Del Schier summarized his efforts to reduce the number of oil coolers and get back good cooling

To recap, my Cozy 200 HP angle valve has always needed two oil coolers. I have spent days with trying to get by with just the one larger 19 row Positech cooler.  The last flight after cleaning it the oil temp got to red line (240 deg) in a climb to only 2500’.

Pacific Oil Coolers told me that make and model Positech cooler I was trying to use by itself was a very poor design and probably most of the cooling was from the smaller Stewart Warner 9 row I had been taking out.

I took their advice and purchased and installed a 13 row Aero-Classics 8000215 that is ¼ “narrower than the old one but 6 rows less.

With the new one I got to 4500’ and just went into the yellow @ 226 deg peak.  Both test flights were at the same conditions; near full power, 60 deg OAT, 120 kn in climb.  In cruise it went back down to ~ 190 deg and my CHTs were ~ 300. I did notice my CHT balance, that I have been messing with, got disturbed.

I am very happy with the improvement, and I think I can fly with the new single oil cooler but know that I need to get more air through it for FL Summer conditions.  There are things I want to try for more airflow, and know I should measure differential pressure as well as temps.

I would like feedback on what to try!  I am not going to move it from the bottom of the cowl strake; that may be impossible or too much work.  I will try cuffs on the corners of the NACA openings like Klaus has on his NACA.  I will also try making a radiused airflow smoother, for lack of a better name, on top of the cooler inside the cowl.  The other thing is a ramp ahead of the opening, see attached Melville pic, to create a negative pressure on the outlet.

  

<<...>> There must be some optimum shape for a negative pressure ramp??

I am glad I figured out I had a poor cooler, and it now looks like I can now have a lighter, safer and neater installation.

He was provided a Canard Pusher article on the oil cooler ramp for the Voyager. (Library 23MS91)

The CP article said it was slightly better more forward covering up almost none of the cooler.  The temporary ramp I tried is mostly ahead of the cooler opening, see attached.  I don’t think I want to make a permanent version like that. I want it on the bottom of the cowl, which I need to re-paint and, I am not sure I could get the cowl on and off if I put it under the strake overlapping the cowl. Attached is a picture of Mike Melville’s ramp; something like that would be easier to install.

The Voyager ramp was over about half of the cooler even though Dick’s CP article said it was a bit better further forward (3.8 in H2O vs. 3.0 in H2O).

I will make a permanent ramp and I am now confident I can fly in any conditions with one cooler.