

# Waikato Chapter of Sport Aviation Assoc of NZ

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

Newsletter - August 2023

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

A big thankyou to all our contributors, your pictures and efforts are a great encouragement to us all. It certainly helps our potential builders to know what is involved and what is possible.

I have included Grant's Presidents report from the AGM for everyone to read, It should be of interest to those who couldn't make it to the event.

Edmonts excellent article on adding fuel injection to an AeroVee engine for his Sonex has been added (without re-formatting) at the end. I have seen and heard this very tidy aeroplane flying recently at Matamata Aerodrome. It is very smooth and does not sound like a VW at all.

All the best, Tony.

## Of Interest:

- **For your Calender: A Visit and BBQ at Avparts – Hamilton Airport on 3<sup>rd</sup> September 10am** – The whole Waikato SAA chapter has been invited for a visit to Avparts to see the shop which is full of aircraft parts and supplies. Many of these are useful for building and maintaining homebuilt aircraft both plans and kit built. It is being run and manned by two homebuilders from our chapter – John Hansen and Lyndon Knowles – who are both very knowledgeable and experienced in homebuilding.

You are invited for around 10am to meet and talk. We will have a walkaround, short presentation by Lyndon and John of what they stock on the shelves and what can be ordered – they have access to some major suppliers giving very wide product options.

Bring meat and salad for a BBQ, Tea/Coffee provided probably about 12pm

John has contacts at Pacific Aviation and is hoping we might be able to visit them on the other side of the airfield for a look see after lunch. (I will email you seperately on this once we know.)

Avparts Address: 16 Steele Road, Rukuhia 3282 (head for the control tower, it is on the south side about 200meters away.

- **Presidents Report (from the AGM on Sat 15<sup>th</sup> July, 2023)**

Good afternoon and welcome to Classic Flyers for our Chapters AGM. Why Classic Flyers you ask yourselves? A few reasons. Firstly, because the weather has curtailed pretty much all flying activity coming here ticked quite a few boxes. You could fly or drive here, there is plenty of aviation interest here to keep us amused and a cafe that provides more than a burnt sausage. Thank you for patronising the cafe. As Bruce pointed out in a reminder email to you all I have been working closely with Classic Flyers CEO, Andrew Gormlie. When I asked what the charges were for the conference rooms his reply was "for you nothing but if the members support the cafe it would be appreciated" So thank you for doing just that.

I hope you have had a chance to see the Remembrance room that has been created for the 23 persons who were aboard ZK AYZ involved in the Kaimai accident. Rev Dr Richard Waugh has asked that Andrew and I write an article covering the story of how and why that came to be so that it can be publicised in various aviation magazines. One such publication will be our own Sport Flying magazine so keep an eye out for it.

Something else of interest is Bruce Cooke's ZK CKE being displayed here awaiting a new, more powerful engine by the new owner. It is here to promote home built aircraft until such time as that happens. Speaking of Bruce Cooke, it is appropriate that my report acknowledges the outstanding contribution Bruce has made to this Chapter during his 20 year tenure as its Secretary. Thank you Bruce for all the work you have done not only as Secretary but also the work involved in organising our signature event, Black Sands. Bruce's contribution to our Chapter will continue by him staying on the National body. This will give us first hand knowledge of what is happening on a National level. So on behalf of this AGM, Bruce, I would like to thank you for an amazing effort and contribution over the last 20 years as our Secretary and your continued work on the National body. Thank you.

Speaking of Black Sands, I would like us all to seriously think about how, and where, we would like to see this event happen. Circumstances in the last few years have made it particularly difficult to plan and run the weekend but I see no reason, other than our own apathy, why we can not make it a highly anticipated event again.

It is good to see the Waikato Chapter contributing to Sport Flying magazine. Credit goes to Tony for collating our newsletters and forwarding this on so this can happen. His job is made easier by those of you who are willing to share your stories and photos of your projects, so thank you for doing so.

In an effort to keep the members interest up I realise we need to have more varied and interesting activities. The committee is open to suggestions so don't be backward in coming forward with ideas or even feedback on those we do run. The trip to Tokoroa to see the beginning of a Bearhawk was an opportunity to both drive or fly and as such I thought the attendance may have been higher. Unfortunately not all projects have the same interest level as a wooden Spitfire but they are all someone's pride and joy and to

support those people is a big part of what we are about. There is a huge amount of knowledge and skill within our group I have a couple of ideas for visits that I am working on but would appreciate your suggestions.

A couple of matters from the Matamata airfield. The toilets are now locked after certain people have damaged the washing machine and left cubicles in an unmentionable state. The padlocks are opened with the code 1942, the year the airfield was constructed. Hopefully this is a temporary measure until Council decide what to do about it. The Gliding club are determined to have put in the AIP that Gliders and towplanes may join Right base for 28, so just be mindful of possible non standard rejoins.

