

A Cessna

414

Comes back to Life

By Roger Battistoni

Finding an aircraft to purchase can be a very difficult task; taking an aircraft through the refurbishment process, however, can be a huge, if not impossible, activity for most pilots and aircraft owners. As a professional pilot, more than 10 years ago I went to purchase my first aircraft, only to realize that I knew very little about the process itself. Seeking to find an expert in the industry to help me through the process, I realized that there was little

help, much to my dismay. It was at that moment that I made it my mission in life to create a company that focused on the buyers (MultiCorp Aviation, www.multicorp-aviation.com), helping them through the acquisition process, helping them identify the correct aircraft type, negotiating the deal on their behalf, assisting with sales tax and liability questions, being their expert in the transaction, and, if necessary, providing buyers expert advice during the

refurbishment process. After all, most of us don't do our own taxes or purchase real estate without a professional guiding us; why should dealing with an airplane be any different?

One customer contacted me several years ago, and with the ups and downs of the economy, we finally decided to move forward on a complete refurbishment project. As I have indicated in past articles, I have never owned an aircraft that was not



The Cessna 414 before its makeover.



Stripped and ready for painting.



Fresh, shiny paint.



Installing the overhauled engines.

refurbished. Why? Safety. In most cases during the refurbishment process, we typically find at least three different issues that could have led to massive failures and, in some cases, in-flight fires. After all, even though there is supposed to be FAA oversight in the industry, there are definitely different levels of what is acceptable, and, usually, conditions cannot be found unless some type of refurbishment is accomplished.

After completing a detailed feasibility study whereby we identified the best aircraft for our customer's mission, experience, budget, market analysis, and investment analysis, we moved forward on the purchase of a Cessna 414. We wanted to find an aircraft that was a good refurbishment candidate. My customer wanted to start with a known quantity, and the only way to do that was to overhaul just about everything on the aircraft. In addition to starting with a known quantity, he also wanted the peace of mind knowing that most of the aircraft's major components would be under warranty.

We identified a perfect candidate, a 1976 Cessna 414, with no major damage history, run-out engines, a Keith air conditioning system, a fire detection and extinguishing system (a must), basic avionics, and old paint and interior. We purchased the aircraft for close to wholesale price (an advantage to purchasing an aircraft in this

state) and moved the airplane to where the first step was going to take place.

Overhauling the Engines

During the first phase, the engines and all accessories were removed. The engines were sent out to be overhauled to new limits with all new cylinders. I am not a fan of factory-overhauled engines; after all, if you use a reputable engine overhaul shop, it is overhauling the engine to new limits just like the factory. In addition, I am always

focused on the value of any improvements, and the cost difference between a factory-overhauled engine and one from a typical engine overhaul shop will allow you to overhaul all of your accessories, including alternators and starters, for the same price of just a factory overhaul. Again, my focus is obtaining the biggest bang for the buck for my customers while focusing on safety. We chose not to upgrade the engines to a RAM conversion; again it's because of the perceived value in the overhaul. In this case, we installed American Aviation intercoolers to provide the benefits of intercooling; installed speed brakes (in my opinion, a must on Cessna 414s) and a VG kit; and overhauled the propellers, engines, and all accessories. We did this for substantially less than the cost of the simple RAM conversion. During this stage, we took the time to complete a very extensive annual inspection. It included overhauling the landing gear (a much neglected system for twin-engine Cessna owners) and eddy current inspecting the entire airframe, including the spar, the landing gear, and tail (for the peace of mind that the structure was sound).

New Avionics

While the engines were at the engine overhaul shop, we were also working on the avionics package. The client wanted a full glass cockpit and wanted to replace as many old instruments as possible, but, again, we wanted to stay focused on the investment criteria of the modifications.



A view of the updated panel.



A look at the original interior.

