



Dream machine

The go-anywhere, do-anything AirCam

BY IAN J. TWOMBLY

The first takeoff is always a little unnerving. It's not just that you're sitting in a flying canoe, or that you're climbing as fast as a business jet. It's that the wind, the view, the sounds, and the feel are so completely different. But after the power comes back to the cruise setting of

around 4,000 rpm, things quiet down, and it sinks in—this is going to be like no other airplane you've ever flown.

There have been ultralights, open-cockpit biplanes, and multiengine cruisers before it, but nothing is quite like the AirCam. When kids dream

PHOTOGRAPHY BY CHRIS ROSE



eye view, the view in their minds is from the AirCam. With twin-engine reliability; a sturdy design; a large, stable wing; and virtually no fuselage to block your view, the AirCam is unmatched in fun—which makes it all the more interesting that the airplane was originally designed as a purpose-built workhorse.

Air Congo

At its heart, the AirCam is a fat ultralight. Phil Lockwood, the airplane's designer, came up with the idea after operating in the ultralight community, specifically the popular Drifter model. In the 1980s he went to Namibia to do some bush flying for a film crew creating a documentary. The Drifter proved to be a good camera

platform, but flying low over harsh terrain didn't sit well with Lockwood.

Later, a crew from the National Geographic Society approached Lockwood with the idea of flying over the rainforest of the Congo for some aerial photography work. The Wildlife Conservation Society was doing research in the Ndoki rainforest, one of the largest in the world. The National Geographic Society sent Nick Nichols, a well-known wildlife photographer, to shoot the photos. But he told Lockwood he wanted to do it all at low altitude.

"They wanted to fly over unlandable terrain all the time," Lockwood said. "Over the rainforest with no chance of rescue, it wasn't a deal I was interested

Most AirCam panels are sparse, although a few feature electronic displays. The back seat of 119CK has only the basics, starting with tachometers on the left, followed by the airspeed indicator, vertical speed indicator, altimeter, and compass. The front seat is only slightly more advanced with its Garmin 496 and engine and fuel gauges.

in." Probably taking a chance, Lockwood told them about a twin-engine design he had been thinking about, mainly for his own enjoyment. But the society was interested, and they commissioned the prototype. AirCam number one was born. "It went together and it worked really well," he said. So they crated it and shipped it to Africa.

The airplane is primarily flown from the front; so far in front of the wing you forget it's even there. Two reliable Rotax 912 engines make this sort of low and slow overwater flying safe.

While there, they based out of the Conservation Society's camp at Bomassa. Lockwood knew he was going to have a short runway to deal with, so he made the airplane capable of taking off and landing in very short distances. It turns out they flew off a 600-foot soccer field in the village. Every day was like clockwork. Since the best light for photos is in the early morning and late afternoon, Lockwood and Nichols took off at 6 a.m. and 6 p.m. and flew for two hours each mission. (Because the Congo straddles the Equator, there is generally 12 hours of sun every day of the year.) "We would fly 20 feet off the treetops," Lockwood said. "Many of the places we flew over,



SPECSHEET

AirCam

Kit base price: \$98,385

Specifications

Powerplants....Two Rotax 912ULS, 100-hp ea
 Recommended TBO 1,500 hr
 Propellers.....Two Warp Drive 3-blade
 Length..... 27 ft
 Height.....8 ft 4 in
 Wingspan 36 ft
 Wing area..... 204 sq ft
 Wing loading 8.2 lb/sq ft
 Power loading 8.4 lb/hp
 Seats2
 Cabin length..... 12 ft
 Cabin width2 ft 1 in
 Cabin height Unlimited
 Empty weight1,040 lb
 Empty weight, as tested1,095 lb
 Max gross weight1,680 lb
 Useful load640 lb
 Useful load, as tested.....585 lb
 Payload w/full fuel.....512 lb
 Payload w/full fuel, as tested..... 417 lb
 Fuel capacity, std 28 gal (28 gal usable)
 128 lb (128 lb usable)
 Oil capacity, ea engine..... 3 qt
 Baggage capacity custom

Performance

Takeoff distance, ground roll 200 ft
 Max demonstrated crosswind component ..
 13 kt
 Rate of climb, sea level... 1,500-2,000 fpm
 Single-engine ROC, sea level.....300 fpm
 Max level speed, sea level 100 mph

Cruise speed/endurance w/45-min rsv, std
 fuel (fuel consumption, ea engine)
 @ 45% power, best economy
 70 mph/4.5 hr
 (18 pph/3 gph)

Single-engine service ceiling.....8,000 ft
 Landing distance, ground roll300 ft

Limiting and Recommended Airspeeds

V_{MC} (min control w/one engine inoperative) 37 KIAS
 V_X (best angle of climb) 43 KIAS
 V_Y (best rate of climb)..... 48 KIAS
 V_{XSE} (best single-engine angle of climb)
 48 KIAS
 V_{YSE} (best single-engine rate of climb
 48 KIAS
 V_A (design maneuvering) 67 KIAS
 V_{FE} (max flap extended) 61 KIAS
 V_{NE} (never exceed) 96 KIAS
 V_R (rotation) 35 KIAS
 V_{SO} (stall, in landing configuration)
 34 KIAS

For more information, contact Lockwood
 Aircraft Corp., 1 Lockwood Lane, Sebring,
 Florida 33870, 863-65-4242.