Thank you for your attendance today and there is no hurry to leave the premises. Feel free to continue browsing and enjoy.

Grant Horn  
President Waikato Chapter SAA

- **2023 AGM Decisions and News** – We have a change of Secretary, thanks for the outgoing Bruce Cooke for all he has done over the years, particularly Black Sands and representing us on the National Body of SAA. He is going to continue on the latter. Russell Ward is now our new Secretary.  
*The 'other' news...* The Committee recommended and the AGM voted to bring back a \$10 a year subscription fee to paid online please, along with the need to fill in the online form about yourself. The committee needs this information to better understand the club needs and wants, and can then tailor events and ideas to suit everyone.  
**The Bank Acc for subs is: BNZ Hamilton 02-03200104853-00** in the Name of: Waikato Br Sport Aircraft Assn. Put your name as a reference please.  
**The Online form to fill in is:** <https://forms.gle/bmcd7i3nksfNnVY18>  
(Sorry for the complicated name, best to just click the link or copy it into the address bar of a web browser to use.)
- **RAANZ – Interesting Article on ATC attitudes in NZ** – I don't have permission to include the article here but for anyone interested in the viewpoint of ATC giving permission for recreational pilots to enter controlled airspace it is seriously worth a read. If you go to the RAANZ website: <http://www.raanz.org.nz> then browse down the left hand side menu to 'Rec Pilot e-zine Heading' then below that click on 'Download copies', then click on the newsletter named: Issue-180 (June-July 2023) and have a read of the article on page 4 titled 'ATC 101'. It is an eye opener!

The rest of the RAANZ Newsletters are worth a read also, note they are free for anyone to read, there is lots of good stuff there, not just for Microlight Pilots.

## Currently Building:

- **Bart Burgers, Pegasus Spitfire MK9 (Full Scale):-** It has been a busy hunting season for me so far with tourists coming back into the country. As this is good for the bank balance its not so good for my Spitfire build, resulting that my normal steady progress has been somewhat hampered.

In the little time I have had I did some work on the cockpit area.

As I am building a 2 seater dual control, the front seat will be able to collapse forward allowing the second person entry. I therefore had to take the support out that ran from left to right. I was afraid that this would make the fuselage at this part move outwards. It did not move a millimetre.....nice.

In order to give the dome frontal support, I have created an arch.



*Above: Spitfire Fuselage Arch*



*Above & Below: On the left hand side I have started to put the ply-sandwich panels in so I can get the entrydoor in place, likewise out of ply (6mm).*





Above: A good way to bend ply... 😊

*(Paul Waterhouse of Central Aero Engineering based at Hamilton Airport has been Visiting Bart and his project to provide his expertise and knowledge along the way. This next letter is from Paul summarising a recent visit to review progress. This is a good example of a SAA Mentor in action. Thanks Paul!)*

Paul Waterhouse has been and done his inspection, always a joy to have him come over and I really appreciate that he looks over my shoulder to see if I do things right....(or wrong 😊)

He mentioned to get the left wing as the right wing...the same...I opted not to finish my right wing but start on the left wing in order to cross reference while my right wing was still 'open' so I can measure and do right.

**bburgers@xtra.co.nz**

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**From:** Paul Waterhouse <paul@centralaero.nz>  
**Sent:** Wednesday, 31 May 2023 1:29 am  
**To:** bburgers@xtra.co.nz  
**Subject:** Pegasus Spitfire visit.

Hi Bart,  
please find a record of my visit dated 12-5-23.

This visit was to continue monitoring of construction of the wooden components of the Pegasus Spitfire.

Remarkable progress has been made since my last visit. The fuselage is now largely covered in, featuring Barts sandwich style construction.

This comprises of a plywood base layer followed by a square segmented wooden tile filler (which is supplied in sheets with the wooden tiles supported on a mesh matrix for ease of use) then another layer of ply over the top. This appears to be a very robust and light method of construction, with a similar construction style being evident in other aircraft types in existence around the world.

Bart has managed to source a genuine WW2 spitfire canopy rail assembly, salvaged from a war time crash in Holland. He hopes to incorporate this genuine and historic item into the build.

The starboard wing construction is well underway, with the classic ellipse of the Spitfire wing being evident, the wing being similarly constructed as the fuselage.

The spars are of box section wooden construction.

The initial wing construction has been carried out on a wooden jig constructed by Bart to ensure straightness and symmetry.

I have continued to stress the importance of Barts construction technique resulting in absolute symmetry of all flying and control surfaces, not only overall dimensionally,

but in the finished aerofoil sections as well. This will not be any easy undertaking and I will continue to stress the importance of attention to detail of every respect of this project.

This will, with out doubt, be a very high performance aircraft and only obsessive attention to detail in every respect will see it succeed.

I look forward to my next visit.

