

ENHANCED REALISM IN FLIGHT SIMS

NEW MARKET ENTRANTS TAKE SIMULATORS TO A HIGHER LEVEL



Canadian flight simulators harken back to the days of the Link Trainer, produced between the early 1930s and 1950s by Link Aviation Devices based on technology pioneered in 1929. During the Second World War, they were used as key pilot training aids in Canada.

Transport Canada divides simulators into two categories: Flight Training Devices (FTD) and Flight Training Simulators (SIM). An FTD is a replica of an aircraft's instruments, equipment, panels and controls in an open or an enclosed aircraft cockpit, including equipment and programs required to

represent the aircraft in ground and flight conditions. An FTD does not require motion cueing and may be used for many different flight training and checking events. A SIM varies from an FTD in that it is a full-size replica of a specific aircraft type cockpit, has a visual system providing an out-of-the-cockpit view and a force cueing system. The more sophisticated the simulator, the more training and checking may be approved for it.

There are a variety of FTDs operating at Canadian flight schools. These include Redbird, Alsim and Fresca models. There are many differentiators from a general aviation (GA) perspec-

◀ There are now 11 Alsim simulators in Canada, and 320 installed worldwide.

tive, including if the flight time is loggable, as well as instruments and avionics. Transport Canada licensing requirements for initial pilot training (PPL) allow for a maximum of five hours of the minimum 45 hours to be conducted in a certified FTD or SIM. For CPL students, a maximum of 10 hours of the mandatory 20 hours of instrument dual instruction may be conducted in a simulator. For IFR students, a maximum of 20 of the mandatory 40 hours may be conducted in a simulator.

There are many benefits from training in a simulator. From the flight school's perspective: reduced operating costs, increased utilization, less impact from snags, improved professionalism and flight training not limited by the actual weather. From the pilot's perspective: lower hourly costs, consistent instruments and avionics, greater availability and less time required to complete the training syllabus. Simulators allow pilots to gain experience through flying into unfamiliar airports utilizing specific IFR procedures before attempting the flight in the real world. With the instructor shortage, student pilots are able to more efficiently use their instructor's time and not be limited by aircraft availability and the weather.

Alsim, whose head office is located in France, expanded into the North American marketplace on 2017 with an office in Austin, Texas. With more than 320 simulators installed worldwide over the past 24 years (including 11 in Canada), Alsim brings a mature technology that focuses on the pilot experience. Scott Firsing of Alsim reports, "Alsim focuses on the visual elements of a flight, with 83 percent of a pilot's physiological interaction being eyesight. With five different models

ranging in price from \$200,000 to \$700,000 USD, a typical flight school sees breakeven in two years. I have roughly three hours in the Alsim simulator flying a Piper PA-28. Although not a full motion simulator, the level of realism is very close to the actual aircraft.”

The level of accurate airport detail, terrain and airspace are incredibly true-to-life with the net effect being that the students see virtually the same visual presentation in the FTD that they see in the aircraft. With real Garmin glass and avionics, the look and feel of the cockpit is actual, not simulated. Waterloo Wellington Flight Centre, located at Waterloo airport (YKF) in Ontario, charges an hourly rate for their Alsim ALX of \$125 (plus the instructor's rate of \$75 per hour). Conversely, their actual Cessna 172 is billed at \$162 and their Piper Seminole at \$294 per

hour (plus the instructor's hourly rate). Check out a video of the Alsim FTD at: [youtube.com/watch?time_continue=8498v=DCFtoEO6A/Y](https://www.youtube.com/watch?time_continue=8498v=DCFtoEO6A/Y).

Redbird simulators are three-axis motion simulators with surround video displays. The Redbird FTD supports a variety of aircraft. The Redbird simulator operated by Canadian Flyers at Buttonville, Ont. (YKZ) simulates a Piper Seminole (PA-44), Cirrus SR22 and Cessna 172. Canadian Flyers has 'flown' the Redbird since 2013. From an owner-operator perspective, the Redbird is more like a computer and less like an aircraft. The Redbird does not require oil changes, is able to fly into low IFR conditions and is not prone to snags. With a service contract, Redbird is able to download patches and fixes directly to the FTD via the internet. Conversion between aircraft types takes approximately 10 minutes, involv-

ing swapping out an acrylic display screen and the engine control quadrant. It is an exceptionally cost-effective training tool. The actual Seminole's hourly rate is \$325, plus \$80 for the instructor. The Redbird is \$160 per hour with instructor and \$90 when flown solo. CFI Dario Matrondola reports that, "FTDs enhance the professionalism of a flight school and is an expected flight training tool. Having personally flown many different simulators, the experience is exceptionally close to real world conditions without compromising pilot and instructor safety. The utilization of simulators offers flight schools improved profitability while delivering a professional training experience. With the current pilot and instructor shortage and higher pilot wages on the horizon, the need for flight training infrastructure will drive the expansion of flight simulators. 🇨🇦"