound legs. The reason? I didn't have to fly high to get over any big rocks, so I flew along at 6,500 feet msl.

The weather to the west was still flyable, so off I flew toward Evanston. WAC Chart CF-17 shows how the ground rises as one flies west. Yes, I kept all my WAC charts because I love maps and they help me get the big picture when flight planning. The Waupaca airport is at 840 feet msl; the Valentine airport, 508 nm west, is at 2,541 feet msl, and the Evanston airport, 476 miles farther west, is at 7,142 feet msl.

Flying in Wyoming in the afternoon—nope!

Afternoon thermals in Wyoming are no joke in my lightly loaded airplane. My only strategy is to tighten my seat belt and grin and bear it. The distance from Torrington Municipal Airport in Torrington, at the eastern edge of Wyoming, to my destination at Evanston, is 312 nm. My ground speed averaged about 125 knots due to the prevailing winds; translated, this means I was wrapping up my eight-hour flying day with two hours and 30 minutes of getting bumped around. I was glad to be back on the ground at the end of the day.

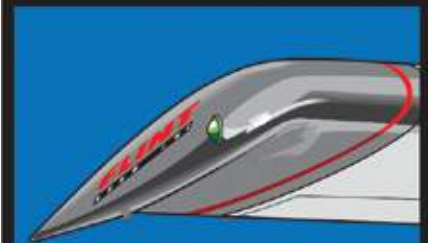
To my surprise, the gas prices at Evanston had dropped to \$6.66 per gallon—a 21 cent decrease since my westbound flight nine days ago. Total fuel purchased was 36.9 gallons at a total cost of \$245.75. Flight time from Valentine was 3.9 hours.

The downhill ride to my home 'drome

I used an online booking service and got an overnight room at a tired Travelodge in Evanston for \$61. It was sufficient, but I wouldn't recommend it.

Like last year, I flew my familiar lower-altitude routing home. KEVW to

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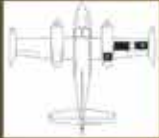
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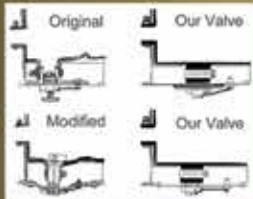
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Mesquite (67L), Nevada, then to PMD (Palmdale VOR) to avoid the Edwards Air Force base airspace, then direct Paso Robles (KPRB). Flight time to Mesquite was 2.4 hours. 100LL cost \$7.15 (the highest price 100LL on the trip). I bought 26.8 gallons and paid \$191.69.

During the last leg from Mesquite to Paso Robles, it seemed as though the 180 hp engine in my airplane had gained 25 more horsepower. We were both longing for home. 3.1 hours later I bought 31.2 gallons of 100LL and paid \$6.04 per gallon for a total cost of \$188.45. After taxiing to my hangar, I shut down the engine for the last time on my 2022 flights to AirVenture.

The trip east took 12.2 flight hours. The trip west took 13.5 hours. My total flight time was 25.7 hours.

In conclusion...

In the July 2022 issue of *Cessna Flyer*, I estimated that fuel costs would increase by 25% to 30%. I was wrong. In 2022, I spent \$1,606.63 on Avgas, for an average cost of \$62.51 per flight hour. In 2021,

I spent just \$1,087.09 on Avgas, for an average of \$42.13 per flight hour.

My July guesstimate was low; my Avgas costs were greater by slightly less than 50% (47.79%, to be exact).