Regards  
Paul Waterhouse  
CEO / Director  
CENTRAL AERO ENGINEERING  
NZ Stewart Systems Distributor  
021 743 033  
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[www.centralaero.nz](http://www.centralaero.nz)  
Facebook; Central Aero Engineering

Thank you very much for your business - we appreciate it and look forward to serving you in the future.

*Above: Pauls letter to Bart after the inspection visit.*



*Above: I really like the the elevated look of my right wing ..almost like its airborne*

*This was lifted up because it was time I put some concrete down on my “wing” extension to my work shop. Hence had better lift my right wing out of the way.*

- **Tony Ashworth: Jodel D18 ZK-OWL:** – I am currently working on the instrument panel. The original one was curved which looked great but unfortunately for me was restricting the aileron travel to the left (tall pilot problem) as my knee got in the way. I have reverted to the rubber mounted flat panel from the Jodel plans which solves this particular problem for me.

It has been more of a mission than expected. I did end up making 5 (!) plywood panels until I got the layout I was happy with. This has meant I am now very good at cutting instrument holes in plywood. I hope to show a finished completed panel with instruments installed in next newsletter.

Next are two photos showing the before and after arrangement. I still have to add my switches and circuit breakers which I only picked up today. (Thankyou Lyndon!)





*Above: Shows the original curved panel in the background my 5 'improvements'*

*Below: Shows the new #5 panel in place, rubber mounted bottom and top.*



- **Grant Horn: Vans RV7a (nosewheel version): –**

Like most of you I have found the weather rather frustrating. So much so that I decided the best way to make progress was to take all the wing skins, the leading edges, the fuel tanks and some sundry bits and pieces to a local Matamata car painter, supply the primer and ask him to do the priming in his heated paint booth. These parts have been ready for priming for quite a while and I would have needed a weekend off warm fine weather too do it myself. Anyway it is a decision I'm glad I made. He has done an outstanding job and only charged me booth time.

Case Groot (*RV6a Pilot/Owner/Builder*) was happy to help me start riveting the to skins on and for a few hours work the progress made looks great. See photo. That evening I was on the Internet searching for tips and ideas on how to rivet the bottom skins when I came across a service bulletin concerning the inboard aileron hinge. There have been some rear spars showing up cracks in that area so Vans have produced a doubler. Trouble is to fit those in a completed wing requires considerable expertise and experience so I figure best I fit them now, before it becomes an AD, while it is easy to do, so hurry up and wait again until the arrive from Vans.

In the meantime I have made some progress in the cockpit area. The brace for the roll over bar is now fitted. The rudder pedals and brake pedals are sorted.

Another issue was the electric actuator for the flaps. A known design problem caused by Vans is that the actuator itself is mounted off center, while the flap shaft is central and if made to the plans it wasn't going to work without binding. Again the thinking cap on and a discussion with (*experienced builder/inspector*) Trevor Parker we came up with the best possible solution. It works now, and everything lines up properly.

The panel attachment angles have been riveted in and the cold air intakes have been bonded in place. All little jobs that don't look much but do mean progress is being made. The real leap in progress will be made when the wing can come out of their jigs and get trial fitted to the fuse.

Come on Vans hurry up and send the parts I need!



*Above: Wing skins fully riveted on RH wing, and LH wing in background to right.*

