

The big chill

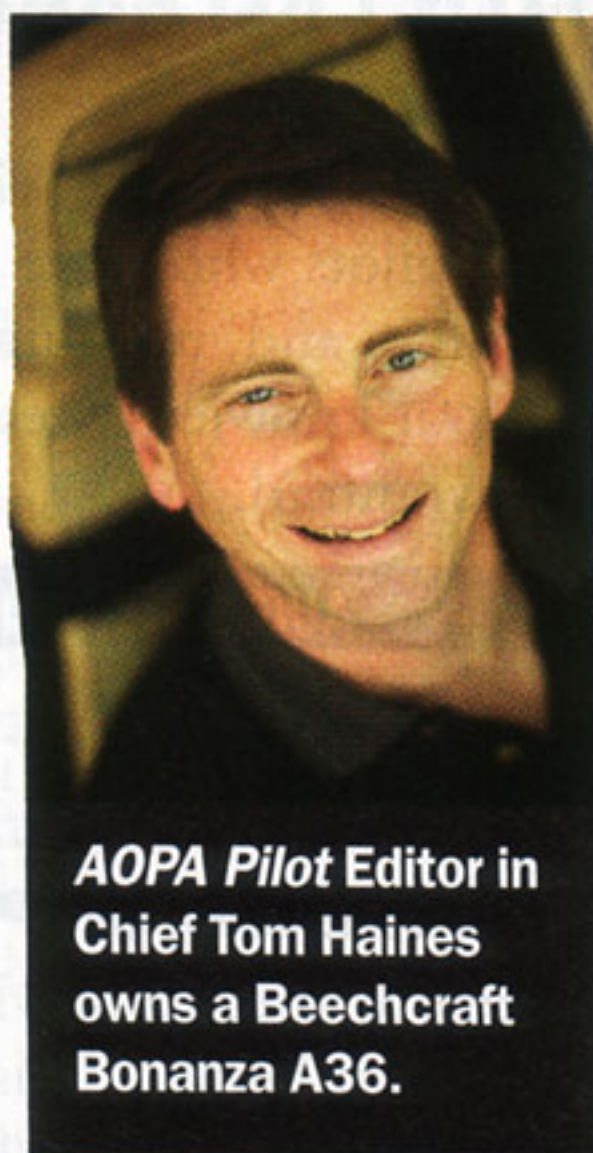
Five hundred dollars versus \$15,000. Forty pounds versus 65 pounds. Based on those few stats the ArcticAir portable

air conditioning system seemed like a no-brainer winner over heavy, expensive installed systems. But would it work?

As you might imagine, as the world's largest aviation magazine, *AOPA Pilot* gets dozens of products to review every month. Most of these products come and go through the office without attracting much attention, but the red ArcticAir from Sporty's Pilot Shop drew a crowd. I had seen the reaction before at recent airshows where ArcticAir President Greg Turton had been demonstrating the system. Where better to show off the cooling effect of an air conditioner than at a steamy airshow among a bunch of sweaty pilots, some of whom hadn't showered in several days? I don't take the time to try out many new products, but this one intrigued me.

I had heard Turton's shtick at the airshows and felt the cool breeze from the ice-chest-turned-air-conditioner among the sticky pilots. But would it work in my airplane?

I have some experience with air conditioners in light airplanes—



AOPA Pilot Editor in Chief Tom Haines owns a Beechcraft Bonanza A36.

most of it not good, but also mostly from 1980's vintage systems. When they work, they work great. But they seemed to be maintenance pigs.

My first experience was with a then-new Piper Warrior in 1989. This little airplane was fully decked out with the avionics of the day and an autopilot—a real novelty in a trainer prior to Cessna's re-entry into the piston market in the mid-1990s. Among the curiosities aboard the Warrior was an air-conditioning system—the only one I've ever seen in a PA-28. The problem was that in order to accommodate the engine-driven air conditioner, the alternator belt was about half the normal size. As a result, the alternator belt broke regularly. To replace it, you had to remove the propeller—not a simple task.

AOPA's well-equipped 1984 Beechcraft Bonanza A36 also has an air-conditioning system, but it is so maintenance intensive that we've finally stopped repairing it and just lug around the 65 pounds of dead weight on every flight.

I'm told that modern systems are more reliable, but they come with a price tag of between \$12,000 and \$15,000 and weight penalties of 54 to 65 pounds—weight you have to carry around even on cold winter days when you would gladly trade the air conditioner for a coal furnace.

