Waikato Chapter of Sport Aviation Assoc of NZ

*(Dedicated to building, flying - and talking about - **homebuilt aircraft**)*

Newsletter - February 2024

- *This newsletter is broken into three sections. The 'Of Interest' covers anything not specifically in the 'Currently Building' or 'Been Flying' sections.*

A big thanks to all our contributors! Particularly those who responded to my Christmas challenge to describe their fav instrument panel, which has been put in its own section.

If you are building or working on a project that I don't know about, please get in touch. A pic or two and a bit of description goes a long way, and really helps everyone else in the club knowing who to talk to. Also, there is a lot of experience out there to tap into if you find you need help. I hope this newsletter shows all the progress being made, although with the superb weather at present I suspect more flying than building is happening at present.

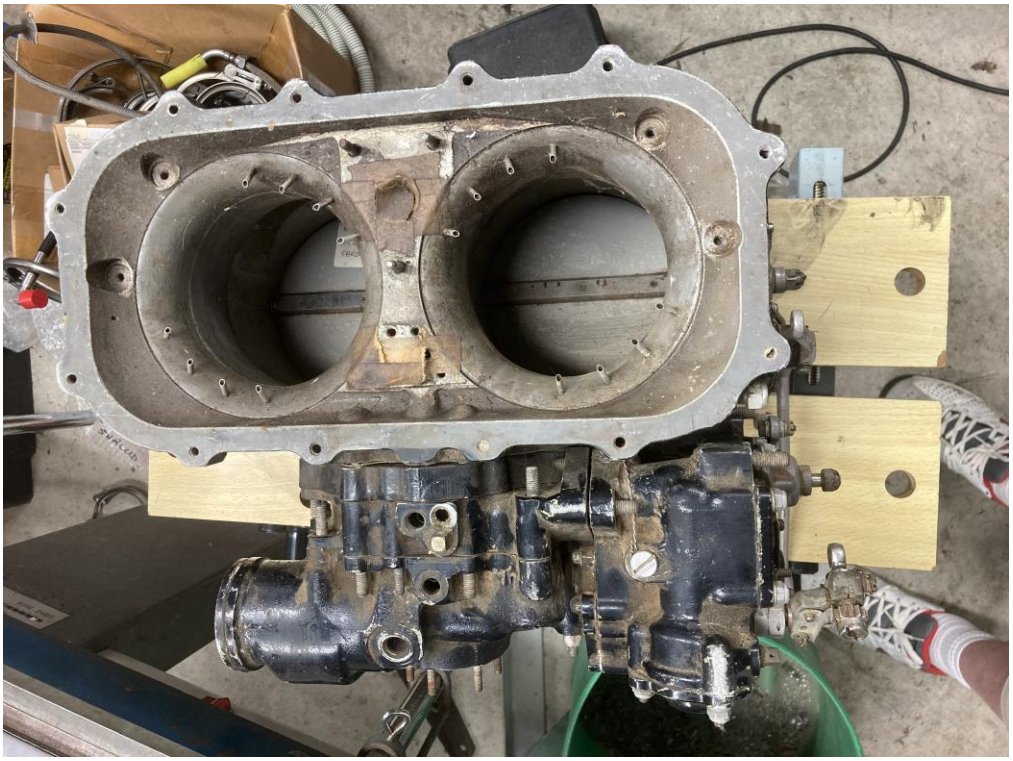
Can I also do a plug for the 'mentors' in the SAA. I personally have several who help me, they are fantastic help with queries on everything from woodwork repairs, engines, propellors, wiring. I recently pointed a new builder to one of my mentors and he ended up taking a trailer to collect with some free parts which fit the airplane he was building. It can be surprising what is out there and who knows about it…

Best regards, Tony.

