**Matt Steinmetz, Scaled, Mojave, CA:**

*“I thought you might find this interesting and it’s worth repeating on forums, etc. if you like.*

*I flew the Long EZ for the first time in 2007.   Like all good canards the oil ran hot… like surface of the sun and lava flows hot.   I tried everything with my super clean, buried, laminar flow, “nobody can see an in or out, but trust me it’ll work” (but it didn’t) oil cooler.   After comparing notes with Mike Melvill and Doug Shane I doubled the size of my cooler.   No joy.   I eventually copied Mike’s location and exit concept and the temps finally trended down.  I bet I messed with deflectors, kickers, coolers and other …”ers” for over a year and a half. Yes, I measured delta.  I fooled with vernatherms, I dialed oil pressure up and down.  I did it all.  I think I eventually just came to accept red line on long climbs and 205-220 temps in cruise as normal.  Over the last 11 years I’ve seen it on the vernatherm once (180F, on a long trek back from Ks when the OAT was between -19 and -25°F).*

*Then a year ago I stuck a valve: WAKE UP CALL.  While I was researching AD’s and reading around the net, that old nagging feeling that my OT wasn’t right kept tugging at me.   The research essentially confirmed it.  Over the last several months I’ve been cutting, pasting opening and closing inlets and exits again.  Also been dueling with the proper location and size for kickers.   Numerous tests all lead me back to where I started.   My inlets and exits were optimized and doing their jobs (he realized after he cut his super pro glossy cowling).   The oil cooler was the same size as other guys are using on similar or even bigger engines. Why wasn’t it working?*

*I was recently perilously close to making a larger inlet (i.e. a complete rework of the lower cowl).  My brother Justin who has watched all of my struggles says off the cuff one day, “You should try some larger oil lines before you cut up your airplane.”  Gasp, cough, wheeze, “I already tried that” I replied!  “Well on my EZ  I put the biggest lines I could find” he says.  I told him, “I know.  I went through this already.  I had this discussion with Mike a decade ago, but sure…”.  Honestly anything was worth a try as opposed to canceling my plans for the remainder of 2018 and some of 19.*

*I had -6 lines on because they matched the “largest” fittings I could put in the engine and oil cooler. I.e. 3/8 NPT to -6 AN.  I didn’t have to dig very long before I found race car fittings that were 3/8NPT to -10 AN.  At that point I figured it was just getting silly.   So after a large puddle of oil on the floor,  a few days waiting for crow’s feet and the shortest extensions I could find from Amazon, and it was airworthy again.    I took off and climbed with the temp starting at about 145 °F.   Each of my previous test points was full rich, 110 knot climb to 8500 ft.  I’d record the temps and typically it was already well north of 210 and shooting like a rocket to redline.  Today it was steadily, slowly climbing through 190°F.   Too early to draw conslusions….   My next point was to level at 8500, full rich, 2600 rpm and stabilize.  The oil temp began to fall.  Eventually it stabilized at 175°F.   No way, not possible, there is a rift in the space time continuum.  Not only was the oil temp below the vernatherm, the cylinder head temps were lower than they’ve ever been before…. Hovering just over 300°F.   The next point was lean of peak.   Long and short, it worked… stabililzing at 180 with the CHTs in the mid 300’s.  Problem solved… by oil lines???*

*So let me summarize:  High oil temps.  Accepted high oil temps for 10 years until had a close call with a stuck valve.  Discovered the silver bullet with something as silly as larger cooler lines.*

*What is the lesson learned here?  I think there are several.*

*1.      I had previously tried “larger lines”.   I’m a bit OCD and I really wanted a “pro” airplane.  I didn’t spare any expense and that didn’t stop at lines under the hood.   At that time in my project I was about out of $100 weekends.  I suspect at some point after spending several hundred on lines for my engine I convinced myself that I’d gone from a -4 to -6 or -6  to -8 with no temp difference and I couldn’t just keep throwing $ at the problem.  I was trying to do everything “pro” when I should have stopped, found the cheapest test lines I could and exhausted my test cases.*

*2.      Normalized deviance.  You’ve heard this before.. There is something in our psyche when we’ve spent too much (whether time or dollars or personal hardship bucks) where we convince ourselves that something wrong is actually right.    It took a close call with a stuck valve pumping 1.5 quarts of oil overboard in ½ hour to shake me out of it.  If it’s wrong it’s wrong.  Don’t stop until you get to the bottom of it.*

*3.      LISTEN.  I actually did the right thing this time.   However, knowing me I could just as easily have taken the low road and ignored sage advice.   LISTEN.  Justin’s off the cuff comment came from years of experience as an A&P.  Often if you talk too much or “discuss combatively” and people clam up and let you struggle along in solitude.*

*And finally to reillustrate point #3.   Roughly the same time Justin offered the bigger oil line comment we were headed somewhere on a trip.  It’s not often he’s in the back of my airplane.   Starting my Eze is a hones skill not unlike taming lions or colliding atoms.  Caugh, caugh, backfire, kickback, rub your belly… pat your head, rrr-rrr—rrr-rrr.   Finally when the battery had nearly had it, the engine coughed to life.  My brother commented “You really ought to try to start this with less throttle.”   I’m sure I retorted some snarky holier than though comment. I mean who does he think he is?  I’ve started this Long Eze hundreds of times and it’s never been easy.   Well not that day or any others when he was around, but on a whim one day I just barely cracked the throttle.  Rrr-rrr- Plunkety chunk chunk chunk… It started right up!  “No way,  I thought.  “I just ran it yesterday… it was primed”.    I gave it no more thought.   A few days later same thing again.  Super long story just long…  He was right.  So I’ll add two more lesson’s learned.*

*4.      LISTEN… you get the point*

*5.      Don’t get stuck in your ways.   Try little experiments now and again even with things you’ve “done this way forever.”  You never know what you may learn.*

**Frieder Kemmann, Wholly different reason for hot oil:**

*“I had the same running high oil temp problem on my IO540, dual oil coolers both new. They are plumbed: front cooler gets first oil(better heat), it's return goes through the rear cooler then back to engine. I tried a new vernatherm- no difference. I then installed the "Casper lab" angled oil filter adapter to the rear of my engine to allow better filter access. This unit in essence gives you a new valve seat for the vernatherm, because it repaced the original surface with a new angled unit and just a paper gasket seals between the old rear cover flange and the new housing. My oil temps dropped from 225 and higher to a now very consistent 189 degrees in cruise, around 195 in touch n go flights. I suspect my original old case seat was slightly out of round or leaking? Aircraft spruce sells these adapters among others.”*