



AFRICAIR DIESEL RETROFIT HISTORY

For over a decade, the Africair Group of Companies, including Africair, Inc. (the Cessna distributor for most of Africa), Tropical Aviation Distributors (the Cessna distributor for the Caribbean and parts of South America), and Propel Aviation Sales & Services, LLC (an FAA/EASA Certified Repair Station and Cessna Propeller Aircraft Authorized Service Station) have been retrofitting Cessna 172 Skyhawks with diesel engines. The existence of a viable, supportable Jet A-1 burning engine has breathed new life into initial pilot training organizations throughout Africa. We are pleased to present the following history of our diesel retrofit program for your consideration.

The History of the Continental Diesel Engine

What is now known as the Continental Diesel Engine (CD 155 Engine) began as the Thielert or CENTURION 1.7 engine which evolved to the CENTURION 2.0 engine. Now called the CD-135 engine, this 135hp engine was the first of its kind and it opened the doors to a new era of flight training in areas where AvGas is unavailable or uneconomical. Africair, Inc. is the exclusive distributor and Master Installation Facility for Continental Diesel Engines for Africa and our sister company, TAD, has the same responsibilities for the Caribbean and portions of South America. Propel Aviation Sales & Services, LLC is a Continental Service Station and Installation Center under our company umbrella and has performed more CD retrofits than any other facility in the world.

Early Africair Retrofit History

Our first conversion was performed in Germany in 2004, when we transformed a standard 2001 Lycoming-powered Skyhawk to diesel power and embarked on a demonstration tour throughout East Africa. Propel Aviation disassembled and containerized a Cessna 172SP, and shipped it via sea freight to Hamburg, Germany.

Upon arrival in Hamburg, our team of technicians reassembled the aircraft, performed our first retrofit 1.7 engine installation under the guidance of the CENTURION factory technicians, updated the graphics, and put the aircraft on the German aircraft registry.



Reinstalling the landing, wings and flight control surfaces after removal from container



Hanging the diesel engine



Preparing the aircraft for initial leak check



Reweighting the aircraft after the conversion is completed

Thereafter, Africair spent several months conducting demonstration flights to potential operators in Egypt, Ethiopia, Kenya, and Tanzania.



Conducting product briefing on the ramp at Wilson Airport, Nairobi, Kenya



Inspecting the aircraft at the evening reception in Nairobi, Kenya

Following our demonstration tour, we were awarded a contract to retrofit the National College of Aviation Technology's (now known as the Egyptian Aviation Academy) entire fleet of twelve Cessna 172 Skyhawks. This very challenging retrofit program was

completed on site in Egypt over the course of 10 months. Our technicians worked in the customer's hangar converting their 172N, 172P, and 172R aircraft through four different deployments, while training the local technicians on the process. Africair's engineers returned on several occasions over the next three years to assist with component and engine changes as EAA continued to gain competency and make this program a success.



Conversions on two Cessna 172R models in process in Cairo, Egypt



SU-BGX (EAA Conversion #5) ready for initial runup



SU-BBD (EAA Conversion #8) getting ready for the engine mating

In 2005 - 2006, Africair delivered two diesel retrofitted Skyhawks to Abyssinian Flight Services' in Addis Ababa, Ethiopia. Since that time, we have delivered a total of seven diesel Skyhawks to Abyssinian Flight Services.



Abyssinian Flight Services fourth aircraft ready to depart

From September of 2005 through early 2006, Tropical Aviation Distributors converted another 172 which was utilized to conduct a demo tour throughout the Caribbean and portions of South America.



MT Three-bladed Composite Prop



N872CP completed and ready to start the demo tour



Taking off in Nazca, Peru



Customer briefing in Ica, Peru

In 2007, Africair was the first US corporation to sell US manufactured goods into Libya after the sanctions were lifted. We retrofitted two 172R aircraft for Air Kufra and a 172S for Gulf Pearl Aviation to augment their training fleets. The Air Kufra project included customized paint schemes as well as training, disassembly, and containerization of the aircraft for shipment to Tripoli.