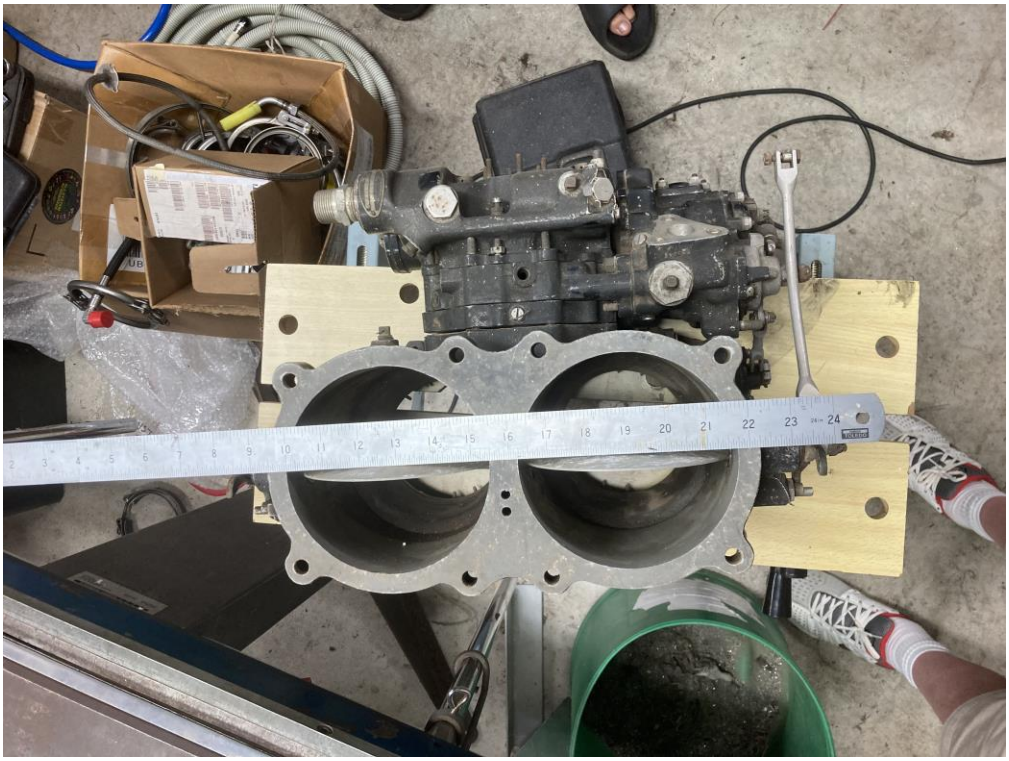
Of Interest:

- **For your Calendar: Black Sands fly in at Te Kowhai, weekend June 6th**
  Here's hoping for fine weather for our Black Sands event. Please don't be backward in coming forward and offering to help. Waikato are the hosts, and the Committee would like make this event as one that the rest of the country look forward to with anticipation. - Grant

- **Lyndon Knowles**: – I visited Lyndon recently and picked up a few items for my Jodel. He had a Merlin V12 carburettor from a P51 Mustang sitting on the bench, I couldn't resist taking two photos just to give everyone an idea of what a **real** carburettor actually looks like…



Above: View from top, you can see the two butterfly valves in the twin intake ports.



Above: View from the underneath, the two intake holes are 125mm (5") diameter each. You can put your fist into them. The butterfly valves are both open, wide open throttle position.

Currently Building:

Bart Burgers, Pegasus Spitfire MK9 (Full Scale) reports:- I have been told by Paul Waterhouse that accuracy is paramount, hence the use of my CNC router combined with the AutoCAD program, it is a very good way to start.

I created myself some jigs, particular for the fuselage, to keep it straight without sagging and in line with the overall form. No rib on this plane is the same (apart from the wings), making each individual jig is a lot of labor, again my CNC machine came to the rescue. Of course, the use of spirit levels is a given and must.

Measure, measure and re-measure. To be sure to be sure.

My right wing is well on its way and is waiting for its final layer of 1/16 th Birch ply. My left wing is in progress and is populated with the various ribs I created simultaneously months ago.

With the limited space I have in my workshop I had to do some real thinking how to get both wings on my fuselage at the same time… playing Tetris.

Fitting a wing without the other being present wasn't going to work for me. I wanted to make sure that the dihedral of both wings was exactly the same, otherwise its performance in the air would be seriously compromised.

Well… I found a way and after a day of shuffling the different parts around it was done.
I determined the exact spot on the engine bulkhead (firewall) where the Dihedral would be crossing. I attached a stringline from one wing tip to the other and made sure it was crossing at exact that same spot (line). – *See pics*

Above: Wings on the fuse, aligning the spars….

Above: Another view from the rear, fitting it into the workshop.