Total costs

Outbound (to AirVenture)

Total flight time:	12.2 hours
Fuel:	112.8 gallons
Total fuel cost:	\$712.34
Average cost per gallon:	\$6.31
Motel cost in Evanston, Wyoming:	\$91.02
Gas for the airport courtesy car:	\$13.20
Two Subway sandwiches (footlong):	\$10.17
Total cost to get to AirVenture:	\$826.73

At AirVenture

4 nights at Ramada in Waupaca:	\$405.00
Meals, etc.	\$100.00
Total expenses at AirVenture:	\$505.00

Returning from AirVenture:

Total flight time:	13.5 hours
Fuel:	134.96 gallons
Total fuel cost:	\$894.29
Average cost per gallon:	\$6.62
Motel cost at Evanston, Wyoming:	\$60.61
Meal at Evanston:	\$17.30
Total return expenses:	\$972.20

Total 2022 AirVenture costs: \$2,303.93

STEVE ELLS has been an A&P/IA for 45-plus years. He is a commercial pilot with instrument and multi-engine ratings and loves utility and bush-style airplanes and operations. Ells was a tech rep and editor for Cessna Pilots Association and associate editor for *AOPA Pilot*. He owns Ells Aviation and lives in Templeton, California. Send questions and comments to editor@cessnaflyer.org.

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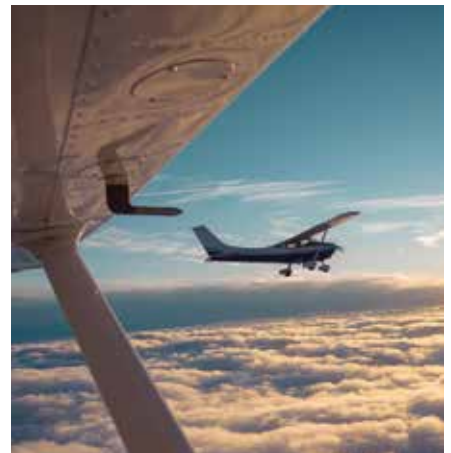
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BUSHLINER AIRCRAFT MANUFACTURING CO. INC. MAKES PANEL UPGRADES EASIER WITH ITS NEXTGEN PANEL SYSTEM

GRANITE FALLS, Wash (August 2022) – When approaching a panel update, many aircraft owners find themselves with a daunting mess. First is a literal mess of wires; live and disconnected, cluttered steam gauges that served well but are past their prime, past “hacks” and modifications, and simply heavy extra junk. Next, they find a mess which isn’t so obvious initially, an aircraft with a panel frame shape that doesn’t accommodate modern avionics.

Up until now, owners would be faced with pulling their aircraft offline to make new avionics fit, in a process that inevitably will cost them months and is by no means simple. This complexity might make some owners wonder when or if it will ever be easy maintaining or upgrading these aircraft.

While it’s easy to purchase new avionics for installation in your aircraft, they may not be approved for or fit into the panel that the aircraft comes with. There have been multiple “one-off” solutions

to get new avionics to fit in Cessna panels, including hack jobs that compromise the structure and misalign primary flight displays. Needless to say, it’s not always done correctly. At Bushliner, we have run up against the same problem—how to update one of these avionics suites without compromising the integrity of the panel frame. We decided to do the work and take a deep dive into the regulations to find the solution that makes the most sense.

The main issue at hand is Primary Flight Displays (PFDs). They do not always fit in the panel in the required position, which is on the visual centerline of the pilot. Moving the PFD over more than 3 inches from the visual centerline is non-compliant. Cutting the panel frame to make more room requires additional approval and is specifically excluded from Dynon and Garmin’s STCs because structural loads have to be calculated and complied with.

Additionally, FAA approval is required for instrument panel

continued on Page 60 >>

GENERAL AVIATION MOVES CLOSER TO AN UNLEADED FUTURE

FAA approves GAMI unleaded Avgas STCs for entire GA piston fleet

EAA AVIATION CENTER, Oshkosh, Wisconsin — (Sept. 1, 2022) — The Federal Aviation Administration today signed supplemental type certificates to allow General Aviation Modifications Inc.'s 100-octane unleaded fuel (G100UL) to be used in every general spark-ignition engine and every airframe powered by those engines. The move was hailed by the GA industry as a major step in the transition to an unleaded future. The FAA's approval of the use of G100UL fuel

in all piston aircraft directly addresses the industry's long-standing goal of finding unleaded solutions that can be used for the entire GA piston fleet.