All specifications are based on manufac-
 turer's calculations. All performance figures
 are based on standard day, standard atmo-
 sphere, sea level, gross weight conditions
 unless otherwise noted.

humans had probably never seen." Although they stayed mostly above the trees, Lockwood said they sometimes dropped into some of the forest's natural clearings. "They were around 300 feet wide and we could circle inside."

There's no question the conditions were difficult on the airplane. Between the heat, constant flying, and human-devouring ants, it's a testament to the design and the Rotax engines that the airplane was able to withstand its time in Africa. And, of course, the runway wasn't exactly paved. Before Lockwood arrived, some workers in the camp asked him how smooth the strip had to be. He said, "as long as you can drive the [Toyota] Land Cruiser down it at 40 miles per hour and not get thrown out, it will work."

The results of Lockwood and Nichols' work appeared as a feature article in *National Geographic* magazine. Nichols thinks so highly of the AirCam as an aerial photo platform that he and Lockwood have done other missions since, including one recently over the redwood forests in California.

The airplane's view and versatility make it an excellent machine for observing wildlife. A crew in Namibia is doing that with its AirCam, as is a group conducting whale research off the Florida coast. Versatility is what drew one owner in New York to the airplane; he flies it off small ponds in the Adirondack Mountains, taking water samples to study the effects of acid rain on the area's fragile ecosystem.

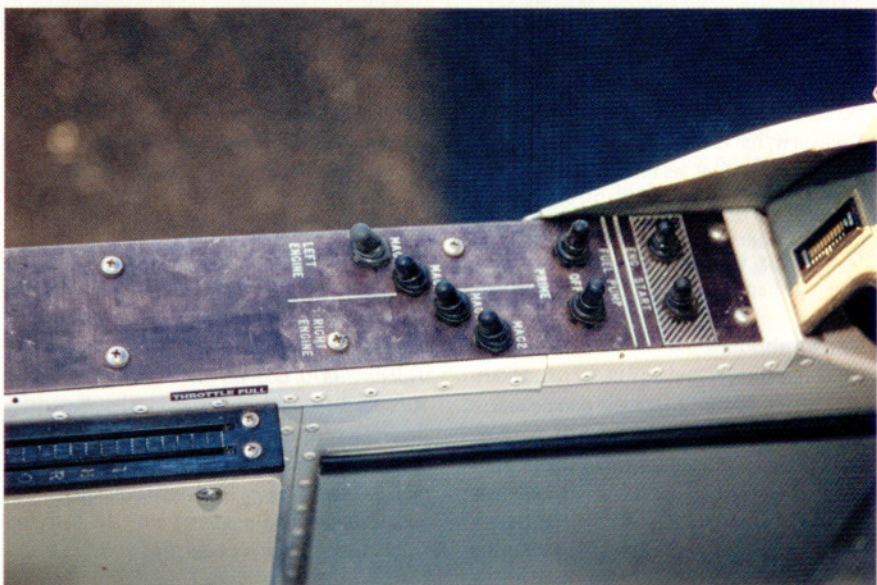
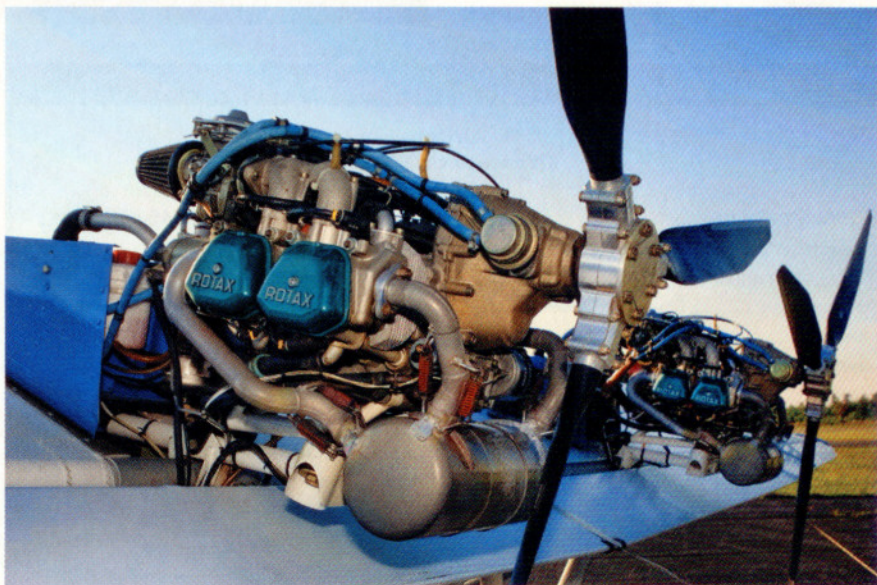
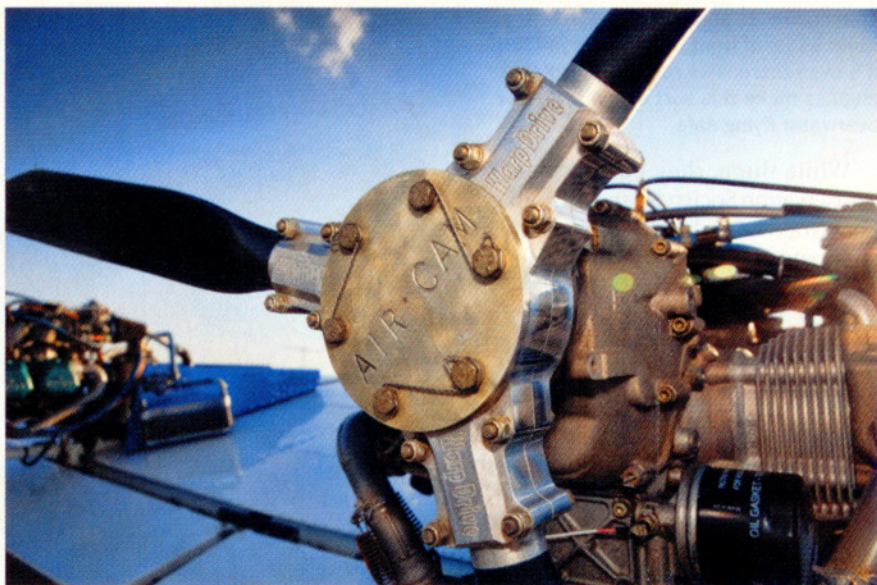
To the market