Above: see pink line of drawstring between wingtips

Above: drawstring crossing the firewall to be sure the dihedral is correct.

- **Paul Waterhouse: Pietenpol AirCamper repair, reports**: – Upside down fuselage, bumble bee yellow in progress, Paul reports: Its not much but here's a pic of the fuse in my state of the art paint shop.

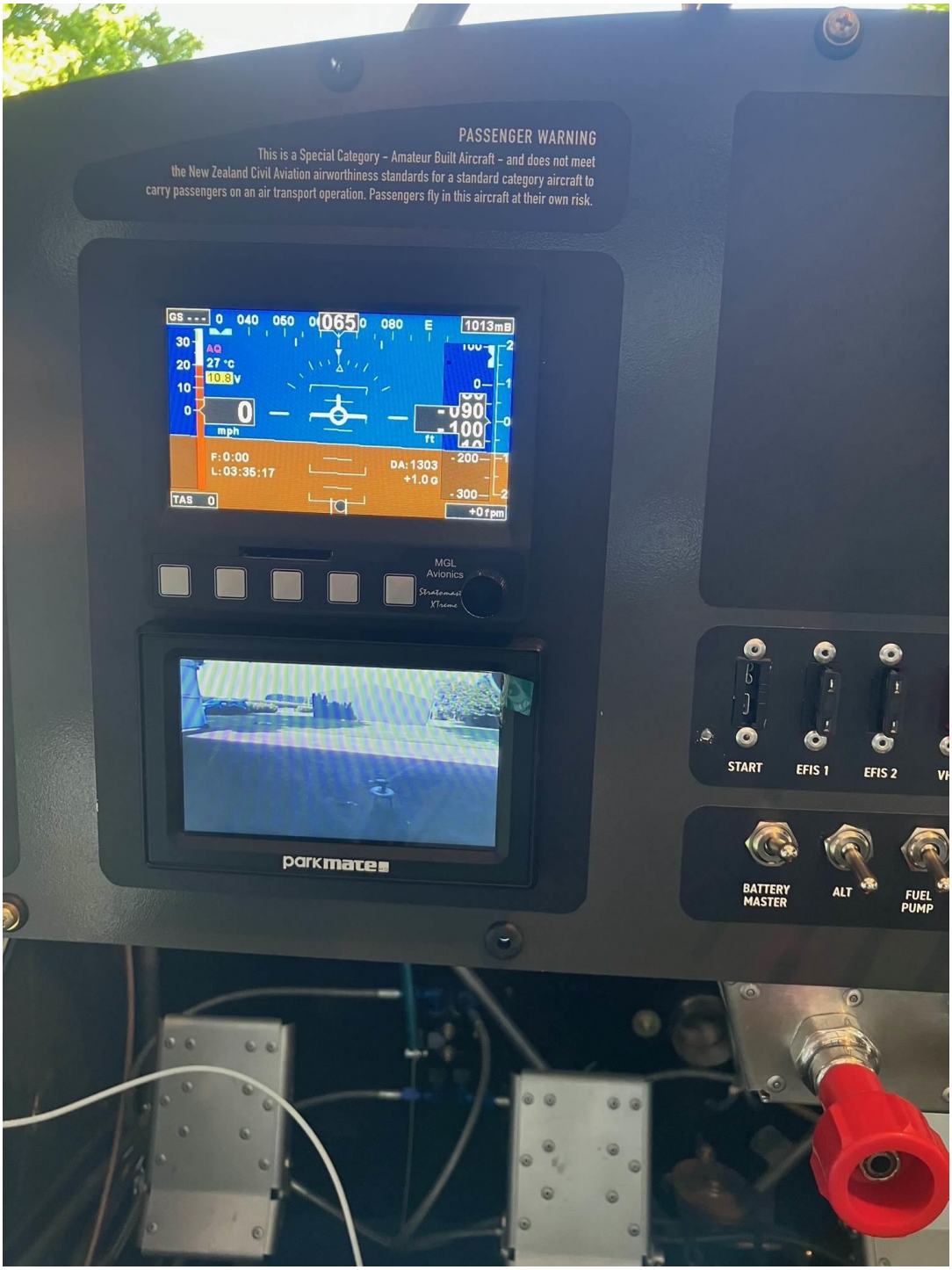
Above: Fuse on saw horses, and masking paper below which I'm sure will be removed before flight!

