

# A glass of its own



## Is it worthwhile retrofitting a glass cockpit? Jason Cameron has absolutely no doubts

G-ODAK is the only Dakota (PA-28-236) in the UK with a Garmin G600 installed. Airways Flying Club does it again! Before the installation of the G600 G-ODAK was always a treat to fly. With only 12 Dakotas in the UK, Wycombe-based AFC are very proud to be the owners of what's probably the best one around. It's a very practical and efficient aircraft that's also lots of fun to fly. G-ODAK is capable of carrying four people with overnight luggage, full fuel and has a cruise speed of 130-137kts. Not bad for a 236 BHP single engine piston aircraft with a fixed undercarriage. A fuel burn of 56lts/hr allows it to travel approx 650nm. And now club members get to do it with an all-singing, all-dancing glass cockpit, courtesy of Garmin and AFC.

The G600 itself is very user friendly and is extremely easy to learn how to use even if you've never flown with a glass cockpit before. The G600 display consists of a single unit 17cm high by 25.4cm wide that has two separate screens side by side. The Primary Flight Display (PFD) is on the left and a very basic Multi Function Display (MFD) on the

right. The Attitude Indicator (AI) on the PFD is larger than a conventional AI and sits right in your primary field of vision, making it very easy to keep your eyes on it when you need it the most. The G600 has lots of clever functions; for example, when an extreme angle of bank or pitch is experienced the screen de-clutters automatically, making it even easier and clearer to see what needs to be done to correct the attitude.

The G600 has its own NAV database purely for the map and info function on the MFD and

it's updated on a 28-day cycle direct from Garmin. All you have to do is download the update from the internet onto a memory stick that Garmin provide with the unit, and pop it into bottom card slot in the face of the G600. It can take up to 15min to download, but once it's complete you just take the card back out and you're away. When in map mode the MFD can display a fairly detailed image of the underlying terrain. Depending on the mode of de-clutter set by the user in at the time, it can have aerodromes, navigation aids, waypoints



**Top: It's a PA-28, Jim, but not as we know it – the G600 installed in G-ODAK**  
**Right: Jason Cameron with Airways Flying Club's PA28 Dakota at Booker**

and your entire flight plan displayed overlying the terrain. The G600 NAV database has nothing to do with the aircraft navigating!

The Garmin 430W (WAAS) has its own NAV database update also on a 28-day cycle, but this download comes direct from Jeppesen; it's this NAV data that tells the G600 and autopilot where it wants to go. Once the update on the 430W memory card has been downloaded from the internet, you simply stick the card back in the 430W and leave it there till the next update is available. Simple?

For pilots who have already experience flying a complex aircraft, it's a very straightforward procedure to be checked out on G-ODAK. The majority of people seem to be able to operate most of the functions on the G600 after about 45mins of familiarisation in flight. So from a teaching point of view it's great. However, to minimise the cost of the checkout to our club members, we've been recommending that people familiarise themselves beforehand using the Cockpit Reference Guide / Pilots Guide available to download for free on the Garmin website. Once they understand the basics of the G600, we then plug the GPU in and spend time on the ground with them showing them how to operate the Garmin G600, how the 430W drives the G600, how we set up the G600 and 430W before the flight, and how to couple the autopilot to both the G600 and 430W for auto lateral navigation. If you already know how to operate the 430W is makes life much simpler. You simply program your intended flight route in FPL mode on the 430W, press activate and you're away. Your entire route will be displayed on the MFD side of the G600. For pilots who have no complex or glass experience it's slightly more difficult. It's still very manageable but understandably more complicated than a standard complex aircraft without a glass cockpit.

One very important thing that some pilots fail to consider is what you'd do if your glass

**Right: pilots with Garmin experience find transitioning to the G600 easy**

cockpit fails. Well, in the very unlikely event that for some reason our shiny new G600 was to fail halfway through the flight, it wouldn't actually be that bad as G-ODAK still has pretty much everything it had before the glass was installed. The only instruments you would lose would be the VSI, HSI – oh, and the map display with your whole flight-planned route. You would still have a conventional AI, ASI, Alt, VOR, turn coordinator, RPM, MAP, compass, suction, engine and fuel gauges. So you could carry the flight on with the use of the VOR, but if you're not IMC or IR rated you'd only be able to use the VOR to get a position fix, so you'd most likely have to refer back to completely basic VFR navigation just like all licence holders were taught at PPL level, with the inclusion of compass turns... And no doubt you'll be current at good old fashion dead reckoning navigation? Right... food for thought... keep current just in case. So for a very short part of the checkout in G-ODAK we simulate the failure of the G600 in flight. This is purely to make the pilot aware that there's always the possibility of instrumentation failing in flight no matter how new it may be, and not to rely solely upon any form of GPS navigating source, but to treat it as a navigating passenger who needs to be cross-checked.

## You may prefer the 600's little sister...

**AFC's Dakota is likely to be one of the few small aircraft in the UK to have the Garmin G600 fitted because Garmin has since come out with the G500, which is a lower-cost version of the G600 with virtually identical features. The main difference is that the 500 is certificated to a slightly lower standard and can only be fitted in aircraft up to 6000 lbs.**

**Harry Mendelsohn says he's sold a number of 500s, mostly so far to homebuilders. Wycombe-based Harry Lees, who installed the 600 in G-ODAK and is responsible for most of the European STCs for the Garmins, says the 500 costs \$16,000 as opposed to \$30,000 for the 600, and the installation costs are about the same – 160 hours' labour plus some bits and bobs. "We've got a number of customers lined up for the G500," he says. "It's a major improvement, particularly for the serious IR flyer – you've got the large moving map with excellent colour graphics on the MFD, traffic if you have the sensor for it – and of course if you're teaching commercial students, they're going to go on to A320s and suchlike with similar displays, so there are advantages of continuity."**

**Whether it adds its value to your aircraft is debateable. "A lot depends on the plane, but you won't get full value back," says Harry. "An old slab-wing Archer won't gain much in value from it, whereas a more modern aircraft might do better. But it's primarily an owner preference."**

**EASA certification is proving complex and expensive, and some piston singles can't take the mod because of lightning-protection requirements – mainly composite and fabric aircraft. For these, Harry recommends the Aspen EFIS, which can cost less than £10,000 installed and looks the absolute business. [www.leesavionics.co.uk](http://www.leesavionics.co.uk)**

One question that's on most aircraft owners' minds is – is it worth the money? Well, for approx £25,000 for the basic setup without all the extras (i.e. TCAS, weather radar etc), I'm sure there would be mixed opinions on this... However I like the G600 and AFC's club members seem to really like it as well, so my answer is 'yes'. It's modern, more accurate than old instruments, doesn't take long to get used to, and it's capable of doing much more than your old instruments so it reduces the pilot's workload. In single pilot operations, operating in IF conditions, that's priceless.

One slight catch is that the G600 does require either a Garmin 430W or 530W to drive it, and whichever one you choose *must*

be WAAS approved. This does add to the cost of the installation but does not affect the time taken to learn how to use the kit, as the 430 WAAS is a standard 430 that has just been upgraded internally to be compatible for GPS approaches.

Overall our Dakota is a very nice aircraft indeed. AFC's club members, whether they've already been checked out on it or not, love flying it, and once you've flown it yourself it's easy to understand why. It's a very popular aeroplane that gets quite a bit of attention and use. AFC operate a three-week-ahead booking system which allows everyone a fair chance at getting to fly it. Book yourself in now and see what all the interest is about... ■

