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ONE YEAR DOWN

Welcome to Issue 5 of Flat Out RC, our first anniversary edition.

It was this time last year I took the punt to establish a new Australian aeromodelling magazine. And what a ride it has been.

It takes a brave person to start any business involved in aeromodelling nowadays but anyone who does has a common bond. The glue that holds us together is the love of the hobby.

So what have I learned in the last year? A lot!

Gaining industry support for a new hobby magazine has been extremely difficult. As the industry struggles under the weight of a new era of retailing, many aeromodelling businesses have begun to retreat from proactive marketing, whether it be in print or digital form.

There is still an audience willing to purchase print based magazines. The ability to sit back and experience the 3D media experience of print is still alive and well.

Despite what some may believe, digital magazine readership is extremely low. The data shows that people are not shifting to digital magazines from print magazines. Some are not reading magazines but getting their content via social media, online forums or YouTube. Thankfully we play in all these places.

The amount of work to produce just one issue of the magazine is considerable. Not only are we writing articles, taking photographs and designing the magazine but producing videos and social media content.

Our hobby is fighting for attention in a crowded hobby marketplace. Just like the local cricket, golf or go kart club, aeromodelling is fighting to keep participation at sustainable levels.

I am a strong believer that to keep aeromodelling alive we need to keep the hobby in front of people so they can make the choice to participate or not. I’d like to think that the activity of Flat Out RC is enacting this belief.

There are many of us that want to see the hobby grow in popularity but then there are some that do not. Some do not want to see any changes to their hobby experience possibly impacted by greater participation. The simple fact is that your experience will not change. New clubs will emerge to cater for more participation. The hobby industry will be buoyant, enabling more choice and convenience as new shops open to support the growing popularity. The growing costs of maintaining clubs will be more manageable with stronger membership. In fact I can’t see any negative aspect to more people wanting to fly model aircraft.

So as this issue hits the shelves, we’ll be working hard on bringing the next story to life in an attempt to help keep you entertained and motivated to continue your journey in aeromodelling or get involved if you have not already done so.

A very big thank you to all those that have purchased a copy of this magazine, advertised or contributed content. It is greatly appreciated as it helps us continue the journey to keep waving the flag for aeromodelling in Australia.

I hope you enjoy this issue of Flat Out RC.

Yours sincerely,

Andrew Sill
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Have you ever noticed that those that complain about the state of our hobby are generally, what I classify as, the vocal minority?

The vocal minority come from different persuasions and have a tendency to push their own personal hobby preferences to others. It’s like a futile challenge to put others down to raise their own self-importance.

There are those that think that you are not an aeromodeller unless you are building model aircraft. Then there are those that think that if you don’t fly aerobatics then you are not a true pilot. What about those that think that jets are the ultimate and scale planes is what it is all about?

I’ve heard all arguments but, sorry to say, I don’t buy it.

I’ve never read the aeromodelling bible that outlines what one must do in the hobby. No ten commandments such as thou shalt not fly aerobatics or you must only worship one discipline.

The aeromodelling hobby has been evolving ever since it began way back when.

Free flight planes transformed into rubber band powered planes, and then control line to radio control. Helicopters came about, electric powered planes and foam, and of course the latest being drones.

Scratch building was once the norm but then balsa kits came about. ARF’s came next in response to the want to speed up the process of getting planes into the air to fly. Foam aircraft made it even more simple and introduced new people to the hobby.

I think I can safely say that there are more people participating in aeromodelling across the globe than ever before thanks to the greater choice that we have to enjoy the hobby.

Our hobby covers a broad demographic from the young to the more senior in age. It makes sense that the more senior, lifelong modellers would be interested in building. It is what they grew up doing, as there was no other choice.
and obviously love it so much that they continued with it.

It also makes sense that the majority of the younger demographic, who have grown up with ARF’s, electric aircraft and foam models may not have a soft spot for building.

Does it really matter? I’d say no but I am sure there will be others that think otherwise. When it all boils down, it doesn’t really matter what anyone else thinks except whether you are enjoying yourself or not. When you are not, then fortunately living in a country like Australia we are spoilt for choice as to how we can get enjoyment.

I have always been very open minded when it comes to enjoying the hobby. In fact, I have done a bit of everything. Built kits, flown planes, helis, drones, fpv, gliders, RC paramotor, even had a go at scratch building a plane! I look forward to one day owning a turbine model and maybe having a go at discuss launch gliders. At this stage my main priority is to finish the models I have to enjoy them.

I know that as I age my preferences may change. At the current stage of my life I have little to no time for building models. The pressures of work and family mean something has to give and that is spending time in the shed sanding balsa.

Fast forward 25 years and the story will be very different. More building, more flying, joining the mowing roster at the club and attending more events.

So next time you frown upon that youngster that is enjoying his foamy plane or look down upon a passionate builder, just remember we are all hear to have fun and there is room for everyone to enjoy whatever they choose.
What’s wrong with my engine?

Continuing from the previous episode of exploring all engine related problems, I discussed with you fuels, mixtures and fuel tanks covering the various problems that beset us.