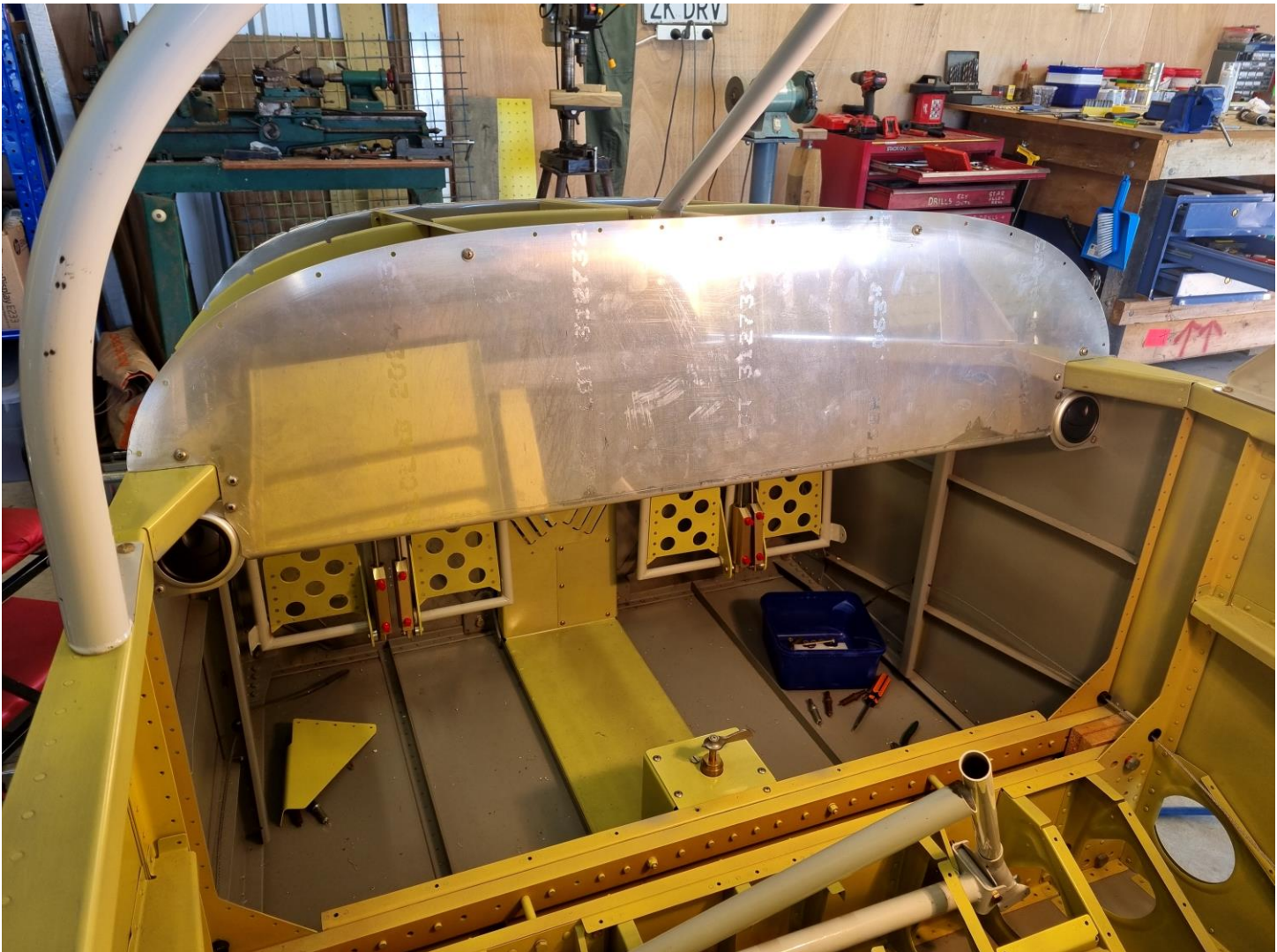


*Above: Cold air intake with clecos in place and borrowed clamps (Ed: Hey! I recognise those)*



Galaxy S21 5G

*Above: LH Wing in Jig from underside, and tank not bolted (upper LH gap)*



*Above: Looking forward: progress made in the cockpit area, rudder pedals, panel, controls and vents.*

- **Andrew Kirby: Baker SuperCat - reports:** – WhooHoo! This is my first entry and first plane. I have owned the plans for this single seat microlight called a Baker SuperCat - made from wood and fabric, for a few years and hoped one day it might be something to tick away at in the garage. This one did fly (until 15 years ago), had been stored dry and "just needs the engine sorting" after the original builder/owner, Ian Davies unfortunately escaped this planet after a motorcycle accident. Well there's always a lot more to it than just the engine but the standard of work appears to be awesome. Ian Davies, was an engineer and true craftsman and I intend on leaving his nameplate and flight approval stickers in the plane in recognition of his creation.

Retrieved from Galatea (the middle of nowhere) from Andrew Carter.



*Above: SuperCat Just fits in the trailer nicely...*



*Above: Not sure if this is in the process of loading or unloading, but looks good!*

- **Paul Waterhouse: Pietenpol AirCamper repair reports:** – Covering is well underway on BZY. Undercarriage build is progressing with different design due to that being the root cause of wrecking it in the first place. Tail Feathers all covered & awaiting paint. Engine re-assembly all but complete and a beautiful new prop arrived from Gary Williams of APP props, with the very nice touch of personalised tip colours. Onward & upward. Covering & paint by Stewart Systems.

*(Paul had sent me some photos a few months ago when the AirCamper was at an earlier stage, I have included those first, then the latest covering photo at the end.)*



*Above: Fuse on trestles with bracing being clamped  
Below: Throttle quadrant, very vintage look!*