- **Dan Harcourt: Rans S-21 reports**: – Rans S-21, ZK-MRS

Currently working through wiring the MGL avionics and accessories. Another week or so wiring then close boot cowl up and fit the pre moulded windshield. We've fitted up the aft Skylight, wingtips, and some lights.

Three pictures attached.

Above: Wiring for Africa, fortunately lots more space than many! Love the wheels and the black and gold…



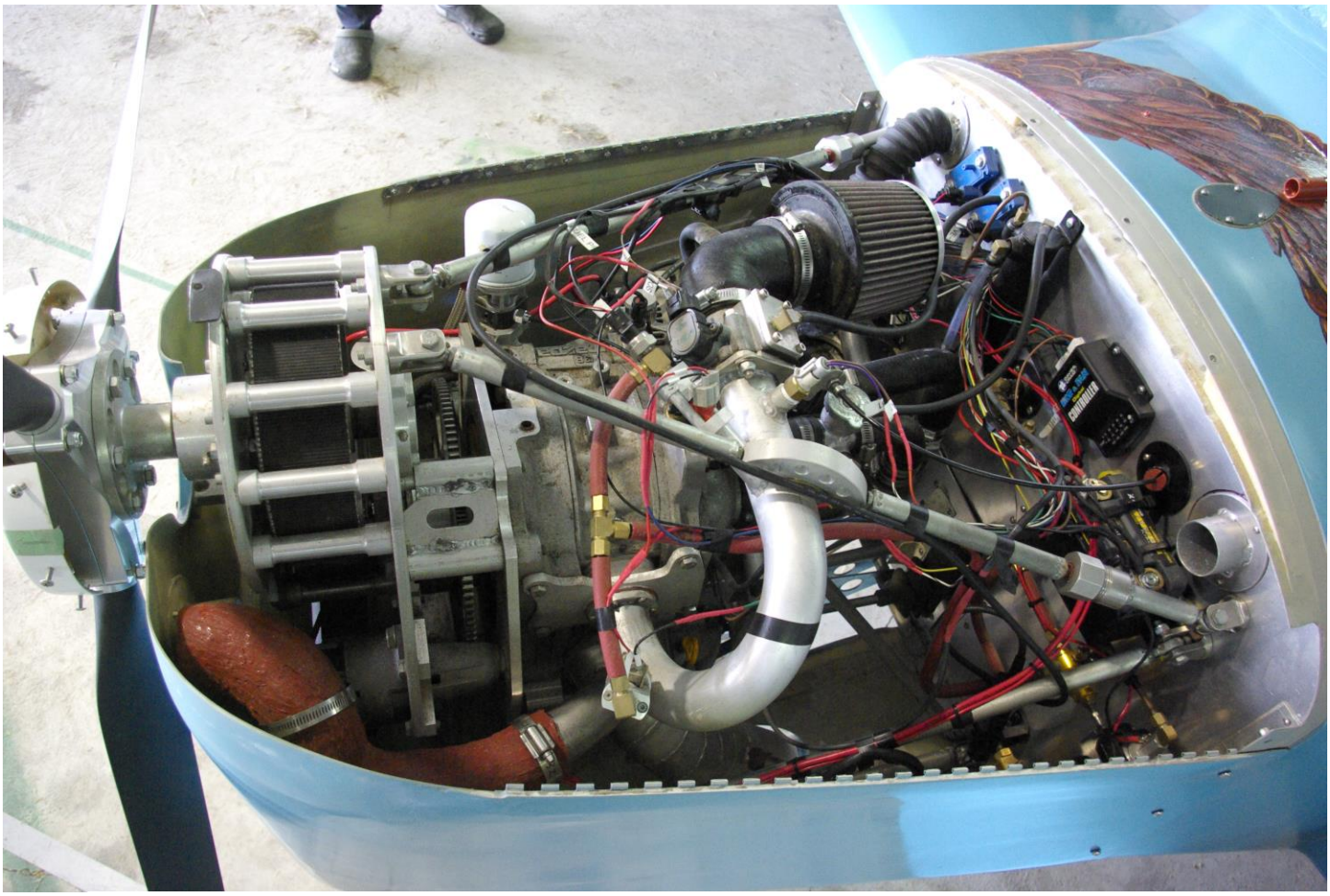
Above: Pilots side of the panel. MGL upper screen is an EFIS showing AH, airspeed left, altitude right. Bottom screen looks like(?) a rear view camera from a car giving a view out the front (I'm thinking of doing something similar on the Flitzer to I can see when taxing. – Tony)

Above: Passenger side view, duplicate MGL, Trig ADSB and a MGL VHF radio below and lots of wiring in progress!