I suggested using stainless steel for the metal plumbing in the tank as it is impervious to all the fuels ingredients we use so let us look at setting up the absolute trouble free fuel tank to eliminate one more of the little problems that are generally covered under ‘engine problems’.

The security of fittings in the tanks is of paramount importance as, in common with many modellers and ARF models, the tank is, many times, a major drama to remove and, in many cases, almost impossible to visually examine.

So many times I have been told by modellers asking for assistance that they cannot remove or even see into the tank when I suggest there could be a problem in that area. Really, no matter how good your tank or tank setup is, there is always that rare occasion that it is the source of the problem.

A little while back, at a popular competition, a modeller (well known to me) asked my opinion of the large radial engine fitted to his scale model. The engine would start slightly reluctantly but not run faster than about 4,000 RPM - way below its maximum. I could not see into the tank area of the model, but I suggested he should examine the fuel tank as the engine was, to me, obviously starving for fuel. While I was talking the problem over, a couple of ‘helpful’ souls came over to the area and the qualified answer to the problem was that the fuel tubing fitted from the tank to the engine was of a diameter too small for the engine - it was 5/32” petrol grade tubing. When I carefully suggested that the tubing was more than adequate as it had who had the same engine had the same problem’.

Now this is a well-worn cliché in all facets of aeromodelling regardless of the problem. If the wings fell off a model you can be certain some wise spark will assure you that it happens to ALL of those models. Doesn’t matter what the problem is - it is a well known problem and the person was told by the butcher who heard it from his third cousin removed who heard it from (his dog or cat etc.) The fact that there were 3 other models flying very nicely with the exact same engine had no bearing on the case, the fuel tubing was too small and that was that. When these knowledgeable persons put their two cents worth in, I retire - I don’t argue and I don’t want to be part of a controversy that is of incorrect advice.

When the happy helpers moved on to annoy some other modeller, I told the modeller with the problem that the fuel tubing was quite adequate as it had
to supply fuel sufficient for one 10 cc capacity engine as only one cylinder fired at a time in the radial sequence. Even if all cylinders were firing at once (can’t happen - just an example), the tubing would be adequate when you consider the diameter of the fuel tubing used in a full size car which is generally around 4mm ID (Inside Diameter). I suggested a blockage of some type was preventing the fuel getting to the engine and the only way to find this was to visually check the tank. Fortunately, the modeller lived in the area (of the field where the competition was being held) so he was able to check the model at home that night.

Early next morning, I saw him setting up his model and he had a beaming smile which indicated to me that he had found the problem. “You were spot on, Brian - the tank had come adrift, slid forward and was choking the breather tube... air could not get into the tank.” On the test flight after attending to the problem the engine was singing a sweet song at full noise and continued to do so for the rest of the weekend. I was rather pleased that he had not resorted to the usual ‘fix’ when the problem arose - he did not attempt to ‘re-tune’ the engine as it had run quite well the day before and, being an experienced modeller he knew that the tuning would not change as he was using the same fuel and propeller.

Reducing the problems

Okay, I have said my piece about accessibility of the tank so it up to you how you deal with it as long as you remember, sometime (if your model lasts a good time) you definitely will have to access the tank to make some adjustment/repair/clean/re-plumb or other necessary procedure so prepare for this when first setting the model up for use.

Now, here is my method for plumbing a tank for long, trouble free use and reliability. As I first mentioned, I am going to use stainless steel tubing from ball point pen refills but that is only for the delivery system and you will need two refills - the ones I am using are 4.8mm diameter. Without some very specialised equipment or materials, bending this type of tube is not to be considered so we also have to resort to copper or brass tubing but we protect it against corrosion - more further on.

Using a Dremel or similar, cut the ends off the refills to end up with a parallel tube but...don’t cut them to length just yet. I found a pipe cleaner soaked in methylated spirit or isopropyl alcohol did a good job of cleaning the inside of the tube of residual ink and leaving it soak in metho for a while completed the job perfectly.

While they are soaking, wind yourself some circlips using plated copper wire around 0.5mm (24 gauge) like a spring around another refill or rod the same diameter (the blank end of a drill is a good choice) then cut along the spring form with fine snips or scissors to end up with a nice supply of ‘C’ shaped circlips which will serve as the tube retainers (aka barbs) on the metal tubing.

Now we are going to cut the refill tubes to length as required - one for the clunk tube and the other for the delivery tube through the tank bung.

A small tube cutter works best here and, using my ‘patented’ method, the ends will not curl in to reduce the tube internal diameter on the ends.

Slide the refill over a metal rod for a very snug fit - a just slide on is what we want - then cut to the lengths required with the tube cutter. Again, the blank end of a drill bit is ideal for this. This provides a very neat cut with just enough curl in to prevent a sharp edge on the ends of the tube.

Scrub the tubes with a Scotchbrite pad (or similar) to a clean and shiny surface, wipe the end sections with methylated spirit or alcohol then tin the ends with solder for about 6mm along both ends.

Slip a circlip on both ends of the clunk tube and one end of the delivery tube then set them about 3mm from the ends. Push the delivery tube through the tank bung and fit the other circlip. A touch with a small soldering iron and a drop of solder will secure the circlips and coat the wire with solder to build up a very neat barbed end.

