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Lancair IV-PT C-GSEM (For Sale)--GO FOR IT !

Posted: **Sun Apr 18, 2021 2:32 pm**
by **Peter Craig**
I have had some unfortunate circumstances come up which prevented me from completing the purchase of this Lancair IV-PT. I am tremendously disappointed, particularly after learning so much about her and seeing her in person for many hours, as well as flying in her.

If you haven't seriously considered a turbine, for any other reason than you simply cannot afford the purchase price, please read through this.

If you are considering a turbine IV-P, I don't believe you could find anything even close on the market, even if you waited years.

C-GSEM was built by Ed Small, with many contributors, including Maurits Van Rooy, on several systems including the panel (which was built and wired by Maurits--all CanBus connections, etc).

I'm writing to let the community know what a tremendously well-built aircraft this is. I initially decided to purchase it after much gnashing-of-teeth and calculating fuel-burn on typical 800-900nm trips vs a piston (not realizing they really aren't much different!). I didn't fully realize what a tremendous aircraft this is until I saw it, examined it in tremendous detail, and learned much more about it. Now that I have had to "drop the ball" on the purchase, I am deeply disappointed. Nevertheless, I wanted the community to know exactly what I learned:

First, about the general issues of turbine Lancairs, in the past:

Turbines are phenomenally reliable, but there were issues with the Walter over the years.

One of the main issues was that some fuel intake lines were run into the belly-tank on some aircraft, without realizing that on climb-out (at 3500ft/min !) the angle of the tank (angle-of-a-tank :)) is such that fuel goes to the back of the plane, and the intake line would become "un-ported" and sucking vapor, instead of fuel. This would cause fuel starvation and led to some crashes.

Another, was that the fuel control units were not rebuilt properly. These are very complex mechanical units, on the side of the engine, which must be rebuilt properly, and recommendation is that nobody but the factory in Czechoslovakia be trusted with this critical rebuild. In addition, there is an upgraded and updated rebuild which is better, and more reliable.

C-GSEM has had the fuel control unit (FCU) fully inspected and rebuilt by the factory in Czechoslovakia. They rebuilt it with the new and improved and more reliable components. In addition, if there is an FCU problem, and it is not functioning properly, this is virtually always detectable on start-up and ground-run, prior to take-off. These issues with FCU's have been problematic in the past. I believe that with proper training, and with the upgrade of this unit, likelihood of this causing an engine problem in flight is low enough that I put it on the list of "worry about my pilot skills a LOT more than my FCU".

Some people feel that the Pratt and Whitney engine is better. There are certainly arguments to be made both ways, but the Walter was designed to be used in Siberia, and purposefully built to require very little field maintenance. It had to be reliable because of the mission geography and lack of remote resources. This led to a more robust engine, in many ways, incorporating a full-circle fuel slinger inside the engine, rather than the PT-6 nozzles. The result is that the PT-6 has hot spots and colder spots in the hot section, and thus requires periodic hot-section inspections between TBO. The Walter does not require this, and goes to TBO without these inspections, in part because this fuel slinger leads to a more even temperature distribution. The Walter engine is a bit heavier, and burns a bit more fuel, but I'll take a more robust engine any day. The cost of one hot-section inspection (even assuming it comes out well, and no IRAN of a turbine blade is needed) would probably cover the extra fuel cost, and then some.

So for me, I'd rather have a Walter than a PT-6 in a Lancair IV-P, and I assume many others have chosen this engine specifically, not just for cost savings on purchase, but also for reliability and lower costs of operation. I would fly this engine over an ocean without any hesitation.

Next, I will jump straight to the build quality. Impeccable. Every detail very carefully worked and reworked. Ed is a consummate craftsman, who was never going to be psychologically at peace if something weren't "just right". His attention to detail is absolutely astounding. No factory-built aircraft would ever receive this degree of attention to every little part, and the smoothing and reworking of the airframe's surfaces was done painstakingly over countless hours. For anyone experienced with looking at these airframes, I think you'll find it among the very best built. The gear doors are reinforced, they close absolutely flush with very strong springs to hold them flush in flight. The "sliders" which the gear legs run along, were reformed for optimal design, the gear legs have been powder coated for long-term durability, every surface of carbon airframe has been treated with a very thin coat of tank sealant, inside, to prevent fraying, any small "needles" of carbon from sticking out anywhere, and for protection against virtually any type of fluid or solvent which might be able to penetrate the carbon-fiber shell, should anything ever get on it.

Every fitting is anodized aluminum. Every line which would in any way benefit from being braided stainless, is braided stainless. Lines which are not braided stainless are done so because

it saves weight where there is absolutely no need for braided stainless. The cowl is a work of art. The intake splits into left and right sections and the carbon ducting of this intake has been worked and reworked to optimize flow into the engine. Just seeing the intake of this aircraft, looking into the cowling, is truly impressive. The wing roots are blended with the fuselage and Ed customized this area so the wing fits under this aerodynamic fuselage/wing junction. The engine is recessed back into the firewall, keeping the cowl a bit shorter (the turbines are already long-nosed, and this is something I appreciate...it looks better, fits better, and gives slightly better visibility).