The cold facts

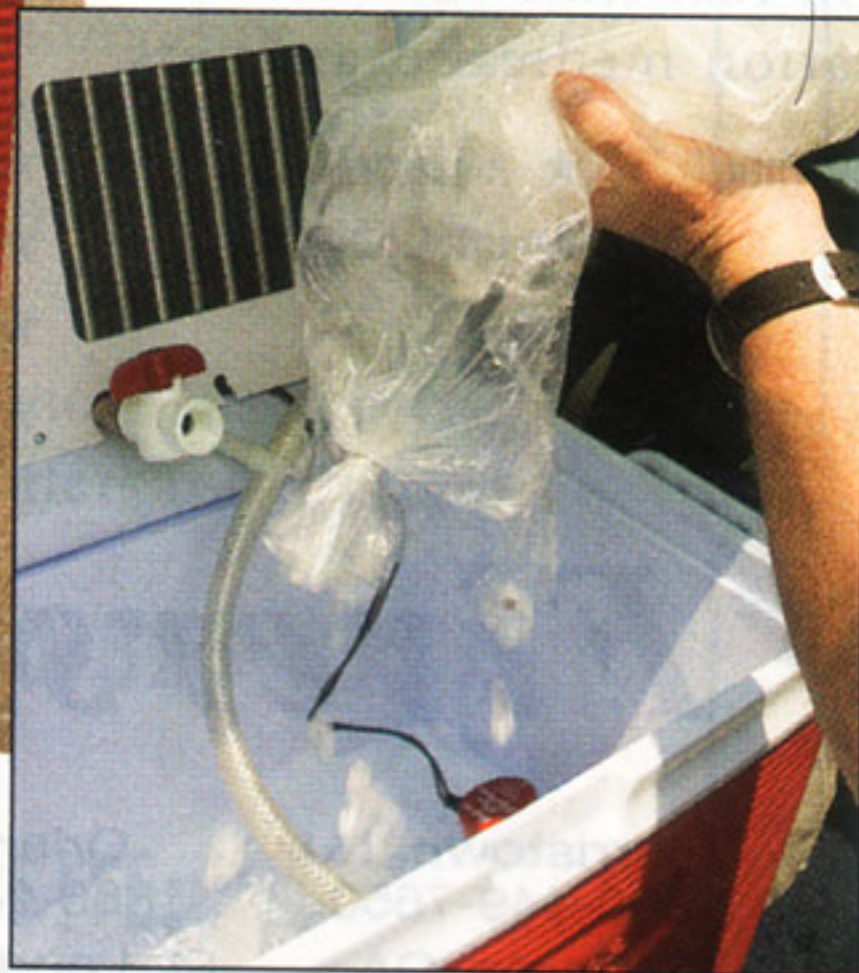
To test the ArcticAir, I waited for a sultry June day and then pulled my airplane from its relatively cool hangar onto the ramp. I left it to sit in the sun until the inside reached the Death-Valley-esque temperature of 115 degrees Fahrenheit. As Turton instructed, I opened the doors to allow the worst of the heat to escape while I loaded the ArcticAir system. The "system" is a run-of-the-mill ice chest with two holes cut in the lid. One hole accommodates a closeable air vent. The second makes way for a fan unit and some plumbing. Larger units have dual fans to which you can attach curved ducts to send the cool air to the far reaches of the cabin.

I poured a gallon of water into the cooler—enough to submerge the small pump dangling to the bottom of the ice chest. I then poured in 16 pounds of ice, raising the weight from 14 pounds empty to 39 pounds. I closed the lid, opened the vent, and plugged the power cord into the cigarette lighter. With the ship's master switch on, I flipped the two switches on the power cord—one marked Pump and the other Fan. Cool air instantly poured out of the fan opening. By then the temperature in the cabin had dropped on its own to a sweltering 106 degrees. Following Turton's instructions, I closed the aircraft doors and let it run while I did my usual preflight inspection.