The clunk weight is very important in any fuel tank and the most recommended is the Walbro type (also sold under the O.S. label) which has a neutral metal (not affected by any fuels) weight with straps that clamp a superfine felt filter.

The two main benefits of this type of clunk is the excellent filtering - nothing other than fuel passes through them and that they do not generate air bubbles in the fuel. Contrary to some thinking, it is not an ingress of air that causes air bubbles - it is movement of the liquid.

A slight pause here to cover a topic that has been bandied around since we first ran model engines - air in the fuel line of which there are countless reasons but, really, the cause is quite simple.

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A slight pause here to cover a topic that has been bandied around since we first ran model engines - air in the fuel line of which there are countless reasons but, really, the cause is quite simple.
For this example I used a 200ml plastic bottle (an empty vanilla bottle I had on hand) that I cleaned internally. Using the lowest (common) viscosity fluid - clean water, I filled the bottle to about .75 of its capacity. Good clean water has a very high surface tension (72.8 millinewtons per metre at 20ºC) so, when I shook it, I could see bubbles form while it was moving but they quickly dissipated when the bottle was still.

The next lowest viscosity fluid easily on hand was methylated spirit which, added to the water in a very small quantity, slightly changed the surface tension and the fine bubbles remained for a short time when the bottle was still. Next addition was one drop of olive oil, another good shake and the bubbles increased and remained for a much longer time.

Okay, we are not using water in our fuel but petrol and oil or methanol and oil has a much lower surface tension and...a big and here....it is subjected to very high frequency transmitted from the running engine so ... there are many bubbles in the fuel tank (aka 'froth') and some of them, according to the type of fuel delivery, are transmitted along the fuel lines. Most oils these days have an anti-foaming ingredient to prevent the fuel foaming like shaving cream but it does not stop the layer of superfine bubbles that form when the fuel is subjected to high frequency vibration. Maybe you don’t see bubbles but they are often there and very fine - almost invisible but, allow a bend or tight change in the fuel line direction or add a reservoir such as a pump (O.S. for example) and the micro mesh bubbles gather together and form large bubbles which are generally not much of a problem for methanol fuelled engines but could be a problem with petrol engines due to the much lower fuel consumption (2.5 times less that a methanol engine) and the type of carburettor.

So, now we have a good reason for using a clunk weight that prevents bubble problems. O.S. also produce a bubble preventing clunk in the form of a sintered ball with an O ring around it (to prevent tank wall damage) and this first became necessary with the super charged O.S. engine which was very sensitive to air bubbles in the fuel. These are also very good filtering clunks but you would need to change to a Viton O ring if you are going to use one in petrol fuel.

Plumbing the tank
Okay, we have our clunk bits and the delivery outlet tube so let's plumb them into the tank and... consider the overflow/air inlet tube which we need to address before we can assemble the internal system.

As I said previously, without special equipment or bending metal alloy it is not easy to bend thin walled tubing. There are two methods for future reference if you have the need - one is expensive but reusable - the other is virtually free.

The first is to use an alloy sold as Cerrobend which will melt a bit below the boiling point of water. It is melted in a bain-marie (one container sitting in hot water in another container), poured into the tube, allowed to cool, the bend is carried out (perfect job), the tube is put into the bain-marie again and the metal melted out to be used again... and again and so on.

The other method is to block one end of the tube, fill it with soapy water (kitchen detergent is good), plug the other end with a tissue (reasonably tight) and freeze the tube overnight. The tissue is to stop the water running out but allows the ice to move it out a bit as the water expands as it freezes. Without a lot of mucking about, take the tube from the freezer and bend it as required. This is how musical instruments - trombones, trumpets, French horns and the like are bent to shape and also the exhaust pipes for Honda motorcycles but they have a...
tube in a tube so the outer tube does not discolour from the exhaust heat.

Okay, let’s do it the very easy way and use copper or brass tube for the breather/overflow but, to prevent any chance of corrosion and breaking down, the inside tank section with the bend toward the top of the tank is shrouded with tight fitting fuel tubing to suit the fuel to be used. Wet the tube with kitchen detergent and push the fuel tubing on making it a little longer than the metal tube then cut the end on a bias so it just touches the inside top of the tank.

Right, let’s assemble the bits and here I recommend the use of Sullivan Proflex tubing, Fluororubber tubing or Neoprene tubing as I showed you in Flat Out RC #3.

You can use silicon tubing if the tank is for methanol but do not use Tygon tubing for a petrol tank as it has a limited life span of about 6 months before it starts to harden and shrink. We need a long lasting tubing that is going to be used for a hinge - it will allow the clunk assembly to trace around the rear of the tank to pick up fuel without interruption regardless of the attitude of the model.

One more item to find, and this will come in handy for other applications as well, is stainless steel tie wire available from many sources on the Internet. One I find very good is Brookfield Beehives and the wire they have is top quality for a very reasonable price.