Connecting the wires during installation



Finalized Air Kufra retrofits

Later that same year, the Africair Group Of Companies retrofitted twelve new Skyhawks under a sub-contract with Cessna Aircraft Company to provide training aircraft to the Iraqi Air Force. These Skyhawks were the first retrofits to be done on G1000 equipped aircraft. Eight aircraft were converted between August 2007 and January 2008, with the remaining four aircraft being modified in the fall of 2008. In addition to the aircraft, the IAF received a thorough supply of spare parts and a customized Frasca training simulator to support their operation.



IAF #5 converted and painted in matte gray



Aircraft on the ramp pending customer inspection



Arrival in Baghdad, Iraq



Aircraft turnover from U.S. Air Force to Iraq Air Force

In addition to these projects we retrofitted three aircraft in South Africa, and continued to perform conversions in Miami for customers in Guadeloupe, the U.S., Colombia, and Angola. Between 2008 and 2011, while Thielert Engines was in insolvency, we continued to support our customer's existing fleet of aircraft operating around the globe and provided technical support during major inspections.

Recent Projects

Our recent success stories include the rejuvenation of the Angolan Air Force's training academy in Lobito, Angola. In 2013, Africair delivered a fleet of six new Skyhawks to the Angolan Air Force. Propel Aviation converted all six to the CENTURION 2.0 engine under an EASA approved STC. The program included in country support, maintenance training and instructor pilot training. We also delivered a FRASCA simulator specifically designed to match the configuration of the training aircraft. To date the AAF's Skyhawk fleet has logged over one thousand hours and their training program is scheduled to increase in the coming years. Additional deliveries are anticipated in 2015 as the academy expands its training activities.



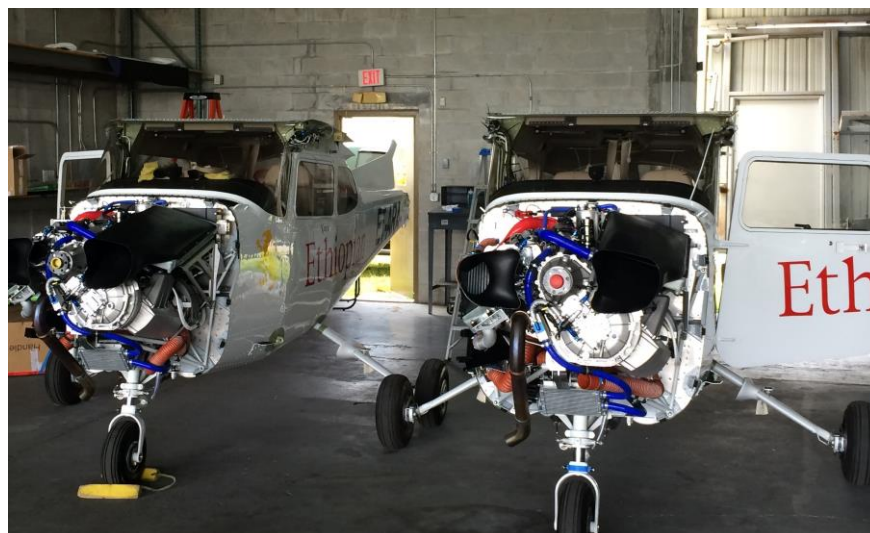
Aircraft, propellers, and spare parts loaded in container for Angola



The first two diesel Skyhawks on the Air Force ramp in Lobito, ready to start their training missions.

In July of 2014, Africair delivered three new diesel powered Skyhawks to Ethiopian Airlines in Addis Ababa, Ethiopia. The Ethiopian Airlines Aviation Academy recently became an Authorized Training Center for the International Air Transport Association (IATA) after following a rigorous. Over a thousand candidates currently enroll in the academy per year and plans are underway to increase capacity to four thousand by 2025.

These initial aircraft were so well received, that EAL recently ordered seven additional CD powered Skyhawks which will be delivered in 2015. These will replace EAL's current fleet of DA40's and will be heavily utilized by EAL's training organization for years to come.



Two converted aircraft with the wings and tails off ready to be containerized



Aircraft on ramp ready for acceptance inspection



Ceremonial handing of the keys to the customer's representative in Miami



Enthusiastic instructors and students inspect the new aircraft during the arrival ceremony in Addis Ababa, Ethiopia

The Africair Group of Companies specializes in customized support for their diesel aircraft and can arrange all international sales logistics, disassembly and containerization, shipping, reassembly, in-country technical and flight support, and unparalleled after sales support.