As for fuel capacity, 188 gallons should be enough :) If I were going to fly to Hawaii, I'd be able to throw a turtle pack in the back seat and do it. I wouldn't hesitate. Meanwhile, the decreased range of turbine IV-P compared to a piston has been reversed. Fast climb to altitude helps with efficiency, and the gross-weight capacity of this aircraft would allow me to carry 188 gallons, 4 people, and bags out of Telluride (9000 ft runway)!

The wingtips are Friedel's, which will improve glide (it's about TWENTY TO ONE !!!), improve climb, should decrease stall slightly, and probably improve cruise slightly. They incorporate HID's and LED nav/strobes.

Fasteners are military locking fasteners. Flush.

The engine management and fuel systems I didn't understand nor appreciate until Ed took me through what they do.

On engine startup, the VR avionics prevents overheating, assists auto-start, and monitors many parameters. In addition, this system continuously monitors fuel levels and switches tanks automatically to keep the wing tanks within less than 5 gallons of each other. Without this system, you may be in a heavy work-load environment (IFR in busy airspace) and it might not be optimal to be having to switch tanks every 5 minutes. This takes care of all of it. The baggage tank feeds into the belly tank (both are filled from the cool-looking fuel port on the right aft fuselage). The belly tank (and thus baggage tank) are fed into the left wing tank, and there are dual feeds (pumps, lines to header tank) from each of the wings. The aircraft will automatically drain the baggage and belly tank first, with a one-way valve between the belly and left wing. As soon as the left wing drops by about 4 gallons, the VR Avionics unit will transfer to drawing from the right wing. the header tank is fed into the engine via engine-driven pump, but is backed up by a secondary electric pump.

The firewall has a special fire-resistant coating (which, if exposed to fire, causes it to expand and turn into a fire-retardant, extreme heat resistant material which will block heat from the cockpit).

Pressure seals are impeccable. Dukes outflow valve system. In flight, aircraft pressurized as fast as you'd want (controllable rate by dial on dash). We flew at 18k with a cabin altitude of about 6k ft.

Air conditioning is very well thought-out and very well incorporated, with engine-driven compressor. The interior is impeccable and very well thought out. Fire extinguisher and

emergency oxygen tank both housed under custom carbon fiber covers (of course, separately), which are carpeted so they blend with the rest of the carpeting. Seat backs have cavernous pockets (I use these a lot in my Cirrus and it's nice to keep the cockpit clear of any clutter, but have the POH, notepads, ipad, etc in easy reach on the back of the passenger's seat. Dual battery systems, each under it's own carbon fiber cover...carpeted, of course, to blend in. The rudder pedal areas have surrounding, removable carbon inserts to keep everything easily cleanable and all interior panels are removable to easily access any and all systems for any inspection or maintenance which might be needed.

The carbon-fiber panel is very well laid out, Dual bus system, battery backups, redundancy as much as I'd ever want (I like redundancy, but don't need a fourth Air-data computer!). I have personally used the G900x system in my Cirrus (Called "Perspective in the Cirrus") for years and really like it. Personally, I appreciate having hard buttons and dials for many things, and appreciate that I'm going from a Cirrus Perspective system to virtually the same system. Nevertheless the G3x autopilot is a serious upgrade from the Sorcerer, from what I've been told. 16W radio transmitters are great for being heard...long range...and Ed chose the underbelly antenna for standing wave ratio efficiency. I'm a former ham-radio operator and appreciate that the antenna design and efficiency are critical to radio performance, and really appreciate the upgraded radio systems in this aircraft. Placement of the primary antenna below the belly is also preferred (there's also a radio antenna inside the tail, which can transmit and receive well through the fiberglass tail. Also, by the way, there is a large, thin copper sheet integrated into the underside fuselage to provide a very large and efficient antenna ground-plane. Some would note that the Carbon fuselage provides a good-enough ground plane...but, as with all things incorporated in this aircraft "good-enough" just isn't good enough to Ed.

The TCAS system is robust and augments the ADS-B system with integration into the G900x nicely. All traffic data from both systems is automatically integrated and displayed.

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I spent two long days evaluating this aircraft. I look at details very thoroughly. I'm a very detail-oriented person. Not nearly so much as Ed, however. I went through photos of every part of the aircraft and the build for several hours with Ed. I asked questions about every part, component, assembly that I could think of...every step of the build, where each and every component was located, how interior panels were fit together, and how he reinforced many sections beyond what the kit called for. Everything that could be thought of or improved was done. Every seam of every door, panel, access cover, and gear doors was fitted extremely well with the very smallest gaps. Every part of this airframe is meticulously built.