When he initially designed the airplane, Lockwood never had any commercial aspirations. Aside from the environmental mission, he had planned to just fly it for himself. But after taking the prototype to Sun 'n Fun, he said the interest was so high that he decided to design a kit. More than 22,000 hours of engineering and 150 kits later, the AirCam is a dream machine to those pilots who want nothing more than a fantastic view, a fun ride, and a connection to what brought them to aviation in the first place.

We evaluated the airplane on a number of occasions, mostly with builders Claudius Klimt and Carlo Cilliers in Maryland, but also with Lockwood at his factory in Sebring, Florida. Klimt is a seasoned pilot who has longed for low and slow, while Cilliers is an all-around airplane fanatic who has worked on everything from South African military helicopters to thrust reversers on Lockheed C-5s. The two met when Cilliers went to the emergency room with a cut on his hand. Klimt, probably the friendliest emergency room doctor you'll ever meet, stitched it up. It turns out Cilliers received the cut from a kit he was building, and Klimt started telling him his woes of trying to put together the AirCam. They became fast friends and ended up finishing the airplane together. Klimt said Cilliers wouldn't take compensation for his thousands of hours of work and expertise, so he made him a partner in the airplane.

The two built what has to be one of the nicest AirCams flying. Their attention to detail is apparent in the custom work on the steps, the propeller hub, the baggage tiedowns, and more. Instead of using the factory-recommended pop rivets, Cilliers insisted they use buck rivets. Between Lockwood's design and Klimt and Cilliers' execution, it is a very sturdy airplane. And although it's fun to see and hear about what Klimt and Cilliers put into the airplane, and about their work to earn the airworthiness certificate from the FAA, it doesn't mean anything until you hop into the cockpit and launch yourself into the air.

Cilliers' handiwork can be seen in numerous places, including the engraved propeller hubs (top). Lockwood worked hard to make the Rotax exhaust as quiet as possible (middle). The left side panel is the AirCam's most complicated with magnetos, fuel pumps, and ignition (bottom). The box with the black top on the left is the throttles.



Wow

The AirCam looks its worst on the ground. The fuselage juts out like a long arrow, and the massive vertical tail draws too much of your attention to the empennage—which is essentially sitting on the ground. That has the effect of raising the seats well up into the air, making it look like you need a trampoline to mount the thing. But once you get settled in, which is actually easier than it would seem, the high seating position is welcome.

