

## Simply Sophisticated

*Skies Magazine*

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***With fixed undercarriage, castering nosewheel and a composite fuselage, the TTx exterior is moulded fibreglass simplicity. Textron Aviation Photo***

Feigning distraction, I spun around in the left seat of the Cessna TTx and attempted to fish my camera from the back seat. I let my hand lean distractedly on the control stick; and, lacking a suitably attentive pilot, the TTx rolled slowly from its assigned heading. It was an ideal set-up for a graveyard spiral; the beginnings of a sad loss-of-control accident. Fortunately, the TTx was still paying attention. Passing through 45 degrees bank, its electronic stability and protection system (ESP) engaged and firmly nudged the stick back toward level flight. A tragic accident was averted.

Steve Kent, regional sales director, Textron Aviation, likely didn't know why I gave his TTx demonstrator a "high five," but this was my idea of perfect automation; it was there when I needed it and transparent when I didn't. This theme persisted throughout my evaluation of Cessna's single-engine speedster. It offered an ideal blend of extensive capability and ease of use; simultaneously simple and sophisticated.

I've been flying long enough that the prospect of a speedy composite low-wing Cessna seemed like a comic oxymoron. Times have changed. The TTx design traces its roots back to the Lancair ES kitplane. A certified version emerged as the Columbia 350 and 400. Cessna acquired Columbia Aircraft in 2007, and branded their new composite singles as the Cessna

350 and Cessna 400, then Corvalis, and now new and improved, as the TTx. Just to complicate things further, Cessna calls it their Model T240.



*The side-stick arrangement makes the cockpit feel even more spacious. Textron Aviation Photo*

## **UP CLOSE**

With fixed undercarriage, casternosewheel and a composite fuselage, the TTx exterior is moulded fibreglass simplicity. Under the hood is a 310 hp Continental TSIO-550-C engine driving a McCauley three-blade constant speed propeller. The "TT" in the aircraft's name refers to the intercooled twin turbochargers that give the airplane its impressive high-altitude cruise performance.

The TTx is a very electric airplane, in the sense that it features dual 15 Amp-hour batteries, dual 60 Amp alternators and dual attitude heading reference systems. The structure is made of pre-impregnated fibreglass cloth over a honeycomb core, with carbon fibre used in selected areas to reduce weight. The wing structure incorporates dual single-piece wing spars. Thumping on the wing to emphasize its solidity, Kent offered that the TTx was certified in the Utility category. With typical cruise speeds below its maneuvering speed, he ventured that the TTx should be relatively invulnerable to turbulence. (Kent's emphasis on structural integrity wasn't accidental. The earlier Corvalis experienced a wing delamination incident that got

Cessna in hot water with the FAA. After a two-year hiatus in production, the TTx is an extensively re-engineered airplane.)

The standard equipment list includes air conditioning, XM Weather receiver, synthetic vision, Trilogy ESI-1000 electronic standby indicator and a panel-mounted pulse oximeter. Options include lightning detection system, JeppesenChartView, and Garmin GSR-56 Iridium satellite transceiver. It even had cup holders.



**Garmin's touchscreen controller simplified avionics operation. Rob Erdos Photo**

A popular option on the TTx is the TKS "weeping wing" anti-icing system. The wing leading edges looked like solid metal to me, but Kent told me that lasers are used to cut 600 microscopic holes per square inch. Just to be sure, I counted. He's right! The TKS system uses very finely perforated titanium leading edges on the wings and vertical and horizontal stabilizers to allow glycol-based fluid to seep out, forming a protective surface layer. A 10-U.S. gallon tank in the wing provides sufficient fluid for 2.5 hours of normal operation. The propeller is electrically de-iced.

A baggage compartment door on the left side of the aft fuselage provided convenient standing access to the space behind the rear seats. The luggage compartment was placarded for a maximum weight of 120 pounds. A further 20 pounds could be carried on the hat shelf, if you have big hats. The rear seats are removable, saving 40 pounds, and opening a capacious aft cargo area.

Two gull-wing doors provide easy entry into the front or back seats, and enhance the sporty appeal of the TTx.



*The easily accessible luggage compartment can carry up to 120 pounds of gear. Rob Erdos Photo*

Upon settling into the comfortable leather seats, I first noticed the two 14-inch diagonal displays for the Garmin 2000 avionics system. The left display is the primary flight display. The right is the multi-function display, which was big enough to display engine data, a moving map and an approach plate, all in a very clear, readable format. The centre console features a colour touch screen that Garmin calls a touchscreen controller. This is Garmin's "everything controller;" an iPad-like interface of graphical icons and touch-controlled functions. The highest praise I can offer is that I needed no instruction to begin using it productively. Proficiency would certainly help, but upon initial exposure the interface seemed to embody the term "intuitive."