Our first move is to introduce the outlet tube into the tank bung after having soldered a circlip on one end. If you need to enlarge the hole in the bung, one safe way is to run a red hot rod through the main outlet hole. I used a long nail - 3.7mm diameter - and it did a fine job. The stainless tube was then a firm push in fit aided with a drop of soapy water.

Okay, push the tube through the bung right up to the soldered on circlip, wrap a narrow strip of aluminium foil around the protruding tube end and solder the other circlip on.

The reason for the aluminium foil is that it acts as a heat sink and the heat from the soldering does not transfer back to the bung.

Slide the tube back through the bung to set the lengths inside and outside as required then slip a short length of fuel tubing over the inside section. You need only around 25mm of tube as this is our first hinge. Slide the clunk tube into that ‘hinge’ and ensure there is a little clearance between the ends of each metal tube. Using the stainless wire, wind two loops around each end of the hinge piece just behind the circlips then twist the wire ends to tie them off.

Rather much the same process for the clunk weight - a hinge piece plus wire ties and that completes the clunk assembly.

Regarding the length of this assembly, check the end wall of the tank to see if it is flat or slightly concave (bowing in) as some are. This is a problem area for the unwary as the clunk assembly length is generally set with about 10 - 12mm clearance from the rear of the tank but... this is often viewed with the clunk weight resting on the tank inner bottom. If the end wall is concave the provided clearance might not be enough and the clunk can jam on the apex of the convex (inner side) surface.

To check all is as it should be, hold the tank vertically and rock it to move the clunk weight in all directions over the rear wall to ensure it has adequate clearance over the entire surface. I suggest 12mm to be the ideal clearance as, according to Sir Newton’s laws, the body (clunk weight) will remain at rest (stay where it is) while the tank moves forward under acceleration of the model. If the clunk tube can stretch under this acceleration, the clunk will jam against the rear wall just as your model is taking off and…you know what happens - the blasted engine stops. As we have very short lengths of flexible tubing in this assembly, the stretch factor is minimal but… not if you have the clunk close to the rear wall. A reminder here again - we are setting up a trouble-free fuel system as well as is reasonably possible - every little point matters.

Next is the breather/overflow tube which, as I said, needs to be copper or brass unless you want to experiment with curving/bending the stainless tubing. Both copper and brass are subject to breakdown when immersed in the fuels we use so we protect the tubing by fitting a tight fit fuel tubing sleeve over the section inside the tank as I explained earlier on.

Where?

That just about covers the assembly of a trouble-free tank so now we have to place it in the model and here we have a bit of a grey area - particularly with methanol engines that do not have a fuel pump for the carburettor supply.

The very first consideration is your mode of flying the model - sedate scale flying, easy weekend flying, old timer type flying, a bit of manoeuvring or 3D type sky blasting.

On my test bench the tank is generally lower than the needle valve of the engine (reference point) and all engines run on that test bench run as they should.

As an experiment, I have held a fuel tank and lowered it as the engine was running until it was 300mm below the engine and the engine continued to run but... the engine was static - not being thrown about as it would be in a model.

I have said this many times over the years and I will repeat it for those who are unaware of the fact that engines do not suck fuel into the carburettor. Obviously this is not entirely correct as there is a very small amount of suction as the piston moves but it is a very small amount with many factors of consideration such as tapered liners, Dykes rings, ringed and non-ringed engines for starters.

The fuel is driven in by atmospheric pressure which is a pressure in all directions around us at 101.325 kpa (kilopascals) or, in old money, 14.7 pounds per square inch at sea level. Not getting too deep into the topic, AP (Atmospheric Pressure) is equal in all directions with main variation being elevation which, for example, shows at the peak of Mt Everest at 4.89 psi.

Now, the matter of concern is our fuel tank, which, under normal circumstances, has equal pressure on all sides so it balances out and doesn’t get squashed (unless you block off the breather). The fuel inside is a different matter as it is also subject to AP but only on the top surface as the tanks sides are at an equal pressure. That surface pressure does not push the fuel out if the tank outlet is left open to atmosphere as the AP is equal on the opening of the tube so all remains static but, it the outlet tube is hanging below the tank, the fuel will start to run out in a siphoning action as the surface pressure of the fuel area is greater than the cross sectional area of the tube and the weight of the fuel is added to the flow action.

Right then, the tank is connected to the engine (no fuel pump at this moment) and all remains static - there is no flow of fuel. We rotate the crankshaft and moved the piston up (two stroke) and the area below the piston increases, the port in the crankshaft or rear disc opens
and atmospheric pressure rushes in to fill the void. As the air flows through the carburettor it is met by the spirit of Giovanni Battista Venturi, an Italian physicist of the period 1746-1822, the man who expounded the principle of Mass Continuity in which, extremely basically here, a fluid's velocity increases when it passes through a constriction.

A parallel tube reduced in diameter somewhere along its length will cause an increase in the flow speed of a fluid (with air being also classified as a fluid flow) as it passes through the narrow section. Now, this all brings in high and low-pressure troughs (suction) and any impediment along the tube such as a projection or a break in the surface will cause such an effect.

