

What's involved in...

Colin's monthly investigation feature



COLIN GOODWIN
Pilot, aircraft owner
and professional
car journalist

TRAINING FOR GLASS

A 300-hour taildragger pilot studies for glass cockpits with teaching software, then puts it all to the test with a flight in a Cirrus SR20

Words Colin Goodwin Pictures Nick Boothman

Climbing out of a Tiger Moth cockpit into a brand new touring aircraft with enough flat screens to fill the window of your local Currys store is as intimidating as having to deliver a best man's speech at a wedding in Mandarin Chinese. Airline pilots will feel immediately at home but those of us used to looking at a small number of analogue gauges that are often in the same place regardless of type, will have a lot of learning to do. And the last place you want to do that learning is in the aircraft.

If you've just joined a group which runs a Cirrus SR22, you'll be extremely unpopular if every time a member turns up to fly the aeroplane it won't start because you've flattened the battery by spending the whole

morning parked on the line fathoming out the screens. Second, learning as you fly is both impractical and extremely dangerous as the last thing you should be doing while airborne is consulting an operating manual on your lap. It's also rather expensive. The answer of course is to do as much learning away from the aircraft as possible.

LEARNING FROM THE ARMCHAIR

Anyone who has picked up a user's manual for Microsoft operating software, or any other computer software manuals written by boffins unfamiliar with plain English, will know that they're far from user friendly. Some are more simple, but plodding through hundreds of pages isn't as straightforward as visual learning. Fortunately there are



HOW TO...

...master glass from the comfort of home



STEP ONE



Interactive courseware DVD shows one PFD. Commentary is combined with on-screen transcript for when teacher's voice becomes irritating. Initial stages explain the functions of the knobs and buttons



STEP TWO

STEP THREE

STEP FOUR



Back and forward buttons allow you to backtrack if you don't understand something or need to recap. Pause button allows for refilling coffee mug or giving the brain time to catch up



As you move through the course you learn how to integrate waypoints and flightplans from the twin Garmin GNS430 units to the Integra PFDs. It helps if you're familiar with Garmin kit



If you're a VFR pilot used to analogue gauges you might need to take a rest before moving onto the mysteries of setting up localisers, glidescopers or an NDB approach

WHAT ELSE IS ON OFFER?

Both common integrated systems supported

Garmin produces software familiarising pilots with its G1000 integrated system that is tailored for each aircraft type that uses it. In the US the software is a peppercorn \$5 but unfortunately you can't download it from Garmin's US website. However, most companies that sell the relevant aircraft types will be able to get hold of a copy. The ever helpful Harry Mendelssohn just happened to have Garmin's Diamond DA40 tuition software at the bottom of a drawer and sent it on to us. It's less polished than Flight1's tuition DVD and doesn't include a compulsory quiz. However, it runs through all the G1000's functions and combined with X-Plane or Microsoft Flight Sim will still do the job.

plenty of computer programmes and training packs that should make finding your way around a modern glass cockpit pretty straightforward.

WHAT'S AVAILABLE

The two most common fully integrated flat screen systems are Garmin's G1000 and Avidyne's FlightMax Entegra. Without doubt as new systems come onto the market - such as Aspen avionics' new Evolution PFD (Primary Flight Display) - tuition programmes will be developed alongside them.

We can split learning methods into two categories: first, there's software that integrates with current PC-based simulators and second, tuition guides that break down the operation of the systems into basic steps without the distraction of having to fly a virtual aircraft at the same time.

Microsoft's Flight Simulator X aircraft list includes Beechcraft Baron and Bonanzas, both of which are fitted with Garmin G1000 systems, and the same for Cessna's 172 and 182s. Microsoft rival X-Plane also features PFD equipped aircraft in its library.

PUTTING IT TO THE TEST

The best way to judge what's available is to try it for real. As a relatively low hours PPL who has gone from flying school PA-28s straight to a vintage type I have very little experience of operating PFDs. I have a short

acquaintance with non certified systems fitted to homebuilts because one will go into my own RV-7 in the distant future.

Mungo Amyatt-Leir is the British agent for Flight1 simulation software and has sent us two tuition packages. The first is a simulator package that's an add-on to Microsoft's Simulator X (it'll also work with Flight Simulator 2004) and the second is an interactive course. Both cover Avidyne's Entegra EXP5000 system.

The simulator software features a range of aircraft including the Piper Warrior III and Cirrus SR22. The plan is for me to lock myself into a dark room, work my way through both of Flight1's aids and then go flying in one of Cirrus UK's demonstrators to see whether the world of glass is still a

accent (Flight1 is a US company) takes you through each step, though there's a transcript provided to one side of the MFD (Multi Function Display). The only irritation is that your teacher mentions 'the Entegra EXP5000' at the beginning of every sentence. It is unlikely that having gone to the trouble of buying tuition software for an Avidyne glass cockpit (or a £200,000 aircraft that it's attached to) that you'll forget what it's called. The course starts by showing you what all the knobs and buttons do and where everything is on the screen, how to toggle through to get engine instruments into view and a further 44 pages on the system's features. Sounds daunting but it's pretty straightforward.



mystery or a completely familiar environment.