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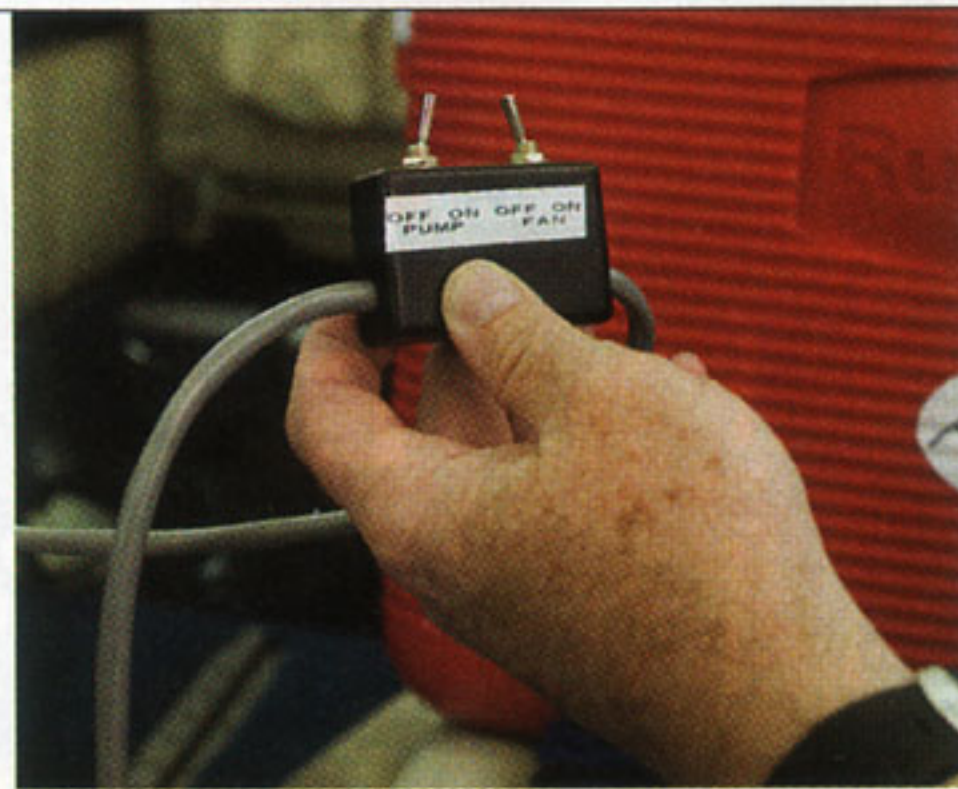
A gallon of water, bags of ice, a fan, pump, and plumbing turn an ice chest into an ArcticAir air conditioner.



WAYPOINTS

After 8 minutes, the temperature in the cabin had declined only about 8 degrees. To continue the test, *AOPA Pilot* photographer Chris Rose and I taxied around a bit. With the unit positioned to blow the air forward, the cockpit area after about 12 minutes had been cooled to about 89 degrees—a 17-degree drop. While 89 degrees does not sound cool, the air felt much cooler than that and was actually quite comfortable.

We didn't measure humidity, but ArcticAir claims the system was engineered to draw the warm air over the ice, causing moisture in the air to condense on the coils inside the cooler—meaning the air exhausted by the fan is not only cool, but also drier than when it entered. And it did feel drier, which is a distinction from “swamp coolers.” Swamp coolers basically blow misted air



around, making you feel cooler, but which are not as effective in humid conditions.

The long power cord allows the pilot to control the fan and pump from the front seat. Turning off the pump—which pumps cold water through a radiator just below the fan—increases the effectiveness of the system, but also more quickly exhausts the ice supply. Running just the fan causes the ice to last longer.

The idea, says Turton, is to cool the cabin while on the ground and immediately after takeoff. Cooler temperatures aloft typically mean the system can be shut off in flight, preserving the ice for the descent and taxi back. And the ice chest can keep your water bottles cold.

Given the size of my A36 cabin and the extreme heat on the day of the test I should have tried a larger size ArcticAir or added a larger amount of ice, but nonetheless the results were impressive.

Unlike installed air conditioners, the ArcticAir is easy to remove. A long piece of tubing can be connected to a valve on the cooler. The pump then can be used to pump the water out of the cooler, making it easy to lift out when not needed. One issue I haven't worked out yet is an effective way to strap the cooler down during flight. Some seat belts may stretch over the top, but mine would not. A system of bungee cords attached to cargo hooks on the floor may be the solution.

While Turton, a pilot and aircraft owner, developed the system for airplanes, he has found it useful for camping, boating, tailgating, and other outdoor activities where there may be power available.

So while it doesn't have near the cooling capacity or the tidy ducting of an installed air conditioning system, the ArcticAir is a novel approach to providing some cooling relief to sweltering cockpits without the price and constant weight penalties of the installed systems.

Prices vary from about \$500 to \$625 based on size of the system. For more details, see the Web site (www.arcticaircooler.com), call 229/271-7905, or visit Sporty's Web site (www.sportys.com) or call 800/776-7897. **AOPA**

E-mail the author at thomas.haines@aopa.org.

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