What does all this mean to us when we are discussing fuel and carburettors? Well, the intake of our carbies is commonly known as the Venturi with the basic design being a trumpet (or bell) type main opening that reduces down in diameter over part of its length the opens out again to almost the same diameter as the top inlet.

In the reduced diameter section is a spraybar (many types) into which fuel is introduced and controlled by a needle valve. Now, back into the above 'heavy section', I wrote that the velocity of the air (fluid) increased in the small section and this is a high-pressure trough - maximum speed of the air in that place.

As it contacts the spraybar (or fuel jet) part of that flow is stopped by the solid object or interference in the smooth flow - hole in the side - so it has to flow around it and, in doing so, the flow rate decreases and becomes a low pressure trough and this, very basically again, causes a suction - it draws fuel from the fuel jet which mixes with the airflow that goes into the crankcase.

In the case of a four stroke, very similar but the opening is the inlet valve and the vacant area is the cylinder as the piston goes down and the same air/fuel action occurs. Now I hear somebody at the back of the field say, “Hey, 'old on a minute, mate - what abart when ya puts yer finger over the venturi and turns yer engine over to suck in fuel - how abart that then?” Okay, I won’t use the terrible cliché that ‘that’s a good question’ because, to me, all questions are good - some better than others but, the fact is it would seem a bit hazy after all I have expounded in the last few paragraphs as it would seem to shoot my postulation well and truly in the foot, so to say.

Well, this is how it works. When you block off the carburettor intake, the air cannot flow in as it normally does but, as you turn the crankshaft, the piston is still creating the void (void of air) in the crankcase and this low pressure area is an invite to AP to push fuel from the tank into the void. At the same time a small amount of air still enters (AP is very persistent) through the exhaust port and fuel passageways in the two stroke or exhaust valve in the four stroke and continuing to turn the crankshaft pushes out some of the air bought in, the void is re-created and more fuel is pushed in from the tank by AP.

To see a fine example of this, try suction priming (finger over the carby) an engine fitted with an air bleed carburettor - no fuel will flow if the throttle rotor is anywhere but fully open as the air to fill the created void is introduced via the air hole in the carburettor body and this does not pass by the spraybar. If you open the throttle rotor fully (maximum RPM position), the rotor blanks off the air bleed hole and the fuel is drawn in by the interchange of positive/negative pressure (voiding and filling of air) as the piston moves up and down.

Well, there you have it, pressure of atmosphere pushes the fuel into your engine and now we see how tank position can have an effect on the smooth flow. I know that here, I am going to upset some readers when I advise that you leave space to change the position of the fuel tank if you have a problem. If you have problems with an inverted engine - not reliable due to flooding - then you should consider lowering the tank position and of course, do not use muffler pressure. In fact, I advise you never use muffler pressure as you pump contaminants and water into your tank and, really, it is not necessary. If you have muffler pressure...
fitted and decide to try without it, you need to adjust the main needle a bit richer - simply retune the engine and it will still run as it should and be more reliable throughout the tank of fuel.

As general advice, for a non-pumped engine, the tank is set up with the centre line 10mm below the alignment of the main needle valve but...this is a general rule and starting point. If you have fuel feed problems due to the tank position, there is a really easy way of finding the ultimate tank position and for this you need another tank of the same capacity. A bit fiddly here but, believe me, you can really sort out tank problems with this method.

You will need some rubber bands or cable ties and some scraps of soft leather or felt as you are going to install the tank on the OUTSIDE of the model secured with rubber bands or ties and the leather or felt is to prevent damage to your model from the securing ties.

As an extra reference, consider wrapping the section of the fuselage with white paper in order to felt pen mark the tank positions for later reference. Easy process now, fly the model to check the tank level and adjust this if necessary to obtain satisfactory results.

The simple truth is, other modeller’s aircraft you see with inverted or side mount engines that do not have problems have a special feature - the fuel tank is set at a level and plumbed to suit the engine whichever way it is fitted and, we’ve all seen them and, maybe, asked the modeller how come he doesn’t have problems with his inverted four stroke (etc.)

Petrol engines - a different story

While the following advice is aimed at engines fitted with a Walbro (or Walbro style) carburettor, it can, with a little experimenting, apply to any engine fitted with a pump fed carburettor. The Walbro (and types) carburettors have a failing that is common to many petrol pumps even in full size cars - they are not at all efficient at pumping air.

My mind boggles (whatever that means) when I read the instructions for a petrol engine and note the advice ‘rotate the propeller 25 to 50 times to obtain a fuel draw to the carburettor’. You’ve got to be joking, mate.

Just think if you had a motorcycle (as they were) with a kick starter and the same advice applied...you would end up with muscles on your kick starting leg the size of beer barrels. So...why did I refer to motorcycles? Well, we can take a page out of their book about fuel delivery.

Motorcycle engines rely on gravity feed to get fuel from the tank to the carburettor - the tank is high so the fuel flows down (pushed by AT which is why it is important to have a small breather hole in the tank cap or elsewhere) - an excellent system.

The motorcycle carbies are a lot different to the Walbro (and types) as they have a float chamber which lets the fuel flow until the chamber is full. The Walbro has a diaphragm and valve system that prevents the flow of fuel until it is activated by a pulse from the engine - if the engine is not running, the fuel will not flow and that is a little problem we must overcome.