Most builders make the panel sparse, which is understandable. We're flying visually here, not doing approaches to minimums. The one unusual addition to this panel is a lift reserve indicator that Klimt uses often for landing. It's an instrument that, according to its maker, combines angle of attack and airspeed. Other than that, the fanciest thing is a Garmin 496 that serves as navigation and weather provider. Anything more would just take away from the view.

Before the first flight with Klimt, he explained the engine operation, talked about what the experience would be like, and generally just chatted about his pride and joy during the ground briefing. But no amount of chatter would have

prepared me for the moment the AirCam's wheels broke free of the pavement and we rocketed skyward. Like some other light tailwheels, it was airborne by the time Klimt applied full power, in maybe 200 feet. But then we must have

Cruising at low
altitude in the AirCam
is like nothing
I have ever done
in aviation.



momentarily morphed into a helicopter because it looked more like the ground was falling away than we were climbing above it. On a day with virtually no wind, we were at pattern altitude well before the end of the 3,600-foot runway. It

was an incredible sight and completely unexpected.

Short takeoffs and steep climbs are the norm for the airplane. Cilliers and Klimt were on their way to EAA AirVenture when they stopped in Pennsylvania for fuel. On departure, the pair asked for an intersection takeoff, and Cilliers said you could tell the controller was apprehensive about approving their request. After takeoff the controller was so impressed with the AirCam's performance he keyed the radio and said, "Heck, you could have taken off from the ramp."

After takeoff we kept climbing, eventually up to about 3,000 feet. The flight was enjoyable, but I felt uncomfortable. Something was definitely amiss. Klimt said, "We can stay this high if you want to, or you can check it out lower." I took the hint and descended to about 500 feet. And it clicked. With nothing around me but a low hull and a small motorcycle windshield in the front, cruising at low altitude in the AirCam is like nothing I have ever done in aviation. The AirCam is so basic, so elemental, that it makes a Piper Archer seem like an Airbus. You can feel the prevailing wind as it pushes you to the side, and the different pockets of temperature you can feel as you fly

Although not exactly a pretty airplane on the ground, looks don't matter when you're having this much fun.



over farmland, parking lots, and houses is reminiscent of a motorcycle ride on a late afternoon. And from this low altitude you can smell freshly cut grass, pig farms, and more.

Despite its appearance, the AirCam isn't noisy or uncomfortable in the cockpit. Takeoff power can be loud, and the back-seat passenger gets dirty air coming off the front seater. But other than that, the seats are comfortable, you're protected from the pounding wind, and talking on the intercom and moving around are quite normal. Controlling the airplane takes some getting used to.

Since the wing is essentially that of an ultralight, it's very lightly loaded. So while the airplane is extremely maneuverable, it takes a little bit of muscle to throw it around. Initially I didn't want to try steeper banks because at times it feels as if it has neutral or even negative lateral stability. But after flying with Lockwood, who did steep turns and stayed overhead a small backyard the entire time, I could see that it was a comfort level, not an airplane issue.

The airplane has a few other features that make it unusual. Although it has an abundance of power, and thus feels safe

at any place or any altitude, if that power is cut completely, you are coming down fast. It's a drag queen to the highest order, which under normal operations only becomes an issue when landing. Klimt keeps in a little bit of power until almost touchdown because otherwise the speed drops very quickly, and so will the airplane.

Stalls are normal, and slow flight is eye opening. That's no surprise given Lockwood's requirements for the airplane. Flying slow, say around 50 miles per hour, and making steeply banked turns allows the airplane to make heading changes in an incredibly short radius. Single-engine work is also impressive. Because Lockwood needed an airplane that could cruise forever on one engine, losing one of the two is hardly a worry. To prove the point, Lockwood took off on one engine. On floats.

Landings are a piece of cake once you understand the approach has to be with power. Set up correctly and sticking a wheel landing or a three-point will be no problem for anyone with tailwheel experience. The only other thing to remember is that you'll be able to land and stop in 250 feet, so it could make for some very long taxis if you don't plan ahead. Really, the hardest part of landing is not staring out the side of the fuselage to watch the ground fly past you as you get closer and closer.

Despite its purpose-driven design and incredible performance, the only thought as you walk away after a flight is that the AirCam is fun. Not the kind of fun you have watching a baseball game. It's more like when you were 10 and went to Disney World. It's pure joy and a feeling that you've done something special. And the fact that Klimt and Cilliers built an AirCam just makes it that much better. Because the two estimate that in 970 hours of flying, they've given rides to more than 200 people, from 80-year-old grandmothers to young kids. "I just love sharing it," Klimt said. That's lucky for GA because if your first exposure to aviation is through an AirCam, you'll go to bed at night and dream about flying and its magic carpets.

AOPA

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🎥 Fly along with Associate Editor Ian J. Twombly as he tours Maryland's Eastern Shore in the AirCam in this online video. www.aopa.org/pilot (keyword: AirCam flight)

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