"Congratulations to GAMI on this achievement, which is another initial step toward a goal we all want — an unleaded fuel for general aviation," said Jack J. Pelton, CEO and Chairman of the Board for the Experimental Aircraft



Association (EAA). "This is a significant accomplishment that opens the door to the hard work that remains to create a commercial pathway and acceptance across the broad spectrum of the general aviation fleet."

continued on Page 62 >>



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News

**» Bushliner Panel Upgrades
Continued from Page 58**

modifications. The exception is going the route where only the non-structural floating panel is replaced. However, most Cessna panel plates will still not accommodate the PFD requirement. Avionics shops that modify the panel frame must obtain a DER approval or field approval in addition to the STC which is time- and resource-consuming and keeps the aircraft offline while the panel is out.

Where does this leave owners? They must either go without avionics upgrades, perform a one-off expensive installation, or purchase a new aircraft with modern avionics already installed. At Bushliner, we know these solutions aren't always ideal, and our goal is to make avionics upgrades easier for the owners, mechanics, and avionics dealers. We solved the unsolvable by creating the NextGen Panel System (NGPS).

Our system is comprised of three products that are a completely new and original way of standardizing the upgrade everyone desires. Instead of attempting to adapt every Cessna panel frame and having the equipment dictated by the aircraft, the old panel frame is completely removed, and a new, billet-machined aluminum panel frame that meets all the FAA requirement is installed in its place.

We make three different frames that accommodate all model variances; the 172 series which accommodates 172B on



to 175; the 180 series fitting all models of 180/182/185; and the 182 series which fits 182E and on.

Each of the A, B and C, and so on model variants have slightly different configurations and constraints (for example, the 172C's panel is not exactly the same as that of a later 172). These custom portions are solved by laser cutting three different parts for these panels; a Panel Plate with the yokes located and selected PFD/MFD and center stack cutout, a Sub-Panel that mounts the circuit breakers, mag key and landing gear selector, and a Flap Plate that adapts the frame to the wing flap type or cowl flap type, depending on model.

Dynon and Avidyne are partnering with us on this endeavor to make the simplest solution to upgrading your panel suite. With the Dynon team, we've evolved the process in order to allow a complete remote install, so the panel is built and shipped to the customer for final installation. We've made it so all of the original mess is removed, weight is significantly reduced because the old mess is gone, and these aircraft can keep up with avionics innovations and are not left behind in this modern age.

These panels are V-Ref accredited and add value on to your aircraft. Please visit bushliner.com to get your avionics suite upgraded.



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News

» GAMI Unleaded Avgas STCs Continued from Page 59

In 2021 the FAA approved STCs for GAMI covering a smaller number of Cessna 172 engines and airframes, and then expanded those STC approved model list (AML) to include essentially all lower-compression engines. Though that was seen as an encouraging step forward in the years-long path to supply unleaded aviation fuel to the piston aircraft fleet, the STC's did not include aircraft needing the higher-octane fuel that accounts for approximately two-thirds of avgas consumption. Today's announcement by the FAA addresses the needs of those higher-compression engines.

GAMI co-founder George Braly said, "This is a big day for the industry. It means that for a lot of our general aviation communities, and especially for a high fraction on the West Coast, relief is on the way. And it means that our industry will be able to go into the future and prosper, and provide the essential infrastructure for this country for everything from Angel Flights to critical training of our future airline pilots."

Braly thanked the GA community for its support through this long process. "Without it we couldn't have gotten this done," he said.

GAMI's Braly has said that Ann Arbor, Michigan-based fuel supplier Avfuel is standing by to manage the logistics and distribution of G100UL, and said he is open to partnerships. "Our arrangement is that any qualified refiner or blender of existing aviation fuels will be eligible to produce and sell it subject to the quality assurance requirements that the FAA has approved," he said.

The timing for when G100UL will reach airports is still uncertain. "It's going to take a while to manage the infrastructure including manufacturing and distribution," Braly said. The supply chain "is still a very wounded infrastructure and that's not going to make the process any easier, but we have a handle on how to do this, and with the support of the major players I think we can do that. It's going to be limited to begin with, but it can be ramped up rapidly," he said.

