

AEROCOMP A YEAR LATER

“New building techniques, overhauled turbines and new Super Floats”

CustomPlanes™



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Text by Norm Goyer, Photos by Bill Fedorko and Norm Goyer

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WHEN I FIRST brought you the story of Aerocomp and its exciting line of turbine-powered aircraft in the January 2000 issue, I felt like we were seeing the beginning of a new type of aircraft for fast personal and business travel. At that time I had flown the Comp Air 7, the Comp Air 8 on Super Floats and the huge twin-tail Comp Air 10. I liked all of these airplanes, so I wasn't prepared for the firestorm the article ignited in some parts of the imported turbine-engine community. I won't rehash these problems, because they've been taken care of, and the next generation of Walter 601-type turbines has been installed in almost every company- or customer-built Aerocomp aircraft.

I recently flew to Florida once again to see what was happening firsthand and to fly two of the aircraft I'd missed the first time around. I made a second trip to personally check out the Diemech shop where John Cook is reworking the Walter engine in a sort of IRAN (inspect and repair/replace as needed) situation.

At AirVenture 2000, we saw a Comp Air 7 with a bright red finish, gray leather upholstery and one of Cook's engines. Fitted with a five-blade Avia Hamilton prop, this aircraft was a macho-looking flying machine that attracted the attention of the crowds all week long. It certainly attracted our attention too, so we arranged to fly the aircraft after it returned to its home base in Florida. The people at Aerocomp

told us the overhauled engine was now capable of  ship and that we really needed to fly it to see the improvements for ourselves.

Aerocomp has been experiencing booming sales that show no sign of peaking in the near future. Some of the reasons for its success include the foresight and marketing strategy of the company's owners. They've designed an extensive line of turbine propjet aircraft, one or more of which is sure to suit the needs and tastes of a variety of pilots and business people. The company owners did their homework because they came up with exactly the kinds of aircraft customers want to buy, not just the kind the company wanted to build. Also, though it may not necessarily be a major factor, Aerocomp chose a superb location: Merritt Island, Florida. The right products, at the right time, at a great location – it sure works for Aerocomp.

The “sizzle” in the Aerocomp aircraft was their unique engine/prop combination. When the aircraft first appeared several years ago, they used a Walter 601B engine. (Aerocomp no longer installs this dash-number engine.) Walter engines have been installed by some Eastern Bloc countries in their LET 410 19-passenger commuter airlines. Then, after they'd run beyond the recommended flight time, the engines were either overhauled (if warranted) or discarded. It should be noted that part of the aforementioned controversy came about when some folks discovered that Walter engines have a TBO of only 1500 hours, but that number of hours flown by those European commuters weren't flown at the same high altitudes as U.S. airlines.

Engine importers were happy to find they were able to obtain quite a number of Walter engines and all their accessories – as well as the props that went with the engines – at attractive prices. Because of their various origins, the first group of Walter engines sold with early Aerocomp aircraft had little (if any) accompanying paperwork, but before they were ever put into service, they were given a great deal of attention. First, they were removed from their shipping cans, checked carefully, then installed on a test stand, where they were run for a long period of time. If the gauges remained in the correct operating range during the extensive bench test runs, they were installed in aircraft sold to customers.

By their very nature, turbine engines can run in spite of many internal defects due to age, or any number of other factors, without showing any outward signs of internal problems. (But when one or more parts fail under running conditions, they can also blow apart in a spectacular fashion.) In the interest of safety, the engines that were sold were restricted in regard to power output, and this added to their margin of safety. That was then. Now, in 2001, it's a completely new Aerocomp/Walter association.

As mentioned earlier, Aerocomp is having a most successful sales experience. It was evident that we were seeing growing numbers of this powerful aircraft. It didn't have the sleek lines of a Lancair or the mystique of the Thunder Mustang, but it was definitely a unique-looking plane. The first time I saw this aircraft, I found it impossible to walk by and not stop to look, because it was so different from most of the run-of-

the-mill experimental aircraft we'd seen.