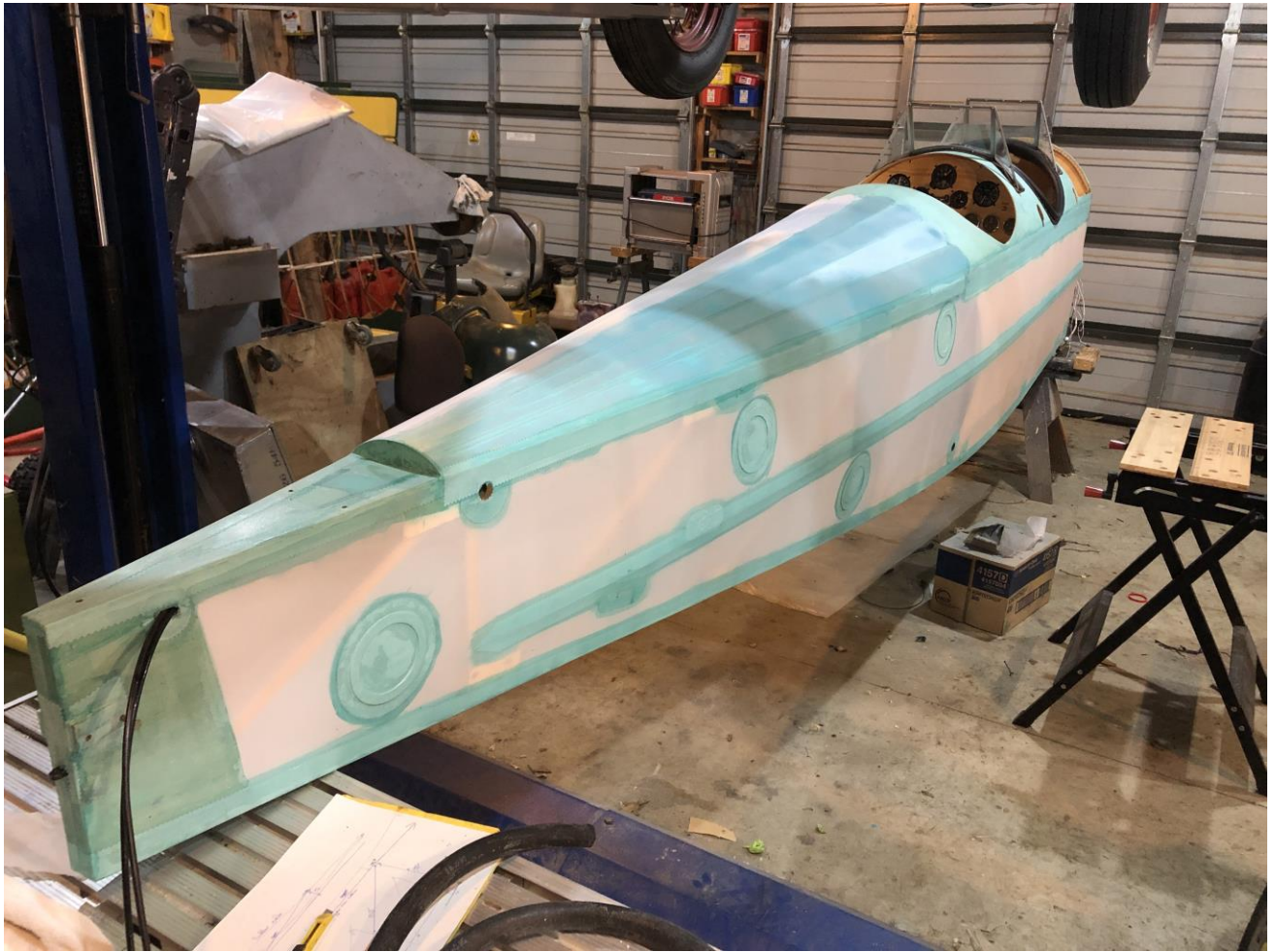
*Above: View along the back of the fuse, beautiful woodwork!*





*Above: Engine core stripped down and view in cockpit.  
Below: Instruments, very tidy against light birch panel, trim lever on right side.*





*Above: Latest view showing covering in progress, might have to stop you there Paul so we can all visit and learn quite a few things... 😊*

- **Dan Harcourt: Rans S-21 reports:** – We've had it painted very nicely recently, shout-out to local painter Jason McGuire at Convoy Truck Refinishers. Such a great guy to work with.

We also made the doors and are working on our instrument panel and avionics with advice from Paul Waterhouse. Finally on its wheels and outside for a picture! Paint, avionics and engine work next...