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Pelton noted that some California municipalities, for instance, prematurely banned the sale of leaded avgas and threatened a safe and smart transition to an unleaded fuel.

"There needs to be a safe transition to unleaded fuel for the GA fleet," Pelton said. "Let's keep forging ahead in a unified fashion, rather than a patchwork of local ordinances that will only set political and safety hurdles in front of the ultimate goal."

While the cost of the fuel has not been determined, Braly said the small batch production process that will initially mark the arrival of G100UL at airports means that the fuel will cost slightly more than leaded avgas. "Small volume batches cost money," he said. "Until we can get [production] revved up that we're making millions of gallons at a time, there will be an incremental cost," he said.

"It's not going to be unreasonable," Braly added. "Pilots in America will not be paying what they're paying for avgas in Europe today."

Owners can also expect to see engines that operate more efficiently. "I think the days of cleaning spark plugs every 50 hours are going to be behind us for good," Braly said.

Swift Fuels Inc., an Indiana based company, has received FAA approval for its 94-octane unleaded fuel, and has expanded its distribution, particularly to the West Coast. Swift Fuels' 94-octane fuel meets some, but not all, of the demand of aircraft with lower-compression engines. The company is developing a 100R unleaded fuel with more than 10 percent renewable content.

In addition, two fuel candidates are currently in the EAGLE/PAFI testing process.

All fuel manufacturers continue to be encouraged to follow through with their own formulations, Pelton said. "Innovation and multiple options have always been a key to ultimate success, so we welcome any and all ideas to bring unleaded fuel to the marketplace for general aviation."



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News

Laura Wilson



“FLYING FLASHES” TEAM (LAURA WILSON AND ALEX JOHNSON) CAPTURES 2022 AIR RACE CLASSIC TITLES

TERRE HAUTE, Ind. (July 20, 2022) – The “Flying Flashes” team of Laura Wilson and Alexandra “Alex” Johnson, flying a 2020 Cessna 172 SP Skyhawk and representing Kent State University, took honors for Fastest Cessna as well as first place overall in the 2022 Air Race Classic. The trophy for Fastest Cessna is sponsored by the Cessna Flyer Association.

Laura Wilson, a rookie to air racing, is a Commercial Pilot who is currently



Alex Johnson

Courtesy: Air Race Classic

instructing for Kent State. She chose to participate in the 2022 Air Race Classic for the experience and to challenge herself. Laura said, "I look forward to participating with other female pilots, especially my best friend, who will be racing with me. The race is unlike anything I have done before and I want to prove to myself I can do it." Laura's family is very supportive of her and an inspiration for her flying: her father and grandfather were both pilots.

Alexandra "Alex" Johnson is also a Commercial Pilot and currently teaches at Kent State. 2022 was Alex's second time flying the Air Race Classic. Her goal is to fly at a major airline so she can travel and experience different cultures. Alex also races for the challenge and experience, as well as to inspire others. "It's great to be surrounded by empowered women pilots who inspire the next generation! This race is unique and different from the typical flight training environment in that it makes anyone who flies the ARC a well-rounded pilot."

For more information on the Air Race Classic, visit airraceclassic.org.

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News

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ECONOMIC IMPACT FOR OSHKOSH

EAA AIRVENTURE OSHKOSH 2022

Facts and figures for a record-setting year

Comment from EAA CEO and Chairman Jack Pelton:

"We introduced a tagline of 'Unlike Anything Else' for this year's AirVenture event and 2022's fly-in proved to truly be unlike anything else. We had seven days of nearly perfect weather, along with this year's programs and activities, which brought out people and airplanes in numbers that we haven't seen before."

Attendance: Approximately 650,000 – A record total (previous mark: 642,000 in 2019) and 7 percent above 2021's attendance of 608,000. Comment from Pelton:

"There were several factors involved in the record attendance this year, in addition to the great weather. Programs such as the 75th anniversary of the U.S. Air Force contributed to exciting aerial displays all week, and it was a joy to welcome our international visitors back in full force for the first time since 2019."