When I was done evaluating this aircraft, I realized it was better built than I had anticipated. I was very glad to be moving into a turbine aircraft of this performance, with this range, which was likely going to require very little maintenance for a very long time.

I jumped at the opportunity to purchase this aircraft. She is a rare, pristinely-built, extraordinarily equipped, turbine with better range than almost any turbine out there. She's basically brand-new. Everything is built so well that maintenance, even long-term, should be minimal. I would be

willing to bet that cost of operation would come close to a piston, long-term...even with the increased fuel burn (Jet A is a bit less expensive than Avgas, also). I looked into engine replacement (10 years, at least...probably 12+ years, since my flight hours decrease at the speeds of this aircraft) and it wasn't too much more than a well-built piston (I think I saw about $80k for a complete replacement with an IRAN engine...which, after ten years of minimal maintenance, is probably about the cost of all the piston maintenance and replacement in my Cirrus). I've run a TSIO-550 TN (The Tornado Alley turbo version) in my Cirrus for many years. I've become very fond of this engine in most respects, and I have learned more about it than probably most. When I did my top overhaul, Western Skyways was extremely impressed with the condition of my cylinder assemblies, considering they had over 1200 hours on them. So I run this engine properly and lean of peak, and it's done well. That said, I have spent well over $25,000 on maintenance over the years. Magnetos being rebuilt, turbos being rebuilt, exhaust manifold replacement, (starter adapter has somehow survived at 1500 hours!...no doubt soon to go), wastegates, etc, etc. If I were to have the TSIO-550 engine rebuilt, I'd likely want Barrett or LyCon to do the build, and I'd likely want ceramic coated, aluminum forged, skirt-treated pistons, cryo-treated rods, crank, cam, case, pistons, valves, springs, etc, and I'd likely want to go to a K engine, instead of the tornado alley system (the higher temps don't seem to be translating to decreased engine longevity). When all is said and done, it's likely I'd spend more on the maintenance and subsequent replacement of a TSIO-550 than I would on a full IRAN'd Walter turbine.

I'm a pilot who ends up flying over mountains at night. I often fly at night elsewhere. I often take-off or land in IMC in the Rockies and elsewhere. This may make some of you say "I wouldn't listen to anything this guy says if he flies over the mountains at night!" I understand. But I know myself as a pilot and know that living in the Rockies, I'm going to do that. It was a big reason I moved to a Cirrus. I was one pilot who knew that the parachute system could well be a life-saver for me. It was worth every penny for the psychological comfort it gave me during so many hours of flying in areas and conditions where an engine failure would not be ok.

I had a hard time with whether or not to incorporate a parachute system into a piston Lancair and finally decided against it. 80-lbs of parachute system is exactly antithetical to why we fly Lancairs. So I had relegated myself to focusing on engine reliability and really taking care of the engine (from build to oil analysis, to proactive inspections) rather than carry an 80-pound system which is near useless under 800 feet AGL anyway. With the turbine, this becomes moot.

When I finally did all the research about C-GSEM, and was realistic about the overall cost of operations of the turbine vs the piston, it became abundantly clear to me that the costs were so similar as to be not consequential. Cost of purchase is higher, for the turbine, for certain, but fuel being the "cheapest thing you put in an airplane" has proven true with my Cirrus....and downtime is not to be sneezed at.

With this aircraft, I knew that the likelihood of spending those days on the phone with A&P's, trying to source parts, trying to negotiate who to rebuild things, how well and for what price, would be significantly lower. I also wouldn't be changing the oil quite as frequently. Every 300 hours for the turbine!! That's a lot of hours saved.

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If you've managed to stay with me this long, I appreciate your patience. I wrote this as I wanted anyone considering a Lancair IV-P to realize the true value of this aircraft.

Ed reports that he "stopped counting at 15,000 hours" in building this amazing creation. He is one of the nicest people you'll ever know. He's an honest and humble man who simply made this aircraft a ten-year labor of love. Although he envisioned flying it himself, around the world, with his wife...he realizes that at this stage in their lives, they simply won't be doing those trips and they don't want this airplane to sit. Ed realizes that seeing her go to someone who can truly appreciate her and fly her often, is far preferable to leaving her in a hangar.

I felt terrible about having to back out of this purchase, not the least of which because Ed was so patient and thorough in going through every part of this aircraft in excruciating detail. I can assure anyone who is lucky enough to be the next one to jump: You will not be disappointed. Once you see this aircraft in person, and really go through the details, it's amazing what you're getting in value.

The value is tremendous.

I write this because I learned so much about this aircraft, and was a guy who wasn't even considering a turbine. If you might be able to acquire this, I hope that you will appreciate it as I have, and can give it a good home. This aircraft deserves to be taken care of and appreciated.