GETTING STARTED


Like a large number of journalists I use an Apple Mac, with which most software isn't compatible; including flight sim programmes. The most recent Macs can run as a PC but most of you will be using PCs so won't have a hardware issue. Flight1's software will run on Vista or XP. The kind neighbour who lent me his PC has a complete rudder pedal and yoke assembly, which is a great bonus. He also has both a PC and a desktop which as we shall see is even more useful.

BACK TO SCHOOL

The interactive course comes on a single DVD and loads easily; you simply tap in a few registration numbers to register the software. Then you're ready to start. A friendly chap with a relaxed American

“ Fail and you're not allowed onto the next stage ”

The instructions are clear and if you need extra time or a recap then you can pause or toggle back a page. The lessons are split into stages and before you can move onto the next one you have to do a multiple choice quiz. The rub is that you're not allowed to move onto the next stage until you've completed the quiz and achieved a mark of 80 per cent or more. If you fail, you have to go back, revise and then attempt the exam again.

The next section takes you through operating the EXP5000, from starting it up, the wait while it aligns itself and the limitations of what you can do - taxi for 

What's involved in... training for glass

example - in the meantime.

The further we get into this section, the more complicated it becomes. Aged 46, I have a pretty good idea of the quantity of information that the Goodwin brain is capable of storing in one go and by the time we're getting into the pages that deal with the autopilot and carrying out autopilot controlled non-precision approaches the grey matter is overheating.

FLYING THE SIMULATOR

If you've experience of Microsoft Flight Simulator you'll cruise through setting up the Flight1 software. It's essentially a plug-in like supplementary scenery or aircraft. Once set up, it's a simple matter of selecting the Cirrus SR22 and going flying. If you've no experience of using Garmin's GNS430 NAV/COMM/GPS units then you'll need to acquaint yourself with their operation. Most pilots will have come across the GNS series and if not you can download the operating manuals from Garmin's website.

It's here that having the lap top is extremely helpful because you can hit P on the simulator to pause it then refer to the relevant page in the courseware to remind yourself about how to capture

waypoints from the Garmin or how to operate the autopilot and the Cirrus's flight director. If you're a rare visitor to the world of flight simulators (as I am), you'll be pausing the action regularly to fiddle with the avionics.

THE REAL THING

Cirrus UK's Nick Tarratt has generously agreed to take the right hand chair in the company's SR20 (it has the same equipment as the simulator's SR22 so there's no issue here). Cirrus UK is based at Turweston, where on the day we chose it is beautifully clear but gusting up to 25 knots, fortunately right down Turweston's runway.

I've sat in Cirrus aircraft, but not left the ground in one. The theory is that my homework

will have brought me up to reasonable speed on the glass screens so that I can concentrate fully on getting used to sidesticks for the first time, FADEC engine control and a few other Cirrus features.

After a quick showround we fire up the SR20 and taxi to the hold. With a castoring nose wheel and excellent brakes it's a snip to taxi even in determined crosswinds. Tarratt explains that the first time he flew with a glass cockpit he was half way up the runway searching worriedly for the air-speed read out. Having spent several hours staring at the MFD my eyes go straight to the numbers.

Most of my flying is done in an aircraft equipped with sticks which I always use with the left hand so the Cirrus's sidestick feels entirely natural. It's a very straightforward aircraft to fly, stable, quiet and smooth

“ With autopilot, the grey matter is overheating ”



even in this turbulent air. Without question time at the simulator has paid off because my eyes instinctively go to the right part of the screen for the information that I'm after.

However, it all turns to custard when we move onto more advanced procedures. In truth I haven't spent long enough on the simulator to master things like setting up the autopilot or adding waypoints. That said, we're talking about a serious workload for an amateur pilot who flies VFR. It's unrealistic to think that you could master a system as diverse and capable as the EXP5000 (or Garmin's equally impressive G1000) and flying a new type in one go. The most productive method would be to break down the virtual and real world learning into sections.

Not surprisingly Tarratt finds his way around the Avidyne set up as if it was an old bakelite radio. He sets up an ILS approach to Oxford and then brings up the plate for Oxford Kidlington. More twiddling and a purple wedge appears on the artificial horizon that lets me know that the autopilot is controlling the aircraft. We break off the approach well before Oxford and then return to Turweston where I make a reasonable job of landing the SR20. ■

WORTH IT OR NOT?

At least the hours are free

Flight1's Interactive courseware DVD costs £79.99 and the flight sim CD £69.99. You could get away with buying simply the latter software, but then the cost of equipping yourself with both teaching aids versus airtime in an actual aircraft is enormous so it's hardly an economy that's worth making. If I hadn't spent the time with Flight1's training kit, the flight in the Cirrus would have been far less productive and less

enjoyable. I'd say that if you're making the move from steam to glass instruments no amount of time practising in front of a simulator is time wasted, especially if you're intending to make use of all its capabilities or if it is mounted in such a sophisticated and able tourer as the Cirrus.