This aircraft appeals to pilots looking for slam-dunk power that drives them back into their seats on takeoff-power with climb attitudes that rival those of an F-16 and give them the feeling they have finally joined the jet age. But they also want affordable turbine power, and the Comp Air 7 Turbine certainly has that too!

The ultimate test is the reaction from pilots who've experienced a demonstration flight in Aerocomp's Comp Air 7 Turbine. Those who are financially capable are ready to buy when returning from the flight! If you've ever flown a Cessna 206 or a Centurion, which are great aircraft, you'll be amazed at the feel and outstanding performance of the Comp Air 7 Turbine.

And as soon as you learn of Aerocomp's excellent affiliated building programs, conducted under the auspices of Sky Build, Inc., (Skybuild is an independently owned and operated facility with Steve Darrow as company president) you'll want to close the deal immediately. Sky Build is located at the Merritt Island Airport in a complex of several large industrial buildings. (The corporate offices of Aerocomp are also located in this facility.)

In Skybuild's building program, each owner/builder works with company technicians using company jigs, fixtures and tools. This ensures that every high-performance Aerocomp aircraft is built correctly. As one segment of the aircraft is completed by the owner/builder, it's moved to another room, where the next section is completed. This isn't a long-term process, and in this way, the builder/owner meets the FAA's "51 percent rule", allowing him to be listed as the manufacturer and to work on the aircraft in the future.

Aerocomp has been in business since 1993, when the

company purchased the rights to the Merlin, a two-place, tube-and-fabric aircraft. In the beginning, Aerocomp consisted of two employees: President Steve Young and Vice President Ron Lueck, an experienced kit builder. Due to expanded kit sales, the company now has more than 20 employees.

When you build a high-performance aircraft like the Comp Air 7 Turbine, it's a good idea to train new owner/pilots in all aspects of flying their new aircraft. Aerocomp organized ground and flight training for new owners of turbine-powered aircraft. Al Pike is in charge of the training program (for pilots without turbine experience), which provides at least seven hours of classroom instruction and a minimum of 11 hours of flight training. To qualify for this training, a pilot must have a current medical, a current flight review and at least 500 hours of total time, including at least 100 hours in complex, high-performance aircraft.

Aerocomp company pilots test-fly newly finished Comp Air Turbines for their owners. This is to make sure aviation insurance companies will be willing to provide coverage for the owner/operator of this particular type of aircraft-without any trouble. Once you've graduated from Aerocomp's flight and ground school course in turbine operations, this experience will go a long way toward convincing your underwriter that you comprehend the complexities of a turboprop engine and turbo-powered aircraft and that you can fly it safely. Without this training, you may be denied coverage, but with it, you'll undoubtedly qualify for it. In fact, your rates may even be lower than average.

I recently paid a second visit to Aerocomp after being promised a flight in the red Comp Air 7 Turbine with its overhauled, more powerful Walter 601D engine fitted

with a five-blade prop. It was the very aircraft I'd seen at AirVenture. The folks at Aerocomp told me the plane was due back in Florida soon for additional radio installations. Finally, we received a call telling us that the plane, normally based in Modesto, California, was back in Merritt Island.

Be aware that when it comes to starting a turbine engine, there are some different rules that must be strictly followed. First, be sure to turn the plane into the wind (if there's any of a significant velocity) to prevent the wind from blowing up into the plane's huge exhaust stack. Next, to prevent any possible damage from the prop blast and turbine heat, make a careful visual check to be sure there's no structure or another aircraft behind you.

Start by checking the position of the fuel tank valve. Move the indicator to both (or to the correct tank). Double-check that the fuel tanks are full. This is extremely important, because turbine engines use up fuel at a high rate. Before you start the engine, apply the parking brake and stand on the brakes, because when those huge props start rotating, you can really feel the power, and you don't want the plane to roll out until you're ready to go. To prevent surges, be sure all power switches and nav aids are off and the circuit breakers are in. Check all the controls to be sure they're free and not binding, because this is your last chance to ensure there'll be full movement of all the control surfaces.

