A little trainer that

AMD's CH2T is a low-cost, easy answer for beginning pilots

BY ELIZABETH A. TENNYSON

TO co-opt the popular soft drink slogan, image is nothing. What matters most in a training airplane is function, reliability, durability, and, of course, affordability. And that's just what you'll get with Aircraft Manufacturing and Development's (AMD) CH2T. Created to be a lower-cost, certified alternative for flight schools wishing to purchase new trainer fleets, the two-seat CH2T is also attracting student owners who want to purchase an airplane in which to earn that first certificate. ■ Combine the airplane itself with the training system under development for the CH2T and you've got a package designed to turn out well-rounded students. While AMD is still developing a private pilot curriculum around its airplane—think Cessna Pilot Centers—the most unique element of its training system is already available. It's a PC-based simulator that runs Elite Simulations Solutions software inside an exact replica of the CH2T cockpit. With its

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Zenith CH 2000

large-screen display mounted just outside the windshield and computer-generated instruments in the panel, students can "fly" without ever leaving the ground. And, because they are using an actual cockpit environment, students can quickly develop muscle memory and flow patterns for the real thing. While the average airplane purchaser is unlikely to buy such a device, AMD expects these simulators to start making appearances in flight schools around the country soon.

As for the airplane itself, an odd combination of full curves and sharp angles ensures that it's not the sleekest airplane on the ramp, but the CH2T, an entry-level training version of the Zenith CH2000, does have some sporty features such as dual gull-wing doors. Much more important for the student pilot and the instructor, however, are the handling characteristics of this docile bird.

AMD invited *AOPA Pilot* to take the CH2T for a test flight at its Eastman, Georgia, manufacturing facility on the Heart of Georgia Regional Airport to show off the student- and new-pilot-friendly characteristics of its new airplane. When we arrived at the factory, employees were preparing the latest CH2T to roll off the assembly line for a flight test with an FAA inspector before delivering it to its new owner, and several other aircraft were nearing completion. Once it has a few more aircraft under its belt, AMD expects to receive permission to forgo such individual aircraft inspections.

We put the CH2T that we tested through its paces with all of the maneuvers a student would need to perform for the private pilot checkride as well as a few extras. Stalls, which so often terrify student pilots and even lead them to give up dreams of flying their own airplane, can best be described as anticlimactic in the CH2T. There was no tendency to drop a wing, even when holding the airplane in a stall for an extended period. In fact, the airplane was so stable that even in a turning stall it tended to return to a wings-level attitude. While that might disappoint sadistic instructors (as well as those who want to prepare their students for what they are likely to find in the rental fleet), it's great news for students and anyone else who gulps down panic at the mere mention of stalls.

The airplane isn't fast by any means, but behind its 116-horsepower Lycoming O-235-N2C engine, the CH2T does live up to its advertised top cruise speed of 100 kt. This little trainer can happily fly at that pace all day, making it a reasonable cross-country airplane, especially for relatively new or low-time pilots who don't want more airplane—or more speed—than they can handle.

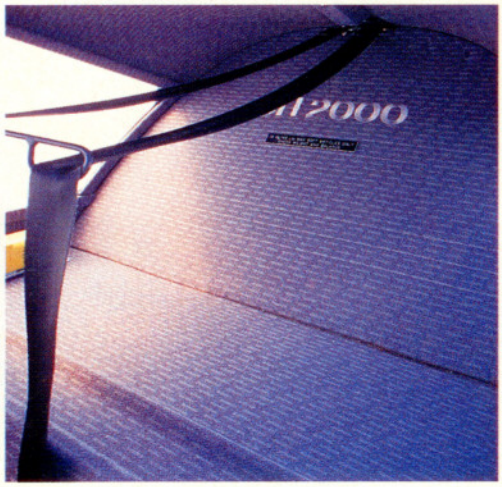
The CH2T's relatively slow cruise speed does not translate into the anemic climb performance seen in some trainers. In fact, climb performance was significantly better than expected, easily exceeding 800 fpm near sea level, even at maximum gross weight.

The unusual "all-flying" tail design provides exceptional control at low airspeeds and in crosswinds. The entire vertical section of the tail serves as a rudder, giving the airplane a demonstrated crosswind component of 25 kt. Meanwhile, the horizontal stabilator design means plenty of elevator authority, even at slow speeds.