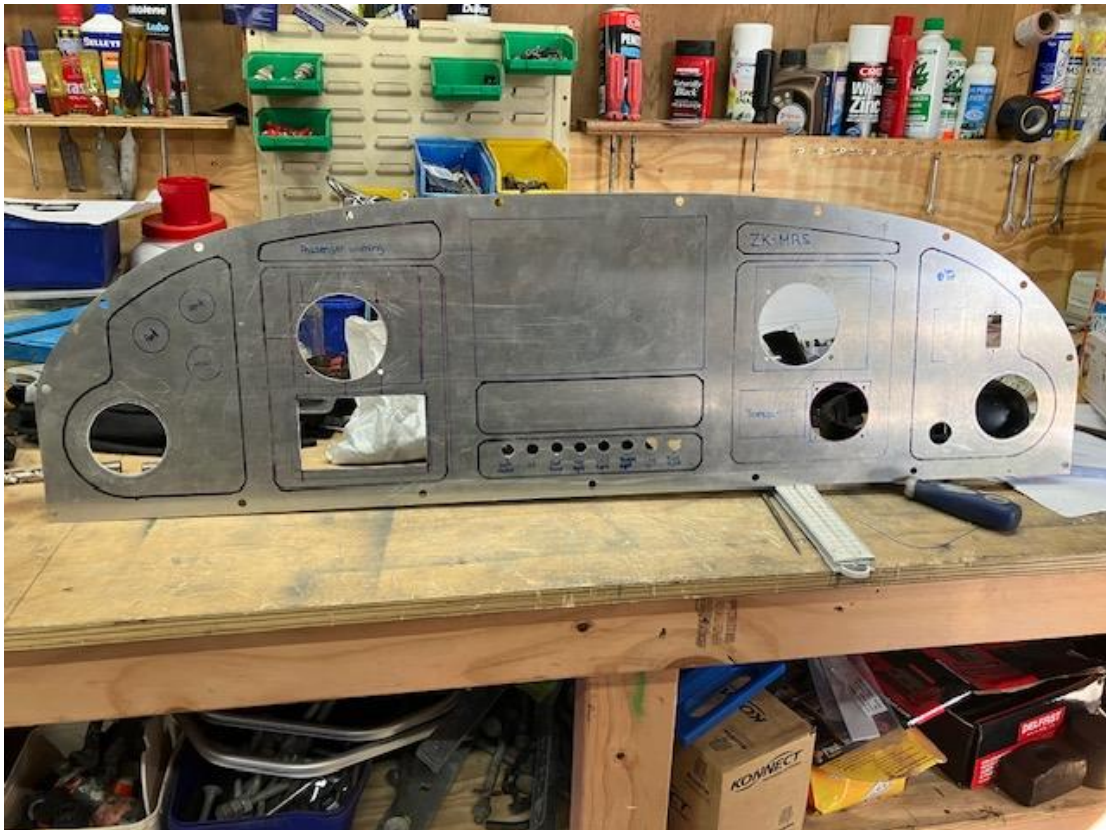
*Above: Painting in progress on its wheels.*



*Above: In the booth all masked up*



*Above & Below: Instrument Panel in progress*





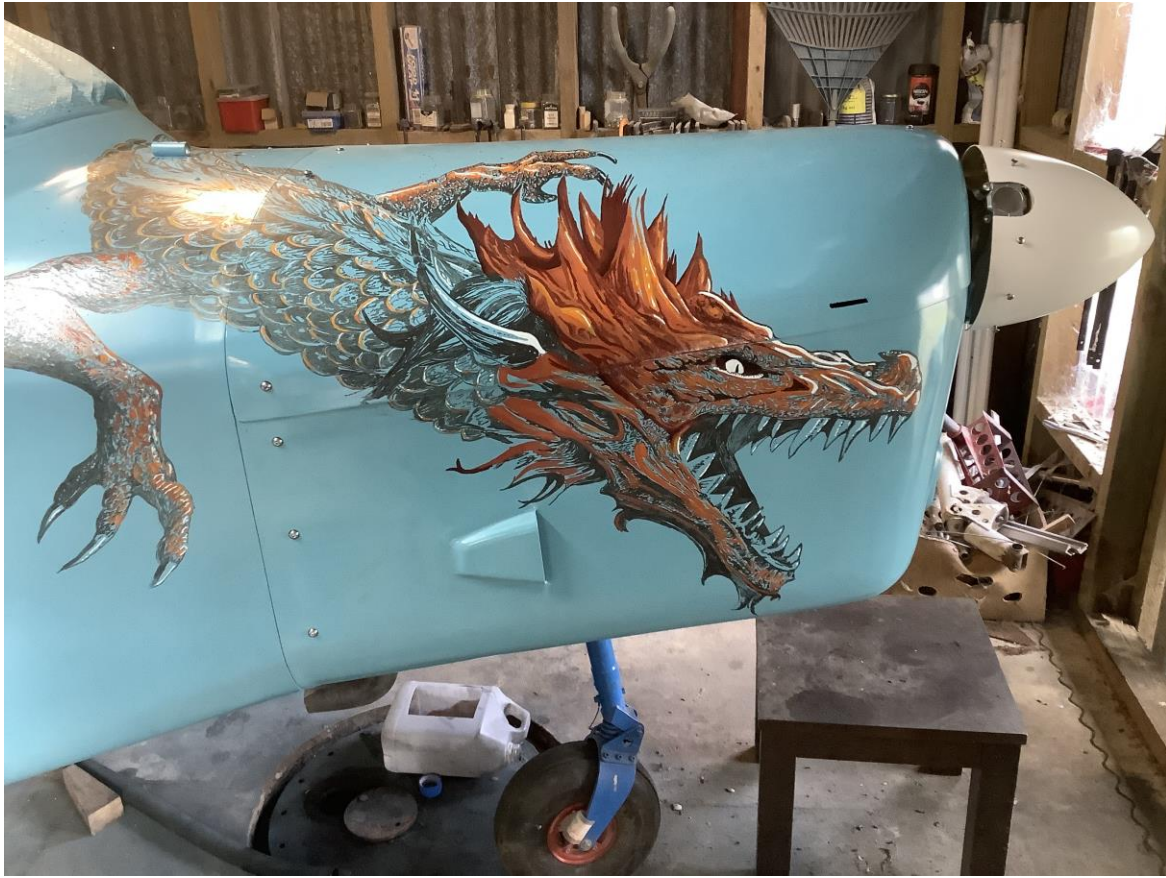
*Above: Wings and eppenage all painted on trailer  
Below: Door assembly work in progress*