Takeoff is the same as with any high-performance taildragger, but with just a few more checks to make before you start the takeoff roll. Place the flaps down 10 to 15 degrees, recheck the fuel quantity and valve position, and make sure the fuel boost pump is on. Then, as with any aircraft with a constant-speed prop, cycle the prop once or twice with the power lever in the idle position. Check one more time

to make sure the power lever is in the run position.

Set the power to 30 percent and slowly move the prop lever to the aft position so you can check that the rpm are decreasing gradually. Now move the prop lever to the full-forward high-rpm position. We were eager to see how this second-generation Comp Air 7 Turbine aircraft would perform with its newly IRAN'd Walter 601D engine and overhauled Avia Hamilton prop.

I wanted to see how this Millennium engine, sporting about 725 shp, would compare to that of the original 600-hp engine. When all systems were go, the pilot brought the power up to 30 percent torque and released the brakes. Then, as the plane started to roll, he increased the power lever for smooth and continuous acceleration. When the engine was up to full takeoff power, he checked the engine temperatures and made sure the torque limits weren't exceeded. By the time he'd done that (maybe four seconds), the plane was already off the ground. We used about 100 feet – maybe less – for our takeoff roll.

We maintained best rate of climb (V_y), which was 110 mph with the two people aboard that day. Now came the fun of flying in a superpowered aircraft. Maintaining a 4000-fpm climb, we were already about 1000 feet above pattern altitude—even before we'd reached the end of the runway! Once the climb rate was established, the pilot reduced the prop lever to anywhere from 1900 to 1950 rpm for cruise climb, and then he checked the pattern again for traffic. With so much power, he knew we'd be joining the traffic within seconds.

Because the Comp Air 7 Turbine was so much more powerful than the 182 camera plane with Editorial Director Bill Fedorko aboard, pilot John Cook (Cook's Diemech firm had overhauled the engine in this plane) had to throttle

way back to stay in formation with it, but because both planes had a wide range of comfortable, tight-formation airspeeds, that wasn't a problem. When Fedorko finished the photo mission, he signaled, then headed back to the barn.

Now it was MY turn to fly and see what this new, improved turbine aircraft could really do. I'd made a note of the recommended power settings for various cruise conditions so I could see how close the book figures were to reality (which in homebuilts sometimes differs significantly). Because our plane had a five-blade prop, I held the rpm between 1700 to 1850. I then reduced the torque and made sure the ITT didn't exceed 690 degrees. Once I had the right power setup, I could increase the tension on the knobs on the power quadrant to prevent creeping.

In medium cruise I checked out the controls by doing steep 360-degree turns in one direction, then in the other. These maneuvers are quite a test of the airplane's controls, because you have to use all the controls to keep the altitude steady, and the ailerons and rudder are used to maintain a well-coordinated bank without skidding or slipping. I had to use some rudder, but it wasn't a problem. In spite of the fact that there was such a huge engine in a relatively small plane, the aircraft handled beautifully.

The first thing I noticed, in addition to the increased performance, was the quietness and lack of any perceivable vibration (compared to those qualities in the Comp Air 7 Turbine I flew last year). The cabin had been completely upholstered, and it had a smooth-running engine and a newly balanced five-blade prop. These factors made for an enjoyable and quiet ride. This was an entirely different experience from a reciprocating-engine airplane.

Next, at 5000 feet I reduced power and tried my hand at slow-

flying to see if it would stall. I held the stick back until my arms finally got tired, then I decided the big bird just wasn't going to stall without a lot more work. I noticed we were bouncing along at about 45 mph, and the plane was still flying. I had to use a great deal of rudder to hold the wings level, because the ailerons had given up several miles per hour before.

