

ELECTROAIR - EIS 41000 ELECTRONIC IGNITION

After more than 2 decades of aircraft ownership and ongoing maintenance, I have seen companies develop and market aircraft electronic ignition only to disappear from the marketplace later on – in some sense leaving Owners stranded.

In July, I spent a brief 3 hours at Oshkosh looking at Electroair ignitions, Garmin autopilots, PS Engineering audio panels and a few other select vendors.

The decision to invest in electronic ignition technology is risky at best, but the benefits in the automotive world are real and verifiable. With a new Penn Yan overhaul, I decided that this is finally the time to switch to an electronic ignition.

I am always skeptical of performance improvement claims made by manufacturers and, so I was with the Electroair. The flight back from Cincinnati yesterday was certainly an eye opener and in the end, a validation of the investment.

Some of my flight observations are subjective, but most are objectively verifiable. Here is what I noticed after 17 years of flying the same airplane.

STARTING – starting the Tiger has always been more difficult than I liked, and it has left me sit in cold weather. Yesterday, I sat in the cockpit, primed 3 strokes in 40° weather and pressed the starter button. Vroom... started instantly, just like my car. I was impressed and flashed a thumbs-up to Roscoe the mechanic.

CLIMB & LEAN – I had a strong climb to 9500' at roughly 100 knots IAS. The Tiger was still climbing at 500 feet per minute at 95 knots IAS when I reached 9500msl.

***(note that the best rate of climb airspeed at 10,000' is 79 knots)

The 1st thing I noticed as I leveled out, was that I was pushing 2700 rpm at 9500 and I had to throttle back ever so slightly. Less than full throttle at 9500' was a first for me. I cruised for a few minutes at 9500, leaned to the book value of 9.8 gph.

I decided to lean to engine roughness to see how lean I could get it. But it was still running smoothly when I reached 5.5 gph so I stopped there - as that is a ridiculously low fuel flow. I cruised for a few minutes at 5.5 gph then eventually

enriched the mixture to 8.8 (book – 1 gph) and continued to cruise home at that fuel flow.

On the subject of leaning, Roscoe and I agreed that we should lean to book value - minus 1 gph. He has another Tiger customer, Mark Mathews, who also has had an EIS for several years and he leans to book – 1 as well. And at each annual, engine compressions are good.

HIGH ALTITUDE – I have never taken the Tiger (or any airplane) above 11,500 in the past because the climb had deteriorated significantly enough that a climb to 12.5 or 13.5 were out of the question. The service ceiling is 13,800’.

I will note that on the way to Cincinnati, with the advantage of cold temperatures, I did manage 12.4 to get over cloud tops and avoid icing, but just barely.

Cruising at 9.5, I advised ATC I would climb to 11.5 and I did so. Then I advised ATC I would be climbing to 13.5 “to see if I could make it”. I leveled out at 13.5 and flew for 23 minutes in the start of oxygen altitudes. I was amazed at the performance improvement simply from an electronic ignition.

I finally advised ATC I would climb to 15,000 and upon reaching it would immediately descend to 11.5.

At 14,800, I was still climbing at 300 fpm at about 85 knots IAS, so I realized that 15K was definitely within reach. I opted to descend to 11.5 before I suffered any effects from hypoxia.

It was a magnificent, long, slow ride back down to 11,500. Having never been that high before, it was quite a sight.

CHT’S & BAFFLING – My major concern before purchasing the EIS 41000 was that it was known to cause CHT’s to rise by 30°. Since 3 & 4 have been running at around 420° in summer cruise, that would be an unacceptable rise in CHT to 450°.

On a side note, the **EGT’s** dropped by about 200° which should help avoid the exhaust valve burning we had in the past.

As it turns out the CHT's did go up. #1 & 2 were at roughly 368° on the way to Cincinnati and in the 390° range on the way home. Neither #1 or #2 ever got to 400, but close. Yeah, but what about #3 – the real problem - you ask?

During the purchase research, mechanic & Grumman specialist, Roscoe Roche, convinced me that he could get the temperatures down and that there were probably leaks in the baffling. When I arrived Monday morning, the first thing Roscoe did was show me all the leaks in the baffling. Most were very small, but cumulatively, there were a dozen leaks. I was hopeful, but also still skeptical of any significant change. Roscoe plugged all of the leaks in about 10 minutes.

On the way to Cincinnati, at 12,000 feet (-7 oat) and leaned to book, #3 was at **410°**.

On the way home at 9500 feet (-1 oat) and leaned to book, #3 was at **410°**.

Roscoe was right. His baffling repair bought us about 30° of cooling on the back cylinders, which offset the rise from the electronic ignition.

I have been at almost every major maintenance event of the Tiger & Traveler for the past 21 years and I was duly impressed with Roscoe as an only-Grumman mechanic.

He is knowledgeable, fastidious and relatively efficient getting work done in a timely manner. He has an incredible supply of parts and Grumman specific tools – that no one else east of the Mississippi has. There is no doubt in my mind, that we would all be well served to have Roscoe do our annual inspection in 2018.

As a final CHT fix for next summer when temps go up, Roscoe will install a new pair of oversized cowl exit ramps that he and Jim Candeletti developed that improves cooling airflow. Based on the improvements he made so far, I am now a Roscoe believer and think the cowl ramps are a good idea and will improve cooling.

SUMMARY

From a certain perspective, that flight home on Tuesday was the most thrilling I ever made. I was amazed that the simple change of 1 magneto to an electronic ignition could have such a dramatic effect on engine & aircraft performance.

It starts like a breeze. We can fly higher and longer on less fuel than ever before.

Well worth the investment.