- **Andrew Campbell: Asso Champion V - reports:** – This aircraft is the Asso Champion V designed by Giuseppe Vidore from Italy. Alpi aviation took the design and produced it as the Pioneer 300, they claim they are different aircraft however the construction and design in many aspects are almost identical, it is one of many of Giuseppe's designs. The construction material is timber, plywood and some fabric covering, with the use of some composites. The power plant I have chosen here is a single rotor Mazda rotary engine producing 115- 130 hp depending on the tuning. To date I have been scratch building this aircraft for 11 years, once the (*Spectacular Dragon*) art work is complete it will go to Matamata for assembly and finishing.



*Above: Mazda 13b single rotor, Rotary engine with belt drive. It's loud, a bit thirsty but light and very powerful. It's shown here at Andrew's home base in Tauranga, but shortly to be moved to the Hangar at Matamata airfield for assembly.*



*Above & Below: Spectacular Dragon artwork in progress on nose of aircraft, wraps fuse and wings, hand drawn and painted by a local Tauranga artist.*





- **Egmont Stegen: Sonex Aerovee – Fuel Inject Modification - reports: –**



### Why was the aircraft (AeroVee engine was) modified:

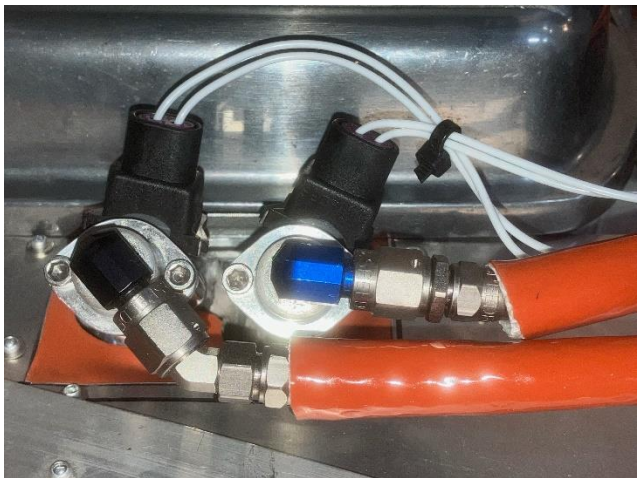
Due to the intake manifold design, short intake runners causing fuel mixture reversion, the two front cylinders number two and four would run a rich fuel mixture and the two rear cylinders would run lean causing excessively high exhaust gas temperatures. If the carburettor mixture is adjusted so that the rear cylinder exhaust gas temperature is under control the two front cylinders would foul the plugs.

In my particular case both cylinder-heads developed cracks between the valve seats. This may have been caused by the high exhaust gas temperatures as well as high cylinder-head temperatures.

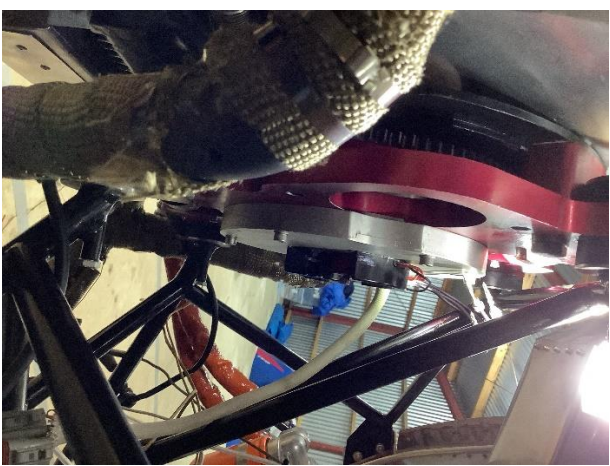
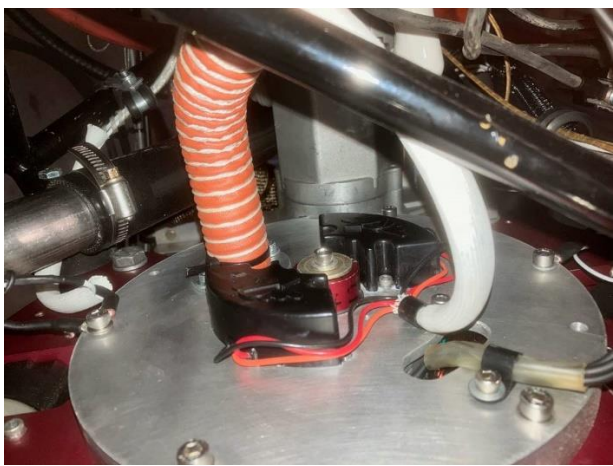
The high cylinder-head temperatures experienced on extended climb is due to insufficient air exit area under the cowling.