It finally made a half-baked effort to stall, but as soon as I relaxed the controls, it quickly recovered from the near-stall. The inherent stability is a result of that great wing and excellent airfoil and an airframe that's also very clean. While I'd been slow-cruising along, I'd made some 360-degree turns in a semistall condition and still had no problem holding it. (Somebody would have to be a real klutz on the controls to accidentally stall this airplane.)

Now it was time to see how fast we could go. I was able to get it up to a true airspeed of about 235 mph at 5500 feet. The manual states it will easily deliver 275 mph TAS at 21,000 feet. The Comp Air 7 will carry loads up to 1670 pounds for a gross weight of 3770 pounds. The plane flew much like a Cessna 206 but without the heavy fore and aft pressures. Of course, these can be trimmed out, but the Comp Air 7 had an entirely different feel to it.

It was time to head back to the airport. As we entered the pattern, I reduced power and put the prop lever full forward. I then reduced the power lever to achieve the correct rate of descent, but I didn't reduce it below the idle stop position. I checked the beta light to make sure it was off. (Funny things happen when the prop starts pushing instead of pulling.)

The manual says the pilot shouldn't let the speed drop below 80 mph IAS during the approach. I pulled about 15 degrees on downwind, then used full flaps when I turned final. I didn't want to have to change the tires, so I made

sure the parking brake was off and my feet were off the brakes.


The manual said wheel landings weren't recommended, unless we wanted to redesign the prop tips, so I set up for a three-pointer (which is the way I've always landed taildraggers anyway). This plane did have a five-blade prop with a smaller diameter than the three-blade one, but the prop still comes awfully close to the ground. As the plane got closer to the runway, I pulled up the nose just a tad. Then, when we were about 3 feet off, I gradually applied full-aft stick, and the plane squatted and stayed down. I then flipped up the lockout on the beta prop and made the next turnoff.

Flying the Comp Air 7 Turbine was practically a no-brainer. It's an easy plane to fly, and you've got to admire its top-notch performance.

END

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Comp Air 7		For More Information
PRICE		Aerocomp, Inc. Dept. CP 2335 Newfound Harbor Dr. Merritt Island, FL 32952 321/453-6641 www.aerocompinc.com info@aerocompinc.com
Airframe kit	 995	
SPECIFICATIONS		Diemech Turbines, Inc. Dept. CP 1200 Flightline, Ste. 3 Deland, FL 32724 904/736-4169 www.diemechturbines.com johncook@fbs.net
Wingspan	35 ft.	
Wing area	178 sq. ft.	
Length	29.5 ft.	
Height	8 ft.	
Seats	7	
Weights and Loading		
Gross weight	3770 lb.	
Empty weight	2100 lb.	
Useful load	1670 lb.	
Engine		
660-shp Walter M601D		
PERFORMANCE		
Cruise at 21,000 ft.	275 mph TAS	
Never-exceed speed	258 mph	
Stall speed, flaps down	50 mph	



The long nose was necessary due to the length of the Walter engine and the need to place the lightweight power unit farther forward for aircraft balance.



ABOVE LEFT: The instrument panel is large, allowing room for a wide range of avionics and instruments. The plane is flown with control sticks rather than control columns. ABOVE RIGHT: Turboprop engine controls are slightly different than those for reciprocating engines, but they're easy to learn.



Both the Walter 601 D engine and the Avia prop were overhauled by John Cook's Diemach Turbine shop in Deland, Florida.



Comfortable, adjustable seats make long cross-country trips pleasurable.



The rugged, forgiving landing gear on this Comp Air 7 Turbine was manufactured by Hammerhead Aviation in El Cajon, California.



This Comp Air 7 Turbine has an Avia Hamilton five-blade prop swung by a 725-shp Walter 601 D water-injected engine. The aircraft has outstanding short-field performance and is easy to fly. It's available with tricycle gear.