To go with these authoritative controls, designer Chris Heintz did away with the system of pulleys and cables common to many training aircraft in favor of a simpler, more direct method. Control rods running directly from control surfaces to a point immediately behind the panel virtually eliminate play in the yoke and rudder pedals, not to mention the fact that they end the need for cable adjustments. The system means that responses to control inputs are immediate, making it easier for a learning pilot to feel the effects of his actions.

The simple control rod design is in keeping with AMD's philosophy of creating an airplane that is easy to afford and maintain. This effort to blend form and function into an aircraft that is extremely cost efficient is evident in such small details as a tail skid that doubles as a tiedown ring. The skid has the added advantage of protecting the tail from overzealous students who rotate or flare too aggressively—a fairly easy mistake to make considering the large stabilator surface. Even those who avoid that pitfall may find a use for the tail skid. Pilots exceeding the FAA's 170-pound average are likely to send the tail thudding into the tarmac when they step onto the wing for boarding. This is more of an ego bruiser than a serious flaw, but it doesn't hurt to remember that even though the airplane is equipped with two doors it's a bad idea to have the student and instructor board simultaneously.

The tail skid is a nice-to-have item in a training airplane, but it's not the tail that is likely to take the real abuse. It's the landing gear. We might as well face facts—learning to land is tough on student pilots, their instructors, and landing gear. The CH2T helps reduce wear and tear on all parties with its single-piece-construction main gear. The gear is a three-quarter-inch-thick piece of aluminum fastened to the bottom of the steel-reinforced fuselage with four large bolts. This system, while being exceptionally strong, does a surprisingly good job of absorbing the bumps and minimizing the tendency



The somewhat utilitarian interior includes sturdy, high-G seats and a small cargo shelf. The single-piece main landing gear and exposed brake line emphasize function over form.

to bounce, even during landings at relatively high speeds. And, in the event that someone plunks it down hard enough to do damage, the gear itself is fairly easily and cheaply removed and replaced, thanks to the external mount system.

The nosewheel eliminates the need for fussy oleo struts by using a steel tube attached to high-resistance bungee cords under the cowling. The cords provide the necessary give and are easy and inexpensive to replace. Because of the design, a rough landing that damages the nose gear will break the bungee, sparing the firewall and engine mount—provided, of course, that it's not followed by a prop strike.

The toe brakes are of the common hydraulic disk type, but the positioning of the brake line in plain view on the front of the landing gear is one of a handful of rough spots that can give the CH2T a less-than-sophisticated appearance. Another sore spot is the oil access panel. The sleek lines of the fiberglass cowling are interrupted by the awkward metal access panel, which does not conform well to the more rounded shape of the upper half of the cowling.

But the CH2T also has a handful of features that are unusually sophisticated for an aircraft of its type, most notably electric trim. Few trainers can boast this feature, and though it tends to be a little on the sensitive side, it's a labor-saving device that new and student pilots will soon adjust to using and even find hard to live without.

The door configuration can make getting in and out of the CH2T a little awkward and is rough on the upholstery—it takes some practice to jump in without stepping on the seat—but once inside, the decidedly utilitarian cabin is surprisingly comfortable. For those who just don't like the intimate shoulder-to-shoulder seating of most training aircraft, the CH2T's roomy cabin will offer respite. The 46-inch-wide cabin is several inches wider than those of most other trainers you're likely to encounter. A Cessna Skyhawk, for example, measures 39.5 inches. At the same time, the cabin is designed to accommodate tall pilots, allowing headroom, with headsets, for a pair of six-foot, six-inchers.

The seatbacks adjust for pilots of differing heights, moving forward to push short pilots closer to the rudders. But only the backs move while the seat bottoms are fixed to the fuselage. The decision to keep the seats still and make them of Tetra Foam improves the absorption of vertical impacts. In fact, the seats are designed to withstand loads of up to 27 Gs. The system seems to work well enough for people of average height, but the shortest pilots might struggle to reach the rudder pedals comfortably.

Cockpit visibility is excellent, both because of the wraparound window design and because the seats are slightly forward of the wing, giving good downward visibility for a low-wing airplane. While pilots of more traditional low-wing aircraft might not see downward visibility as much of a concern, students, using pilotage to navigate and wondering what happened to the landmark that looked so prominent on the chart, will be grateful to have such an unobstructed view of the ground.