### Details of modification:

New intake manifolds made using 1.5mm aluminium tube with 10mm flange plates. The tube is alloy welded to the flange all the way round on the inside as well as on two opposite sides on the outside. Injector holders are welded to the base of the flange allowing the fuel spray pattern to directly enter the inlet port. The intake plenum is connected to the original intake manifold. Injector lines are stainless braided leflon AN3 using taper-lock AN3 fittings.



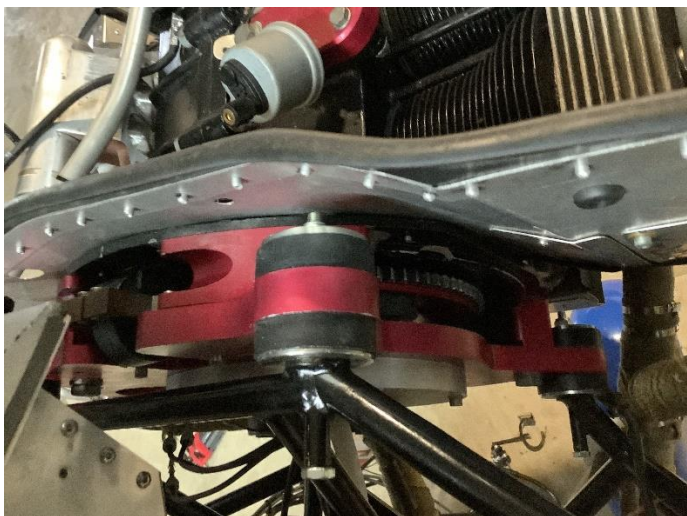
To run the fuel injection the original alternator Max output of 20A was insufficient. The rear accessory case was milled to incorporate a larger diameter rotor and stator, a spacer plate and backing plate to mount the electronic ignition was installed. The spacer plate has a machined step that locks into the machined accessory plate to centralise the spacer and back cover. A 25mm blast tube from the upper cooling baffle installed for alternator cooling. Secondary electronic ignition modules mounted on the alternator backing plate.



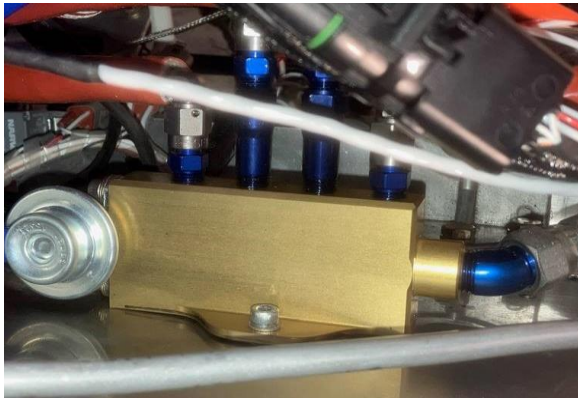
The original carburettor functions as a throttle body with manifold pressure sensor giving ECU readings of throttle position. While using EFI the carburettor mixture is set on cut-off. In the event of electrical failure , the mixture knob is pushed in to full rich and the engine can continue without the injection on the original carburettor.



The primary ignition is magnetron coils mounted on the accessory plate with magnets in the flywheel, this is a complete redundancy system that will allow the engine to run without any electrical power in the event of electrical failure. The carburettor is gravity fed.



One fuel pump mounted under the fuel tank above the rudder pedals. Fuel line are stainless braided Teflon lines. There is a filter on the intake of the pump as well as exit filter between the pump and fuel rail.



The original carburettor is functional by adjusting the mixture from cut off to rich. This fuel injection system is designed that way to have a redundancy back up as there is no space to install two fuel pumps under the firewall.

Enlarged cowling exit to improve cooling efficiency. Originally it was only the alloy section that was open at the bottom, this has been changed to the complete width open at the bottom with braces to the firewall to provide rigidity. Side cooling vents added as well.



## Been Flying:

- **Bill Izard – Falco** – Finally got to fly ZK-TBD after months of bad weather to Gisborne for a weekend. I have been flying it at 2200rpm at 145 knots leaned out at 25 liters per hour. The power of a wooden Falco....



*Above: Bill's Falco parked at Gisbourne, very smooth shape, all wood!*