An innovative feature in the cockpit is the side-mounted control sticks. They emerge from the cockpit sidewalls, just ahead of the door frames, and are really just small, conventional control sticks angled slightly inboard. They are an ideal solution in that they don't impede cockpit entry or exit, they enhance occupant mobility and comfort, and they facilitate access to the entire instrument panel.

I found the field of view quite satisfactory even over the tall instrument panel. The cockpit layout was simple and functional, with colour-coded rocker switches on the centre console. In the spirit of simplicity, the fuel selector had only LEFT and RIGHT selections, although a warning annunciation was designed to awaken the pilot when fuel asymmetry exceeds 10 gallons.

## CRUISING

Cessna brought aircraft registration N171CS to the Canadian Business Aircraft Association (CBAA) convention in St. Hubert, Que., in June. Equipped with air conditioning and anti-icing system, it had a basic empty weight of 2667.8 pounds, providing a useful load of 932.2 pounds before reaching its 3600 pound maximum takeoff weight. For our flight, we had two humans and 52 gallons of fuel onboard, resulting in a gross takeoff weight of 3350 pounds. Filling the tanks to its 102 U.S. gallon usable fuel capacity would have left about 320 pounds of payload; enough for one standard adult male, two wombats and a tuba. Do the math yourself.

We departed from St. Hubert's runway 06L under calm, clear skies. For takeoff, flaps are selected to "Takeoff." Simple. I applied full power, checked that the engine was indicating 35.5 inches manifold pressure, then rotated as the speed passed 75 KIAS, and stabilized at an initial best rate of climb speed of 110 KIAS. Passing 400 feet, I retracted the flaps and established a cruise climb at 140 KIAS with the propeller speed reduced to 2500 RPM. There was nothing challenging about that.



***The author, smiling, after flying the TTx with Cessna's demonstration pilot, Steve Kent, at right. Rob Erdos Photo***

The flight manual quotes a 1300 foottakeoff ground roll and a 1400 foot per minute rate of climb at maximum gross weight and sea level standard conditions. Owing to the magic of turbocharging, it will sustain its rate of climb to 12,000 feet. In lieu of a rudder trim tab, the

TTx incorporates an innovative rudder hold, which is a brake that serves to hold the rudder in a selected position, alleviating the need for the pilot to hold pedal pressure.

The TTx is an interesting design in that it is an unpressurized airplane with a 25,000 foot certified ceiling. Achieving its maximum cruise speed potential requires that the airplane fly high, and that demands that passengers and crew use of oxygen. Passing 10,000 feet, Kent and I donned oxygen cannulas, which are unobtrusive little tubes that deliver oxygen to the nostrils. Above 18,000 feet, proper oxygen masks are required.

We levelled at 17,500 feet and set a maximum cruise power setting of 33.5 inches manifold pressure and 2430 RPM. At -13C outside air temperature (7C above standard), the result was 209 knots true airspeed burning 25.4 gallons per hour. A lean-of-peak power setting reduced our speed to 199 knots true airspeed, and we watched the range ring on the moving map expand as our fuel flow decreased to 18.6 gallons per hour. Its published maximum range at economy cruise speed is 1250 nautical miles.

Cessna credits the TTx with a maximum cruising speed of 235 knots true airspeed. "Maximum" is the key word, as this is only achievable, according to Kent, without the optional TKS anti-ice system or the air conditioner. Nevertheless, the TTx is no slouch.

My oxygen cannula was doing its job, but just for fun I poked my left index finger into the panel-mounted pulse oximeter, and was informed that I had a blood oxygen concentration of 96 per cent. Reassuringly, it also confirmed that I had a pulse.

It was here, in cruise at 17,500 feet, that the utility of the TTx struck me. The combination of the G2000 avionics system, airborne weather and traffic advisory systems, and certification for flight into known icing makes the TTx a potent personal mobility tool. While no "light single" will match the dispatch reliability of an airliner, this was an airplane that will let you keep a schedule.



*The TTx combines simple operation with impressive performance. Textron Aviation Photo*

## COMING DOWN TO EARTH

The TTx incorporates wing-mounted speed brakes to help hasten descent without risk of shock-cooling the engine. The speed brakes were controlled by a switch located adjacent to the throttle, and extension was transparent save for an annunciation on the display. Extension caused an 800 foot per minute descent or a 15 to 17 knot loss of speed, depending upon pilot response. The speed brakes incorporate an asymmetry sensor, although I can't figure out why they don't automatically retract when the throttle is advanced.

We returned to St. Hubert for a coupled RNAV 06L approach, and I let Garmin do the driving. With the impressive GFC700 digital autopilot, GTS800 traffic advisory system, XM weather and synthetic vision on top of the native capabilities of the Garmin 2000 avionics system, the TTx is a state-of-the-art single-engine airplane. Add the optional TKS ice protection system, and the TTx delivers about as much "anywhere anytime" mobility as a single-engine airplane can deliver. Yet, beneath its skin still beats the heart of a sport airplane, with sufficient simplicity and friendly handling to simply fly for the joy of it. However you choose to enjoy it, it's your choice.