How to tell if you are getting correct engine instrument readings

It's always a good idea to check that your probes and instrument are reading properly before installation or when you get an odd reading. Sometimes folks assume they need to start messing with carburation when that's not the problem.

Note that Rotax 2-cycle engines with stock OEM crankshaft seals often leak after 5 to 6 years or around 300 hours run time. This can cause air leakage and increase EGT readings which can lead to a lot of engine damage real fast.

Before attaching the probes to the engine, use a jumper cable to ground it to the engine and connect the other leads to the instrument.

For the EGT probe, use the very tip of a paraffin candle flame (birthday candle) which should read 932 F. If using an analog type gauge, the probe may need to be heated with a propane torch to get it off the 0.

The temps probably won't be exactly 932 F but + or - about 50 F is close enough and it's nice when both probes are pretty even.

For the CHT, water temp and oil temp probes, determine the boiling temp of water at your elevation and use a cut down pop can, vice grips and a propane torch. Take the reading right when it starts to bubble as it will rise 20 F to 30 F if let to hard boil.

If you have 2 of the same probes and find an odd temp reading on one, the leads can be swapped at the instrument to determine if it's the probe or the instrument.

For a static RPM check (tied down, brakes on and throttles rigged correctly) use a hand-held tach that counts the blades. If using a gear reduction, multiply the RPM times the reduction ratio.

Oftentimes I find that especially the analog gauges give faulty readings. I much prefer the digital type and the best value available as of this writing is the MGL E-1 engine monitor. Below is a description and current pricing. Let us know if you need one!

The E1 universal engine monitor combines in one compact 3 1/8" format instrument all that is needed to monitor most smaller aircraft engines, from two-stroke ultralight engines to medium sized four strokes such as from Rotax, Continental and Lycoming. Most automotive engine conversions can benefit from the use of the E3 engine monitor.

The E1 can measure up to 4 total EGT/CHT channels, a universal RPM input, a universal temperature sender input, a universal pressure sender input, and the aircraft's supply voltage.

- 66 different engine setup configurations possible
- Universal, programmable rev counter (engine RPM) with digital and analog readout, with a programmable high alarm limit

- Programmable engine Hobbs meter (password protected) and running timer (flight timer) with automatic flight log
- Can monitor up to four total programmable thermocouple channels for EGT and CHT probes with a user programmable high alarm limit
- A universal temperature sender input with a user programmable low and high alarm limits
- A universal pressure sender input with a user programmable low and high alarm limits
- Supply voltage measurement up to 30V with a user programmable low and high alarm limits
- Maximum recorded values for all measured values are stored in non-volatile memory
- High accuracy: Built in thermocouple linearization curves and cold junction compensation
- Thermocouple temperature probes can be common K, J or E-type thermocouple probes
- Uses standard automotive temperature and pressure senders
- Special Rotax 912/914 engine monitor mode utilizing the standard built in Rotax NTC CHT probes
- Supports the new Rotax 912/914 4-20mA oil pressure sender

Download E1 Manual (PDF)

Price: $345 + shipping from CA