The Conversion Process

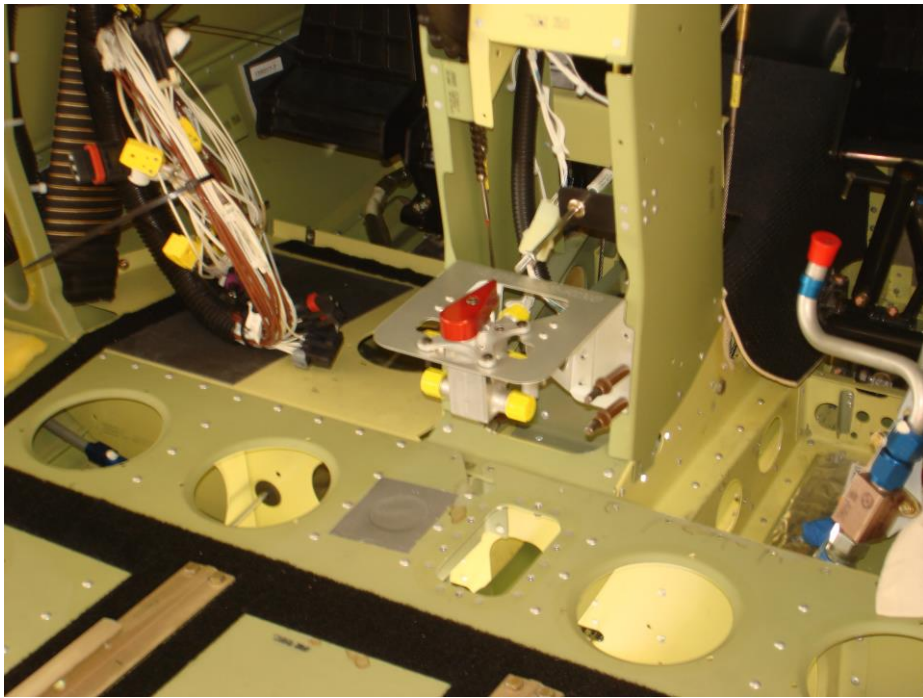
The CD retrofit is extensive and involves not only the engine exchange but also the addition of return fuel lines, extensive wiring work, relocation of the battery, modifications to the instrument and circuit breaker panels, installation of the FADEC power lever, replacement of the fuel ports and caps, relocation of the oil access door, and other cowling modifications to accommodate the coolant site glass and the new exhaust port. The Africair Group is one of a select group of “Master Installation Facilities” appointed by Continental worldwide and has completed far more installations than any other facility.



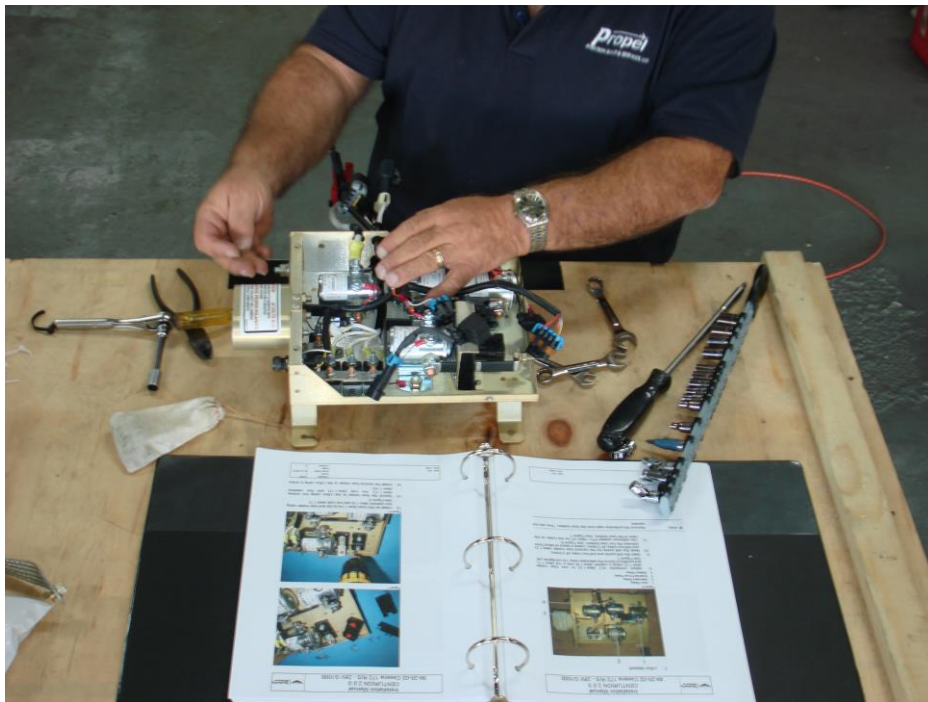
Engine, cables, and all accessories removed from firewall