- **Andrew Campbell: Asso Champion V - reports**: – I caught up with Andrew at Matamata recently and he has now moved his aircraft to Matamata for final assembly. The wings are on, engine and cowling attached, and the dragon is in its final form before flight!.

Above: Dragon from the pilots side. Prop is having pitch adjusted at present, see gauge.

Above: Dragon tail around the fuse, passenger side



Above: A clearer view of the Rotary engine setup and Kevlar belt redrive with top cowling removed.

- **Pete Kirby: SuperCat - reports**: – I missed the Whakatane weekend as we went on a 2 week holiday to the (postponed) RAANZ fly-in at Hokitika. That said, what an awesome 2 weeks off.

  I'm slow and steadily checking of my SuperCat verses the plans, despite knowing it had flown 30 hours with the original builder. My lack of height and leg length vs the builders 6'2" gave much (over)thought to using the original crafted seat back. After pondering and designing all sorts of foam/glass/moulding ideas, I copied the plans for the seat base and used the original back. The pedal geometry is also being re-assessed/aligned with the added value of bringing the base hinge point closer to the pilot.

  The fuel tank was removed and I discovered it had a 30L main plus 6L reserve. I think this complexity is over-the-top so it'll be used as a single tank.

  I'm not going to waste any time on the diy 2-cylinder/full case VW engine (of no known dimensions) as it sat stagnant for 15 years. I will probably start looking for a 1600cc soon - ideally a pre-flown one (if someone has one hiding in the corner of the workshop). I've also considered a v-twin project. No rush... still thinking stuff through.

Above: Fuel Tank with reserve being checked over.

Above: Seat area being fitted out for size…

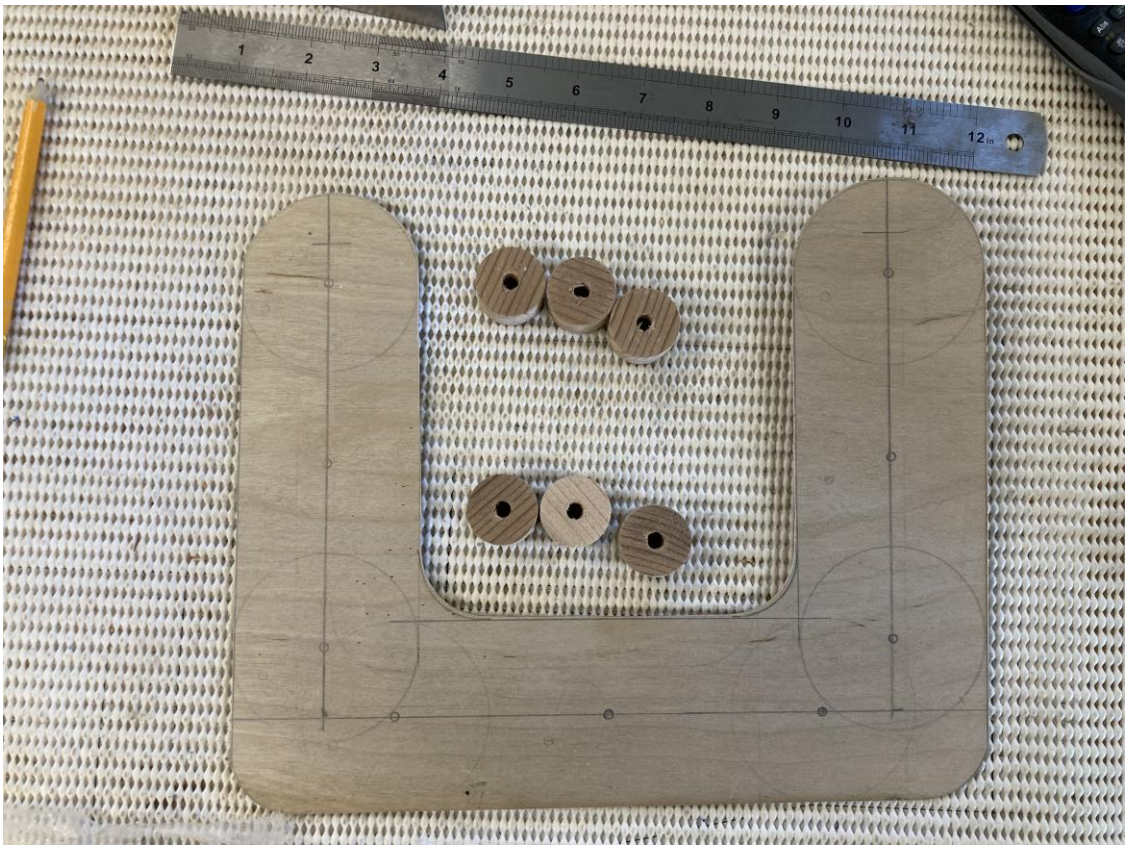
Above: Original seat back and base, moulding up a better fitting one.