Total aircraft: More than 10,000

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aircraft arrived at Wittman Regional Airport in Oshkosh and other airports in east-central Wisconsin. At Wittman alone, there were 18,684 aircraft operations in the 11-day period from July 21-31, which is an average of approximately 121 takeoffs/landings per hour when the airport is open.

Total showplanes: 3,226 included: 1,375 registered in vintage aircraft parking, plus 1,156 homebuilt aircraft (up 6 percent over 2021), 369 warbirds (up 5 percent from '21), 137 ultralights, 87 seaplanes, 77 aerobatic aircraft, and 25 rotorcraft.

Camping: More than 12,000 sites in aircraft and drive-in camping accounted for an estimated 40,000 visitors.

Volunteers: More than 5,000 contributing in excess of 250,000 hours.

Commercial exhibitors: 803.

Forums, Workshops, and

Presentations: More than 1,400 sessions hosted throughout the week.

Social Media, Internet and Mobile:

More than 10.6 million people were reached by EAA's social media channels during AirVenture, with engagement of 1.1 million; More than 83,000 hours of viewing EAA video clips online also occurred during the event.

International guests:

International visitors returned in a big way in 2022, with attendees from 92 countries outside the U.S., just one

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News



behind the record total from 2019.

The Gathering shines: The EAA Aviation Foundation's annual event to support its aviation education programs attracted more than 1,000 people and raised more than \$2 million dollars that will be focused on EAA's mission of growing participation in aviation.

Media: 797 media representatives on-site, from six continents.

Economic impact*: \$170 million for the five counties in the Oshkosh region (Winnebago, Outagamie, Fond du Lac, Calumet, and Brown). * - based on





2017 University of Wisconsin Oshkosh economic impact study

Pelton hints at what's ahead for EAA AirVenture Oshkosh 2023, scheduled for July 24-30, 2023:

"We're going to take a little time to give our staff and volunteers a well-deserved rest, but there were numerous discussions at AirVenture 2022 about possibilities for next year. Certainly the 70th anniversary year of EAA will be among the big considerations as we look forward to next year's edition of The World's Greatest Aviation Celebration."



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News

HARTZELL AEROSPACE WELDING ACQUIRES CANADIAN WELDING COMPANY

Expanding presence in engine mounts and exhaust

OSHKOSH, Wis., July 26, 2022 – Hartzell Aerospace Welding, a Hartzell Aviation company based in Eagan, Minn., has acquired Acorn Welding, located in Edmonton, Alberta, Canada. The announcement was made today at the 2022 EAA AirVenture Oshkosh annual air show.

Key factors in the acquisition included the value of the Acorn Welding leadership and experienced workforce, as well as and the company's strategic location. The international acquisition expands Hartzell Aviation's presence in General Aviation exhaust and engine mounts. Acorn and its more than 50 skilled employees will continue to be led by previous majority owner Don Hrabec, and by his business partner Roy Milton.

Portfolio Fit, PMA Capabilities, Location

"Acorn Welding integrates well with our business and allows us to add exhaust stacks and air boxes to our product lines," said Hartzell Aerospace Welding President Ryan Latham. "The company's proven ability to develop and obtain Parts Manufacturer Approvals (PMAs) will enable us to build out our product portfolio," he added. "Additionally, its location in Western Canada permits us



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to better serve customers.”

Acorn Welding is a Transport Canada Civil Aviation (TCCA) approved maintenance organization and one of the few EASA-approved welding facilities. It is also a TCCA-approved manufacturer and holds ratings for welding, components, nondestructive testing, and structures, as well as for distribution of aviation parts. Acorn Welding has grown into Canada’s largest aircraft exhaust and engine mount company and is the largest radial and vintage aircraft exhaust company in the world.

The 50,000 square foot operation is well positioned to continue to grow as a part of Hartzell Aviation. It offers a line of almost 100 new manufactured products, aircraft exhaust, and engine mounts for over 50 aircraft makes and 270 models, and 750 fabrication fixtures. For additional information on Acorn Welding, go to acornwelding.com.