Too many owners go overboard on avionics, and, in my opinion, this has a lot to do with the fact that they are listening to avionics sales professionals rather than trusting someone who is not part of the transaction. We decided to move forward with Aspen PFD 1000 PRO and MFD 1000 systems to replace the standard six-pack. Why did we not decide to go with the G500/600 system? Simple; it was because of cost and redundancy. The Aspen systems have two AHARS systems, one for each screen, and the G500/600 system does not. This is why on a G500/600 system you still must keep the attitude indicator, altimeter, and airspeed indicator. When you go with the Aspen systems, you only need to keep the attitude indicator, and you also have the redundancy; if one of the AHARS systems goes belly up, you still have the other one. Did I mention that the systems are cheaper (installed)? We panel-mounted a Garmin 696 next to the Aspen. Again, for less than \$4,000 dollars (installed), you get another WAAS



Old interior was completely gutted.

GPS, weather, a great moving map, charts, and more. Any normal MFD would cost around \$6,000-\$10,000 just for the unit, not to mention the additional cost of a GDL-69 (around \$6,000 installed) to bring weather into the unit.

One of the largest improvements to aircraft panels in recent years has been the JPI 960 system for twin-engine aircraft. This system allows you to replace all of your current analog engine instruments (oil temperature gauge, tachometer, manifold pressure gauge, etc.); in most cases, because these gauges actually brought fuel and oil lines into the cockpit, the lines can be capped off, thus enhancing safety. It truly brings your aircraft into the 21st cen-



New seats, panels, and trim treatments.

The completely refurbished 414. It's essentially a new airplane.



tury, and my hats off to JPI for developing such a system. However, where there is good, there is also bad, and the installation tech support from JPI during this installation was absolutely horrible, and it caused a one-month delay. In more recent installations, there has been better support. However, for a system that is as complicated as the JPI 960 to install, in my opinion, JPI could still do a better job of supporting installers.

We rounded out the installation with a Garmin 340 audio panel, GTX 327 transponder, and a Ryan TCAS system; my customer flies in the Caribbean a lot and did not want to rely on the ATC system providing traffic information through a Mode S transponder, such as the GTX 330 transponder. The panels were all removed and powder-coated, except for the circuit breaker panels and the lower panels. The cost to disassemble these latter units and have them powder-coated was cost prohibitive (at this price point), so the aircraft paint shop that I recommended to my client masked them and painted them to match at a significantly lower price.

After all of this was completed, I tested the aircraft personally. There are always small things that have to be tweaked, especially during this much work. Having



someone who has had extensive experience with these new systems perform the test flight is a must; it will save a lot of time and money later trying to troubleshoot systems issues.

Pretty Paint and Interior

After the annual, avionics, airframe modifications, engine overhaul, and propeller overhaul, the airplane was off to paint and interior. As part of what we charge our

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customers for our services (a flat fee of \$3,000 for pressurized twins; this includes conducting the feasibility study, identifying the aircraft, negotiating the deal, managing the refurbishment, etc.), we also have an interior designer on staff to assist our clients with scheme selection and color selection, both outside and inside. In this case, we had a custom scheme designed. Most aircraft owners do not realize that it is important that both the interior colors and exterior colors work together to create a complete package.

During the paint process, all of the panels and control surfaces were removed, and the aircraft was stripped. This is where surprises can be discovered, and, indeed, with this aircraft, there was one. In this case, it was the amount of small dents that were found; they weren't hail damage dents, just small dents from wear and tear throughout the years. This damage was corrected during the paint process. No corrosion was discovered, and repairs were made to the fiberglass, etc. Also, all of the seals on the aircraft were replaced. If you are looking at getting your aircraft painted, make sure the paint shop has a climate-controlled paint booth. I cannot stress enough the importance of applying paint at the correct temperature and the correct humidity. In fact, if you look at any aircraft paint can, you will read that there is a very narrow band of temperature and humidity at which the paint should be applied. The difference is simply amazing.

The interior was completely stripped down, and everything was recovered; all new foam was molded to the seats. The selection of materials is extremely important, and we have moved more toward using materials that are found in commercial applications (such as high-end hotels) then getting them treated to comply with FAA regulations. The benefits for our customer are lower price and much higher durability.

In the end, the windows were polished to remove a lot of the smaller scratches, the paint was sealed (after 30 days of paint curing), and the airplane was delivered to our customer. He has spent less than \$400,000 on an aircraft that, for all accounts, is a new aircraft; it has warranties on the avionics, accessories, engines, interior, and paint. The airplane is, in essence, a new aircraft at a substantially lower cost than the price of a new aircraft.^{CO}



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