Above: Inside seating areas, looking at adjusting rudder pedals to fit.

- **Tony Ashworth: Jodel D.18 ZK-OWL - reports**: – I have been fitting a VW AeroVee engine to the front to replace the Subaru and redrive. (Hope to save 35kg). I have an engine mount built and painted after doing a lot of C.G. calculations for length etc. Fortunately, I have a similar aircraft/engine combo in Rotorua built by Steve Chilcot to compare notes with. It has been very helpful in positioning all the items on the firewall and other cable routes.

  Thanks also to Mike Tunnicliffe for his ever-useful advice. I needed to insert packers into the firewall (between two layers of ply) to carry the battery box, as the plans call for these. Mike advised me to cut a hole through the inside ply, through the foam and glue a packer into the hole sized flush with the inner ply. Then cover these packers with a ply lap from the back to create a strong mount for the bolts to support the battery box.

Above: A picture showing a early test fitting of the engine, (unpainted) mount and lower cowl. The cowl needs raising a bit at the front, as the front mounted oil filter is interfering at present. This was just the first try. (And yes the prop is missing some nuts, it is just sitting on lugs for show here.)



Above: Shows 6 of the 9 (dia25mm) packers to be inserted into the firewall cavity from the rear, and the plywood lap cover that will eventually be glued over top of these packers.

Above: Shows view inside the firewall. The UHMWPE plastic (doesn't stick to epoxy) is holding the other 3 packers while gluing in the three left hand holes, six more holes are yet to be filled.

Instrument Panels – Special Report from our Flyers:

- **Karl Belfield: Jodel D.11 ZK-ERT – reports on Instrument Panels**: –

I don't know if I can answer all your questions but here is a D11. UL ZK-ERT which needs new canopy – fit out and rear baggage space I am doing, The motor as well I am doing up and have 3 under way. They are custom 0200 but I don't call them 0-200 as that as well may get you in the pooh.

This is my custom D11 fit out as it is 35 mm shorter than the normal Jodel in height and all areas are used to keep the instruments high.

I have made this so a 6 foot 4 person can fly my D11 without removal of the change of seat angle and their knees don't hit the dash.

Steam driven and never a hint of glass panel as I am old school. To many incidents now are due to looking at the panel rather than flying, Instruments as below.

Above: Many prefer a non-electronic (Steam powered) panel as being quick to scan and then spend time looking out. I think there is a radio or adsb lower center however.

- **Keith Pereau: Zenith CH-601HD ZK-ZKP - reports on Instrument Panels**: –

Here is the panel on ZKP showing normal, and cross-country mode…

Above: This is a mix of electronic efis, and conventional gauges in the middle, plus adsb/radio center

Above: This shows the view with the moving map, during cross country I guess. Bit of a trade off we all do here, to see a map when travelling, but full instruments when take-off or circuit situations.

- **Andrew Moir: Furio ZK-FUO - reports on Instrument Panels**: –

I'm pleased with the Furio panel with no changes necessary.

- The MGL screens are completely customisable which requires a bit of home work to achieve what suits your particular mission and are now working well. The touch screen feature is a but clumsy in flight particularly in turbulence.

