

430hp 172 V8 STC

By the time that this goes to press, Quiet Aviation in Hangar 99 should have officially received the Issue Paper with the Basis or rules to install the GM LS3 430hp Corvette V8 in a Cessna 172. This has been a 7 year process getting the FAA to authorize the installation of a production automobile engine in a certified aircraft which had never been done before. To reach this agreement, we had to make some concessions that will be discussed later and sneak in by using some never used and unusual Federal Regulations. At this writing, we are nearing the conclusion of the 30 day public review in the Federal Register of this application.

Our first move was to exercise removal of the 172 from the Standard Category and place it in an existing and never used Primary Category. This Category was established for owners of certified aircraft to do their own maintenance. This is limited to aircraft certified under 2700 lb G.W., normally aspirated engine, 4 seats, unpressurized, with a stall speed under 61 mph. Then with a separate STC, we install the V8 and components according to the 1949 CAR3 (CAA) regulation which was used originally for the 172 and is without the many current policies including the ASTM regs for engines. The engine/gear box/prop and accessories for this powerplant must have it's own Type Certificate. This was simplified by doing it under the JAR22 reg for powered sailplanes.

For a long time we had proposed to use a fully electronic engine that you find in your car so that there will be the economy, emission control, reliability, and convenience that we all appreciate. We proposed a dual computer system in block diagram form as all other vendors do and were asked to explain how in detail we planned to do it. After much detail and schematics followed with several discussions, we were denied use of the computer as "nobody is doing it that way". We did not propose voting computers as the industry likes, but independent computers with no added logic to go bad. These computers are GM stock which have the useless functions defaulted like an "open door" and installed using the same electrical harness. So we have backed down and for the STC will use the certified Airflow mechanical fuel injection, but they are permitting the use of GM's electronic ignition module. Neither can we use an LCD display of the engine functions so for now there will be the typical analog gages.

Since even this approval is a first, it will be a foot-in-the-door or a precedence to build on. We are nearing flight in our prototype 172 with a nice Sensenich 3-blade prop, a modified cooling system, and the dual computer setup. We plan to run up the hours with these computers for proof of concept which can be used in a follow up proposal.

Therefore we are happy to have anyone with at least 200 hours in the 172 or 182 to fly it all they wish at \$20/hour and a verbal report of each flight.

We are still at some liberty in defining this package. A sour point was the requirement to use a certified propeller or certify the one we prefer according to the Part 35 procedure. It would have been nice to use the Sensenich carbon fiber airboat prop that was proposed as it would have given good performance and kept the cost down. However, in doing some research with vendors and regs, it appears that we can get away using a C/S

propeller to certainly enhance the performance and marketability of the package that justifies the extra cost. We will proof the plane for use of alcohol fuels which should easily operate on 87 octane auto fuel or 100LL or a mix if required. There maybe some altitude limitations that we must investigate.

This STC produces a 172 or Skyhawk that is silent at a 1000', runs on auto fuel at 5 to 6 gph, may actually cruise at 150 mph, is cheap to maintain, and can be used for hire except for any Part 135 activity. Once we have proven the concept, and hopefully updated to a fully electronic engine that is also emission free, we can extend the mods into some of the early 182's, a lot of Pipers including the Arrow, the Maul's, some Bonanza's. With good success, it could even open up the Standard Category and offer the package in production airplanes. And we would like to prepare a firewall forward package for some of the better selling kit planes like the RV10, the Ravin, and several in the bush category. Having obtained a GM dealership for aircraft and airboats helps to make the use of an auto engine a great enhancement to aviation and very very competitive.

These LS engines are all aluminum and compare well with the IO5XX series engines in weight and CG and to an advantage as you step up the hp. They have the Corvette racing LS7 engine at 505hp, a supercharged LS9 at 650hp, and this basic, small block, engine with mods that include twin turbos has been tested for 50 continuous hours at 2050hp and potentially could have run 2700hp. Now that really speaks well for the engine. By using GM's Performance Build engines, the FAA has accepted their quality control and has permitted the installation of a Crate Engine (a unit that has been run on a test stand and is nearly complete) directly into the aircraft.

We will be updating our website www.quietaviation.com very soon with all of the STC news so that you can stay abreast of the developments. We are not sure at this moment how we or who will process this Issue Paper into an STC. It is time for myself and partner Fred to retire so it may be sold to Cessna, a major mod facility, or some special interest group. We do have one performance builder that needs the dealership but also likes the idea of expanding into a new market. On the other hand, the possibility exists that we make a private offering to distributors and service centers that want to participate and carry out the project ourselves. By the STC, only service centers can make the mod and there are no overhauls as it is cheaper and faster to simply replace an engine.

The next several months will tell how this pioneering adventure is going to move ahead. In the meantime, we will continue to test our innovation and prepare to market several of the experimental packages. And we are presently engineering the V8 or the Russian radial installation in the Travel Air biplane so that it will be introduced as a kit plane. Stay tuned.