First, we must have the fuel tank as high as possible to provide the gravity feed and then we need a substitute for the float chamber and this is in the form of a Tee piece and fuel button. Ideally the Tee piece is in the fuel line, as close to the carburettor inlet as possible and the fuel button is connected to the leg of the Tee set up to suit your application for your model.

In use you fill the tank until it is indicated by the overflow from the breather (keep this at a maximum of 100mm long), remove the fuel button and introduce a drop more fuel into the tank until it flows out the fuel button line (squeeze the tank overflow but do not block it in case you forget to unblock it) then replace the button. You now have fuel knocking on the door of the carburettor and, if all else is well, you will have an almost instant engine start.

As the fuel flows

Next issue we will discuss, briefly, the fuel line to the carburettor and then look at why you are having carburettor problems and how to fix them.

Any Questions or discussions?
Contact me at beewun@bigpond.net.au or oilyhand@bigpond.net.au

Contact me at oilyhand@bigpond.net.au

Pipe cleaners and methylated spirit is the way to clean the inside of this pen refill but...wear disposable gloves as the job gets messy.
PHOENIX MODEL WACO 60CC

WORDS: ANDREW SILL   IMAGES: COSMO MOURTZIOS
While walking the pit area at a recent flying event, there was a plane that caught my eye.

When I say caught my eye, it was more like I couldn’t keep my eyes off it. It was a big scale biplane, a WACO in fact.

The owner of the plane was nowhere to be seen but I knew if I lingered long enough the owner would return to his craft. He did, and his name is Mark Stewart and I was fortunate to find out more about this beautiful model he had built.

Mark’s plane is a Phoenix Model WACO, one of the newest additions to the Phoenix large scale range. Large it is with a wingspan of 90.5 inches in the old scale or 2300mm and fuselage length of 1873mm.

My research tells me that the Phoenix Model WACO is based on the YMF-5 variant, a modern-day replica of the original WACO biplane now built by the WACO Aircraft Corp.

Before I go too far, I can hear you all pronouncing WACO like the word Wacky. To set the record straight, it is pronounced as whhaaco so nothing wacky about this biplane.

The build

Mark is an experienced model plane builder that also has experience working with biplanes so building the WACO would be no problem.

The quality of the ARF kit is excellent with Mark stating that Phoenix have really picked up their game with a lot of the scale details in the plane.

The Oracover covering is impeccably applied as is the painting on the fibreglass cowl.

The build went well together with a total of twenty hours required to finish the plane. Mark stated, “It was an easy build. One of the few biplanes I have put together where everything lined up”.

The wing incidences were spot on out of the box, a great relief for Mark.

Digital, metal gear Savox servos were used all round, a total of six. They offered 16kg of torque which is ample for the nature of this plane.

A single aileron servo in each lower wing is employed, with a connecting rod between the lower and top wing ailerons. This doesn’t provide the most scale like look but does help reduce cost in added servos. Personally, I think most would prefer separate servos for each aileron.

All supplied hardware was used with Mark not feeling the need to substitute anything.

Metal cabanes that connect the upper and lower wings are a sturdy metal construction, so much so that wire rigging is not needed to be added.

The two-piece wing connects to wing joiner tubes and, as each wing half can be kept together, field setup is kept to a minimum.

The two-seat cockpit is nicely finished with built in pilot figurines as well as some scale detail inside the cockpit including a detailed instrument panel. The cockpit is removable that allows for easy access to the electronics inside.

Heavy duty aluminium landing gear, that is well in line with the scale looks not only is a sturdy unit but adds to the scale appeal.
A special powerplant

What engine would suit the WACO? A radial of course.

Though the design caters for a gas 60cc size motor of the single cylinder variety, Mark decided to use the Saito FG-60R3 radial gas version.

This motor is a very close relative to the nitro fuelled version but converted for gas use.

Mark has experience with the nitro version, which he enjoyed, but surprisingly stated that he didn’t think the gas version of the motor performed as well.

Not only does the radial motor enhance the scale looks but the engine note as well.

A smoke system has been added for further appeal.

The flying

Mark had a lot of praise for the way in which the WACO flew.

The motor revs to 5,500 on a 23x10 prop. This gives the WACO ample power with Mark saying that flying at half throttle provides excellent scale flying characteristics.

The striking Oracover finish creates a quality appeal to the WACO kit and looks great in the air.

The WACO is no 3D aerobat, but Mark says that it is easily capable of achieving sport aerobatic manoeuvres.

With no bad habits, Mark enjoys flying the WACO and highly recommends the plane for those seeking a larger scale biplane experience.

If the WACO from Phoenix Models is now on your bucket list then contact your local hobby shop. They should be able to source one for you locally but be quick as they will not last when the word spreads.
GRAND OPENINGS

ECHUCA

MOAMA MODEL AERO CLUB

WORDS: ANDREW SILL
The word improvement.

It’s a word that conjures positive thoughts. It’s a word that is sometimes difficult to identify in our hobby but one that was clearly visible when we visited the Echuca Moama Model Aero Club annual fun fly.