While the cockpit layout is generally pilot-friendly, it does have one awkward spot—the flap indicator. The split-flap design itself works well, producing about a 10-kt reduction in stall speed when deployed, but the flap indicator, located below the flap switch between the pilot and passenger seats, is virtually impossible to see while activating the flaps. With no detents to allow the pilot to lower the flaps by feel, the design can cause a few difficult moments as the pilot tries to determine how long to hold the switch down to apply the desired amount of flaps.

OK, now you know what to expect from the airplane itself, but what about the cost? If you want to buy a new airplane for you or a family member to train in, you want to know that you can afford it. The list price beats just about every new production aircraft on the market. With a base price of $69,900, you can afford to buy this stripped-down version and install the radios and avionics of your choice. The fully, if basically, equipped model we flew still came in well below the competition at only $94,900.

But purchasing the airplane is only the beginning. It's the maintenance costs that can get you, especially in a trainer that is likely to take some abuse along the way. The CH2T was designed with that in mind. Not only is the airplane simple, and therefore relatively easy to maintain, AMD has made an effort to keep costs down on other fronts, as well. The manufacturer makes available the original part numbers for all "off the shelf" components. That means owners can keep costs down by purchasing parts from local sources rather than being compelled to order through AMD.

Operating costs are also meant to be low. The Lycoming engine has a 2,400-hour TBO and burns only 5.5 gallons per hour in cruise, making those weekend trips as affordable as they are fun.

The CH2T's dual gull-wing doors are among the airplane's sportier features. The cockpit layout and instrumentation are similar to those in many popular trainers.

Of course, the CH2T may not be the "total package" when it comes to airplanes, but if you're looking for an affordable new trainer, it comes pretty close. □

Links to additional information about the AMD CH2T and other training aircraft may be found on AOPA Online (www.aopa.org/pilot/links.shtml). Elizabeth Tennyson is the managing editor of AOPA Flight Training *magazine. E-mail the author at elizabeth.tennyson@aopa.org*

AMD CH2T/Zenith CH2000
Base price: $69,900
Price as tested: $94,900

Specifications

Powerplant	Lycoming O-235-N2C
Recommended TBO	2,400 hr
Propeller	Sensenich 72-in, two-blade, fixed-pitch
Length	23 ft
Height	6 ft, 10 in
Wingspan	28 ft, 10 in
Wing area	137 sq ft
Wing loading	11.7 lb/sq ft
Power loading	15.1 lb/hp
Seats	2
Empty weight	1,175 lb
Maximum gross weight	1,606 lb
Useful load	431 lb
Payload with full fuel	266 lb
Maximum takeoff weight	1,606 lb
Fuel capacity, std	28 gal (27.5 gal usable) 168 lb (165 lb usable)
Fuel capacity, w/opt tanks	34 gal (33.5 gal usable) 204 lb (201 lb usable)
Oil capacity	6 qt

Performance

Takeoff distance, ground roll	1,130 ft
Takeoff distance over 50-ft obstacle	1,520 ft
Rate of climb, sea level	820 fpm
Maximum level speed, 6,000 ft	104 kt
Cruise speed/endurance, no reserve (fuel consumption)	
@ 75% power, best power, 2,000 ft	99 kt/4 hr, 5 min (6.7 gph)
@ 55% power, best economy, 8,000 ft	95 kt/5 hr, 30 min (4.9 gph)
Landing distance over 50-ft obstacle	1,680 ft
Landing distance, ground roll	900 ft

Limiting and Recommended Airspeeds

V_X (best angle of climb)	60 KIAS
V_Y (best rate of climb)	63 KIAS
V_A (design maneuvering	108 KIAS
V_{FE} (max flap extended)	101 KIAS
V_{NO} (max structural cruising)	108 KIAS
V_{NE} (never exceed)	143 KIAS
V_{S1} (stall,clean)	36 KIAS
V_{SO} (stall, in landing configuration)	29 KIAS

For more information, contact Aircraft Manufacturing and Development, Heart of Georgia Regional Airport, Post Office Box 639, Eastman, Georgia 31023; telephone 912/374-2759; e-mail info@newplane.com; or visit the Web site (www.newplane.com).

All specifications are based on manufacturer's calculations. All performance figures are based on standard day, standard atmosphere, maximum gross weight conditions unless otherwise noted.