- Solid state circuit breakers which display on the MGLs make for a clean panel and the ability to monitor current draws.

- I like the backup of the analogue gauges (airspeed, altimeter and compass) in the event of an electrical failure.

- Placement of the Gear Selector and indicator lights well clear of other switches reduces confusion (particularly with the flap switch which is used shortly after landing) and puts the indicator lights where they're more likely to catch your eye (last famous words)

-Master, Ignition and Alternator switches and start button which are used primarily on the ground, kept well clear of other switches which are used inflight.

Also the switch layout flows nicely on startup and shutdown.

- I don't really like the round format of the VHF and Transponder control heads but I was limited in my options due to the lack of space behind the panel.

Above: A more electronic layout, suits a very modern high tech aircraft.

- **Egmont Stegen: Sonex ZK-VWS - reports on Instrument Panels**: –

Attached are some pictures of the sonex panel layout . Most of the instrumentation was chosen to custom fit into the limited space of the panel. The EFIS Lite from MGL has all the engine gauges as well as ASI and ALT, there are also different pages to switch to for maps and compass. I tent to use an Apple ipad for the maps as the image is slightly larger than on the EFIS screen and I don't have to switch pages.

For me the layout works well, the only thing I would do differently is make the panel hinged to be able to get to the wiring .

To the right of the EFIS is a MGL V6 com radio, small compact unit, below that is the ADSB TRIGG 22 .

TO the left is a back up ASI steam gauge type . this is handy during landing as you can see at a glance where the airspeed is at. The ASI numbers on the EFIS are small.

Above: A smaller instrument panel, but has both the moving map to the right, and the main EFIS in the middle with a ASI as Egmont notes to the left.

(Egmont also gave me a separate picture marked up with arrows, but I couldn't copy it into this newsletter unfortunately.)

Tony Ashworth: Jodel D.18 ZK-OWL – report on Instrument Panels 1-6: – This picture shows a progression, it is not my final one, I think this is #5 I have made. I have made #6 but don't have a photo with the instruments in it. I may make #7 shortly as there a couple of things to improve…

Above: The bottom left white gauge is a AoA Indicator measuring pressure from a 45 degree pitot probe. They are also called a Lift Reserve Indicator (LRI), I will insert some green/orange/red zones to mark the safe and warning ranges. My research says it is frankly better than an ASI at telling you when you will stall, because is independent of weight, angle of bank and g-load in operation. (I will still be watching the ASI however…) I will do a later article on this once it has had some testing.

I have three pitot based gauges in the center (ASI, ALT, VSI), and a MGL AH lower left. The black square on top right is a MGL Engine Information panel, and there is a Automated Fuel/Air Mixture round gauge below that. My ipad mount is on the right hand side on the black round flange.

I will have the radio (icom hand held) on a thin center console between the seats and in front of the flap lever, not shown here.

There is a skyecho adsb in/out device, which I plan to put on the vertical mount seen above the instrument panel on the coaming. It has three status led's worth keeping an eye on.

I have a row of switches to the right for ancillaries, but will put master and mags top left - not currently drilled. It's a bit of a work in progress tbh, I have also slipped my checklists on a rotary wheel in #6.

Been Flying:

- **Clint Kraidy: Aerobike, ZK-CKD - reports**: – Clint won the trophy from the annual SAA prizegiving for the wildest cross country trip to the meet. He took off from Matamata and headed to Whakatane via the Kaimai's. Airspeed 60kts, Headwind in lee of Kaimais 40kts, Groundspeed 20kts, was a bit of a challenge getting there. Some senior SAA people were obviously very impressed by his dedication!

  Here are two pictures of Clint leaving Matamata Friday evening last, and also with his trophy for the wall.

Above: Takeoff at Matamata Friday after work, heading to Whakatane, Kaimai range in background. About to slow down a bit…

Clint with his Cook Straight Challenge Trophy prize and certificate back on the ground at Matamata on Monday morning, after an early morning flight with almost no wind.

- **Lockheed Electra: Visit to Matamata Aerodrome this Wednesday:**

Above: while not strictly speaking a homebuilt aircraft, this shiny beast has been restored over some years, and this is its first flight into Matamata. Has NAC reg and logo on this side, and the other side has a Chilean airline logo which is where it last flew.