Interior flooring & sidewalls removed as well as all avionics and the mapbox to allow room for FADEC computer



New fuel selector valve installed



Modifying the junction box



Circuit breaker panel modifications



G1000 Panel with AED, CED, FADEC test switch, and single lever power control

The Benefits Of The Continental Diesel Retrofit

The beauty of the CD diesel conversion is that CD powered aircraft can be operated using Jet A-1 fuel instead of Avgas. Jet A-1 fuel is available virtually everywhere, while in many parts of the world, the supply of Avgas is limited or non-existent. Also, outside the US, Avgas is generally much more expensive than Jet A-1 – sometimes costing as much as 4 times the price of Jet A-1. These factors, combined with the lower consumption rate of the CD engine (as low as 6 gallons per hour), make the CD powered Skyhawk the perfect training aircraft in many countries. The engine is reliable and fully supported by the Continental factory warranty. Finally, because the engine is FADEC controlled, the aircraft is easy to operate and diagnosing technical issues is made simpler by FADEC downloads.

Our Capabilities Today

To date, our companies have performed more than 60 retrofit installations with the 1.7, 2.0, and 2.0S CENTURION engines. We have modified a variety of Skyhawks, including the K, N, P, R, and S models. Our personnel have performed retrofit installations and upgrades on-site in Egypt, South Africa, Germany, and Guadeloupe and have exported retrofitted aircraft from Miami to Iraq, Ethiopia, Angola, Libya, Colombia and other countries. Propel, is an EASA and FAA Certified 145 Repair Station, and an authorized Cessna Service Station. Propel has 10 licensed mechanics (4 with IA authority) and 2 mechanic's assistants.

Within the Africair Group Of Companies, we have 8 certified technicians who have attended the CENTURION factory training and 6 pilots with significant time in the CENTURION retrofit products. We have contracted pilots for in-country training for months at a time to support program implementation. Our employees speak French, Creole, Portuguese, Spanish, German, Arabic, Hindi, Farsi, and Swahili and we have liaison offices in San Juan, Puerto Rico, Nairobi, Kenya, and a team of Field Service Engineers based in Abuja, Nigeria.

Cessna Skyhawks converted to the CD diesel engine are logging thousands of hours all over the world. The fleet of four-cylinder diesel power plants has accrued over 4 million hours and is flying in a variety of 2,400 aircraft worldwide. Regardless of the application, Africair, TAD, and Propel are uniquely qualified to retrofit, upgrade, or support your diesel/Jet-A-equipped aircraft. With the backing of AVIC Corporation, and the support of Continental Motors, Continental Diesel has brought stability and superior OEM support to an outstanding line of diesel engines. As the market leader for diesel and AvGas aircraft engines, Continental Motors Group has chosen to bring all of their

diesel engines under a single brand as of July 2014. The Diesel engines previously referred to as “Centurion” has recently been renamed “Continental Diesel” abbreviated as “CD”. The former Centurion Diesel 2.0S is now the CD-155 and the former Centurion Diesel 2.0 engine is now the CD-135. Continental’s newest diesel V6 will start the CD-300 series of engines, with the first product rated at 310HP. As Continental Motors continues to expand their diesel offerings, our companies will be there ready to install, service, and support whichever model you are interested in.