The weather forecast was perfect, so we headed north from Melbourne for three hours to the town of Echuca on the Murray River for a very special weekend.

Not only was this event their annual fun fly but also the unveiling of some new club facilities.

A little background

The Echuca Moama Model Aero Club is the host club of what is the Victorian Model Aircraft Association (VMAA) most recent state field.

The state field is part of the growing assets accumulated by the VMAA to secure flying fields across the state. This investment is an investment in the future of the hobby, a very smart and welcomed strategy.

The investment is hinged on purchasing land that will be suitable for model flying for a long time and having a host club that can be the custodian of the land and sustain it as a model flying field.

The host club not only maintains the land for flying but invests their finances and resources to keep the club going.

This year’s fun fly event celebrated the efforts of many with the official opening of a new clubhouse, undercover pit area and an extended runway.

Leading the club development projects was Fred West who coordinated a team of workers and was a liaison with the VMAA.

The process started with a proposal put to the VMAA in 2016 outlining the facilities the club wished to put in place. Those plans were approved in January 2017 with work starting in March that year. The club chipped away at the work throughout 2017, having it ready for launch in early 2018.

The total project cost was around $40,000 with the VMAA putting in $22,000, the host club $12,000 and the MAAA $6,000. All labour was supplied by the club members.

The work undertaken was of a high standard and something
that the aeromodelling hobby can be proud to utilise.

The flying

Visitors came from around the state, and they came in numbers as the carpark was already filling by the time we arrived at 10:30am. Many had camped the night at the field, taking advantage of the beautiful Autumn weather.

Many of the locals from the surrounding area came out and brought with them a gaggle of aircraft.

Surprisingly, the majority of aircraft at the event were of an aerobatic nature with a few turbines and scale aircraft to keep a nicely balanced flight line.

We spotted a few large scale planes including a 100cc Hangar 9 Beast biplane as well as a Krill Katana and a giant Pilatus.

The format for the flying was a very relaxed approach with pilots lining up to all have their turn.

A slight breeze coming down the strip, ample flying space with a 1,000 feet flight ceiling made for perfect flying conditions all day.

A big surprise

At the pilots briefing, the club had warned that at 1.30pm our eyes were to be planted on the sky for a special demonstration.

Like clockwork, two full scale Pitts biplanes came into view for our very own aerial demonstration.

Fred West had pulled a few strings to make the display happen which was a highlight for all.

The sound and the smoke combined to really mark this event as a memorable one.

The unveiling

Once our private aerobatic display was complete it was time for the official part of the day which was the inaugural opening of the new facilities.

VMAA Vice President, Jon Gouge, was
there to cut the ribbon and officially thank the club for their efforts on behalf of the VMAA members.

The new club house and kitchen was well tested with the food flowing all day. The new undercover pit area, with its built-in benches and seats were popular among spectators as was the extended runway.

**Building for the future of the hobby**

Not only is the VMAA investing in the future of the hobby but the local club is seeking to build a better flying environment that all can enjoy.

Club president, Daniel Lister, is adamant that the field will be a place for all aeromodellers to enjoy. A number of events are already planned with invited groups and the club is happy to share their field with visitors to the area.

It was great to witness what happens when passion and action meet. A vision comes alive. Even more impressive was the club’s commitment to keep on improving the facilities. The unveiling of the new clubhouse, pit area and runway is just the start.

It was inspiring to see the dedication the members had to building a better club environment and an honor to document the moment in time.

A big thank you to the VMAA and the Echuca Moama Model Aero Club for investing in the new field facilities and our hobby. A great job done and something you should be very proud of.

Visit the Flat Out RC YouTube channel to see a video of the overview of the event.

The new clubhouse will serve the club well for many years to come.
Whether trying to establish a new model flying club, lost your existing field and need to find a new one or looking for a better flying option, finding a new space to fly can be daunting but here are a few of our tips for finding a new flying field.

**Scout for locations**

Finding a space suitable for model flying is not an easy task but easier than ever.

We have specific needs. Height, noise and space requirements to name a few. This means we need to take a very considered approach to identifying a suitable space. If in suburban areas, the task will be even more complex and the options few and far between.

Identifying suitable locations starts with getting a feel for the area you wish to fly in.

Jump in your car and go for a drive to see the lay of the land. If you see a spot you like then note the location.

Getting online and using Google maps can save you a lot of leg work and allow you to identify a possible area to search.

**Announce your intentions**

Thanks to social media, you can easily advertise your need for a suitable model flying site.

If you are a Facebook user, a tip is to find a community noticeboard group that may exist in the vicinity of the area you wish to setup a new field.

This works very well in more rural areas where opportunities are possibly greater. A strong sense of community exists among smaller communities so tapping into the network and asking the question can get you miles ahead.

A more laborious method but one that can be quite effective, is to produce a simple flyer that states your wish to find land suitable for model flying. This flyer can be dropped in letter boxes in the vicinity of the area that you have identified as suitable.

You may need to go letterbox to letterbox doing the mail drop but if this is the price you need to pay to find a field, then so be it.
Approach the landowner

At some point in time you will need to approach the landowner of the prospective site.

