

# FIRST PC12 GLASS COCKPIT AVIONICS UPGRADE IN AFRICA

By Athol Franz

After waiting a number of years for the Pilatus developed STCs to be finalised and approved for the installation of the Dual G600 into the Pilatus PC 12, it was time for the first PC 12 Dual G600 upgrade in South Africa to be carried out. Many hours of research, customer liaison, Pilatus Centre South Africa assistance, tailor making the configuration of this project, it commenced in Hangar M1 at Lanseria Airport early in January. A day Century Avionics had been looking forward to and working towards for a good number of years.



The upgrade entailed the removal of the EFIS 40/50 system on the pilots' panel as well as the co-pilot flight instruments together with this the remote mounted LRU units underneath the floor in the fuselage of the well planned and laid-out PC 12. The removed wiring was approximately 14kg and excluded trays and units. The total weight saving for this upgrade is substantial. Such a pleasure to do an installation of this calibre of aircraft that has not had retrofit after retrofit done where you as the avionics company have to first tidy up the 'spaghetti' behind the panels as a result of previous removals of obsolete harnessing looms prior to your installation.

All new harnesses were manufactured from scratch by Century Avionics and installed systematically into the aircraft. It was taking shape, one terminal block at a time, step by step our very experienced installation team made a bunch of rolled up prepared looms look very pretty and functional in the aircraft. This aircraft had to look and feel like a factory installed upgrade - not only from a beautiful superior sleek glass cockpit that every pilot feels excited to put through its paces, but also what exists where pilots and owners don't normally see. Behind the panels and under the floor boards the new laser wire marked harnesses had to look better than the removed harnesses and the routing behind the instrument panels was to be neat and tidy - a masterpiece.

One can see from looking at this behind the scenes effort that the team doing this installation took pride in and enjoyed the task at hand. They

really loved making this aircraft look and function even better than it did the day it rolled out of the factory. Century Avionics has been fortunate enough to have successfully installed a number of dual Garmin G-600 and GTN systems into a number of different larger airframes, experience on this installation was in abundance. The engineers involved on this project had more than 25 years of experience in avionics collectively.

#### Existing equipment retained in the aircraft:

- Honeywell ART 2000 radar - interfaced onto Pilot G-600
- Honeywell KMH-820 traffic and terrain - traffic interfaced onto all MFD units
- Honeywell KMD-550 MFD - Radar, EGPWS (terrain) and moving map GPS
- Honeywell KR-87 ADF- displayed on Pilot and Co-Pilot G-600 systems
- Honeywell KT-70 transponder- stand-alone transponder #2
- Honeywell KFC- 325 autopilot system

#### New equipment installed:

- Dual Garmin G-600 PFD/MFD with Synthetic Vision System
- Third party radar enablement and Chartview for Jeppesen
- Jeppview go-referenced approach plates
- Garmin GMA-350 Audio Panel

- Garmin GTN-750 Touchscreen Nav / Comm / GPS
- Garmin GTN-650 Touchscreen Nav / Comm / GPS
- Garmin GTX-33ES Remote mount mode S ADS-B Transponder
- L3 communications ESI-1000 electronic standby instrument with PS-855B independent backup battery
- Garmin Flightstream-210
- Bluetooth flight plan loader
- Mid-Continent MD-93
- Digital clock with dual USB charging ports

The upgrade entailed STCs developed by Pilatus for the Dual GARMIN G-600 and L3 Communications Emergency Power Supply for the Electronic Standby Instrument and the GARMIN GTN Avionics stack according to the Garmin AML STC. A local minor modification for the installation of a digital clock with dual USB charging ports was carried out as a value added feature for the ease of use of tablet EFBs. Our local PILATUS CENTRE SA was helpful in procuring and importing the STC hardware from its sister company on time. Century Avionics was delighted to receive the carefully manufactured and marked bracketry, panels and hardware. As such we were committed to a successful project, the well forged relationship we have with the professional team at PCSA made for a seamless install. Once completed and reassembled all systems went through a complete interface functionality check to make sure the full functionality of the systems was obtained.

**Switch on day - much anticipation and hard work - it worked beautifully**

Super functionality and redundancy alleviating workload in the cockpit by adding greater single pilot functionality and operational awareness. This upgrade not only accomplishes a reduction in cost of avionics maintenance and increasing downtime as a result of aging and failing EFIS CRTs, it gains higher level of situational awareness through moving map touchscreen GPS / NAV / COM, multifunctional displays in primary view of the pilots, ADS-B trend lines for traffic advisory, emergency power to essential avionics in case of electrical failure, synthetic vision on primary flight displays integrated with GPS, NAV, ADF indication, Radar Altimeter, Angle of Attack, Altitude preselect, vertical NAV and GNSS functionality and approval; a must have in any IFR certified aircraft.

The aim for carrying out an upgrade of this magnitude was to remove all the old / steam driven avionics and instruments and replace them with glass solid state units. By doing this you increase reliability and accuracy of the avionics in the aircraft with Garmin's two-year warranty on its equipment, high MTBF records and Century Avionics great country wide after sales service, you gain piece of mind.

One of the most important phases of the upgrade is the training we offer as Century Avionics strongly believes that once an installation is complete, the pilots need to familiarise themselves with the newly installed equipment. This gives the pilots the opportunity to operate the G-600 / GTN simulation demo unit and ask the questions you can't find the answer to in the pilots' guide. The GTN Trainer app is another very helpful tool to get to know the features of the new avionics prior to stepping into the new upgraded glass cockpit. After the installation was complete Century avionics presented a training day for pilots at its premises at Lanseria Airport in order familiarise the pilots with the operation and functionality of the newly installed avionics. Further pilot training abroad is available from Garmin in Germany should it be required.

Century Avionics is extremely fortunate and grateful to be the first avionics company in Africa to carry out a Dual G-600 system upgrade on a Pilatus PC-12. The company feels that this will set the trend for Legacy PC-12 owners and operators in the future so as bring down operating costs and most importantly increase the safety and situational awareness for the crew and aircraft. Century Avionics prides itself on its extensive knowledge and experience on the installation, maintenance, support, certification and approval of general aviation avionics. 📞

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PC 12 Before



PC12 Bare



Masterpiece



New panels in



First ground run - everyone involved