Hartzell Aerospace Welding was established as Aerospace Welding Minneapolis (AWI) in 1993. It is a world leader in general aviation aircraft exhaust systems and engine mount repair. Its core competencies include certified welding, precision machining and sheet metal fabrication. For more information go to awi-ami.com.

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Online Forums
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Our online forum, located within the association website, is a great source for question-and-answer interaction and an excellent way to converse with other members, the CFA staff, and Cessna Flyer's contributing editor, longtime A&P/IA, Steve Ells.

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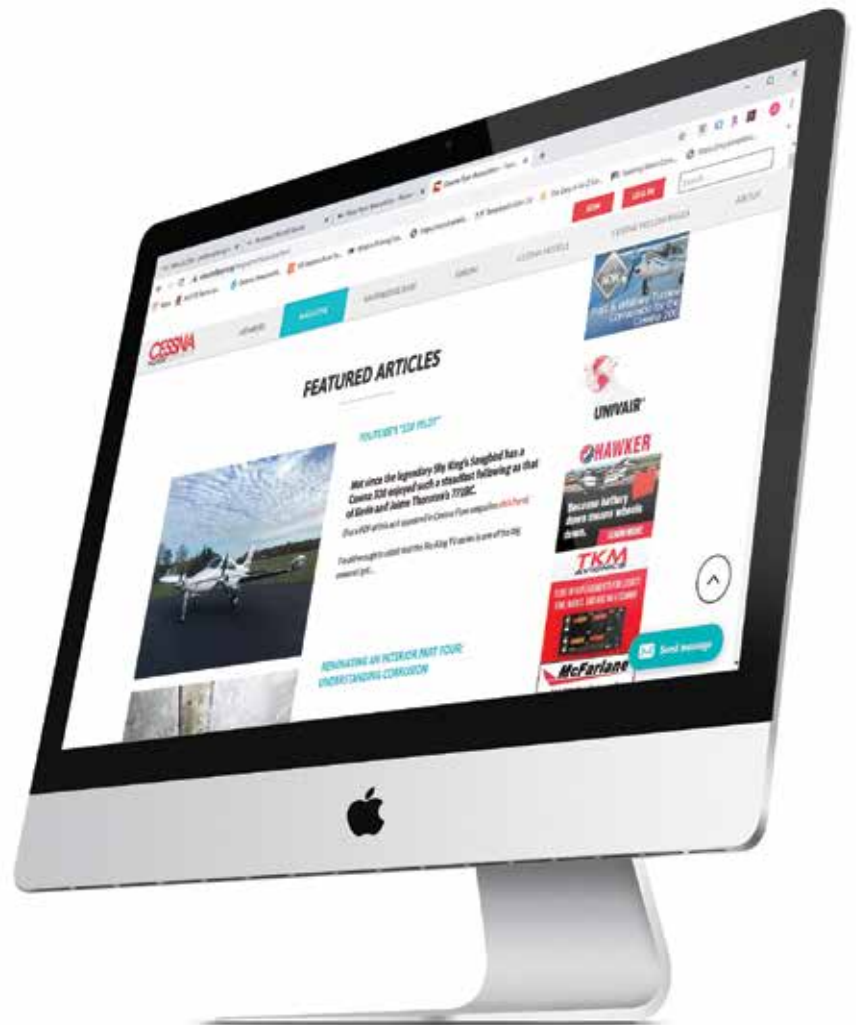
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CESSNA FLYER ASSOCIATION

FBO OF THE MONTH

Waupaca Municipal Airport (KPCZ) Waupaca, Wisconsin

Steve Ells was impressed by the FBO at Waupaca Municipal Airport, managed by Mat and Britney Klatt of Klatt Aero. Steve wrote:

"I flew into KPCZ for The Gathering at Waupaca and EAA AirVenture Oshkosh 2022 with a mechanical problem. Mat Klatt, the airport manager, is also an A&P mechanic. Mat took an interest in working with me to solve my problem by very quickly providing me with a space to do some troubleshooting and a few tools that I didn't have. Britney Klatt willingly drove me back to the Ramada after I was done.

"In my opinion, based on the actions I saw, the Waupaca airport is in good hands. Conversations showed that Mat has worked hard with the city staff to start implementing changes (such as on-airport camping, for one) that will eventually make the Waupaca airport a go-to airport in central Wisconsin. I liked the Cadillac crew car, too."

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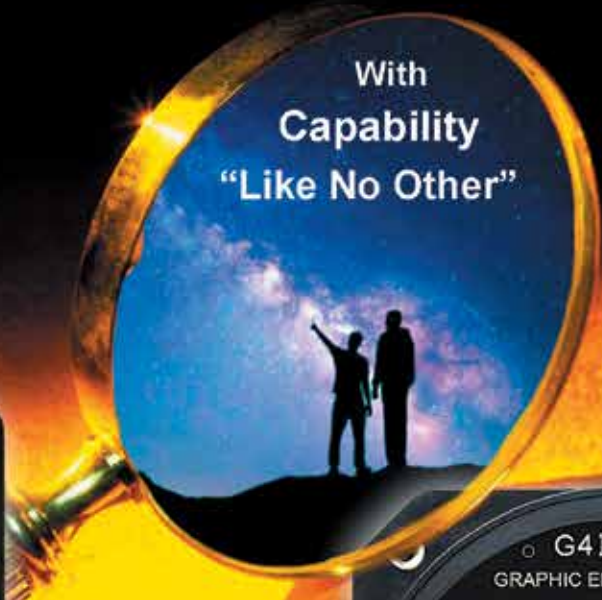
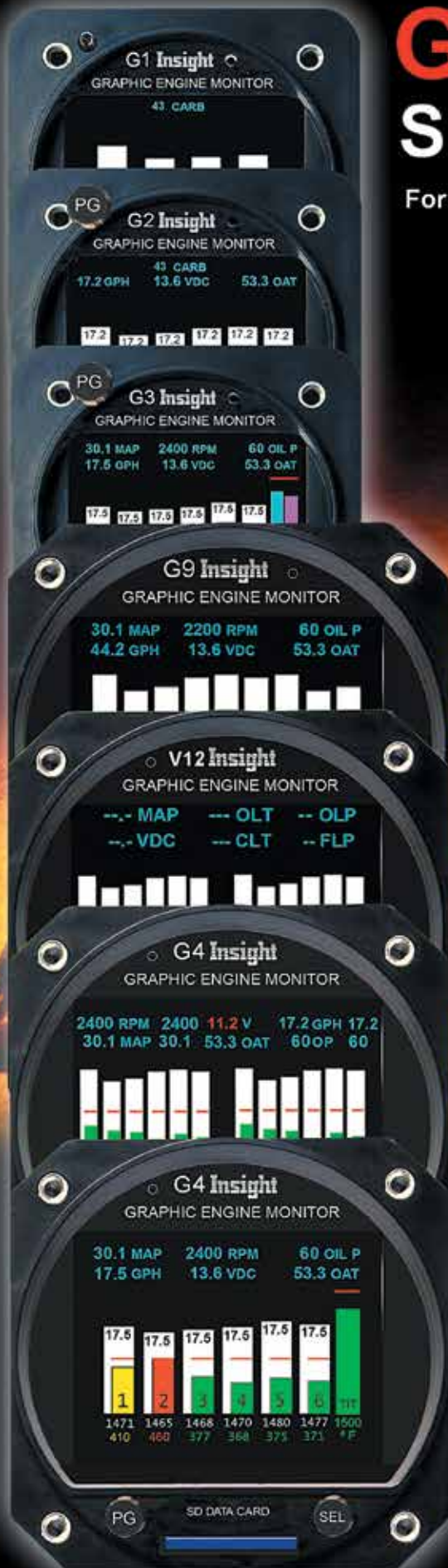
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