Whether you drive down the driveway and knock on the owners door, send a letter or an email, make sure you are prepared.

The landowner will want to know what the impact of the use of their land will be, what’s in it for them including any lease proposal, lease term and maintenance of the used land.

Work with the landowner to make them feel comfortable that the use of the land will not be detrimental.

If you can document your proposal to show your intentions are real and confirm exactly what you want to achieve it will demonstrate a sense of professionalism and instill confidence in the mind of the landowner.

Consider the space you need

A flying field is more than just a runway.

Consider the space required for a pit area, clubhouse and parking.

The runway should aim to be a minimum of 150m and suitable for the intentions of its use. For example, if you plan to fly turbine jets or large scale aircraft then the runway needs to be of sufficient length, including a safety margin.

The prevailing wind direction and sun movements should be considered but sometimes meeting all the requirements may be difficult so keep an open mind.

Keep trying

It’s no easy task securing a new field so enter the process understanding that you will need to work hard to achieve your goal.

If you can form a team of proactive and like minded workers then this will help spread the work load.

As one door closes you need to open another. Think laterally and explore every avenue.

Securing a new field is a long term proposition so the time you spend up front in finding a field will be beneficial for many years to come.
You can often tell the type of person by the planes they fly.

So how would you classify Derek Pontarolo, the proud owner of one of the most intriguing model planes gracing the Australian sky?

Crazy? Unique? Visionary?

After having a chat with Derek, it became clear that he is all of the above but a hell of a nice guy to boot.

We came across Derek’s unique plane online. It was so unique we reached out to him to find out more.

His plane is the B-2 Bomber, a twin turbine beast of an aircraft.

The Stealth Bomber

The Northrup Grumman B-2 Spirit, also known as the Stealth Bomber, is an iconic plane.

Designed to be a heavy penetration strategic bomber, the B-2 features a stealth design aimed at deflecting or absorbing radar detection.

The B-2 Spirit was a highly expensive aircraft to develop but still flies to this day with 20 aircraft in operation by the US Air Force.

First flown in 1989, we had never seen the B-2 in model form until now.

A unique choice

Derek has been an avid aeromodeller for the past 25 years. His journey started at the local park where he taught himself to fly, losing many planes along the way.

In 2005, Derek ventured into the world of turbines and has been an avid jet pilot since.

“After smelling burning kero, my mind was made up”, said Derek.

Over his time, he has flown a broad range of aircraft but has a penchant for scale aircraft and in particular the CARF Models brand of planes.

Derek has owned and flown a range of CARF planes from scale prop, aerobatic and jet aircraft and has never had a bad experience with any of them.

When asked how he came about the B-2, Derek stated that, “I am always after a model that other people don’t have”.

His B-2 is definitely not a common sight at any flying field.

Derek had seen prototypes of the B-2 online but apparently the model had a chequered history.

CARF displayed the model at many events but had lost a few along the way. Ongoing production was put on the back burner but was still offered for sale.

After a discussion with renowned model builder, Steve Richardson, Derek was encouraged to be a pioneer and take on the B-2 project. Steve would later assist with the build in fitting the engine, exhaust and fuel system.
The airframe was ordered, and the journey began.

The plane

The CARF B-2 is a large plane with a wingspan of 4.35 meters and a weight of 22.5kg.

The wing breaks down into three pieces for transport.

CARF are renowned for their composite airframes and the B-2 is a fine example of their workmanship. The composite building process ensures that the smooth lines of the B-2 can be replicated authentically.

As is common with many composite aircraft, the base paint scheme was done in the mould.

The plane comes in a gloss finish, but Derek painted white indication lines, grey stealth components and added decals. He also added a matt clear base coat over the airframe to achieve the matt finish as per the full-size craft.

Two Jet Munts VT80 turbines power the aircraft providing a total of 16kg of thrust. Setting up the twin turbines was simple with both motors on separate radio channels. They are currently setup to start together but Derek plans to have them on individual starting and shutdown sequences for greater control.

The CARF exhaust system was used as it is specifically designed for the B-2.

34kg torque servos were used all round with the DFA brand the chosen source. DFA is a new brand but with a proven design as they are based on the, now defunct, JR brand of gear. Besides the traditional control surface servos, the retract doors are also servo driven adding to the servo count. All servo linkages are of the heavy-duty steel clevis type.

The control surface setup is quite unique for a model plane but replicates the full-size aircraft.

With the lack of a vertical fin, rudder control has to be managed through a unique, drag rudder setup.

The drag rudder setup involves two spoiler like control surfaces that deploy in either wing tip in the location where a conventional aileron would be located. With the two spoilers deployed on one wing, drag is created, forcing the plane to yaw.

Roll and pitch is handled by a series of 4 elevons located in the trailing edge vees on either wing half.

To help pitch control, the Beaver Tail, in the center of the trailing edge, acts as an elevator.

Smart electronics

Derek has employed some smart electronics to help improve the B-2 flying experience. Before you start to think he might be cheating, the real B-2 bomber has numerous computers working to keep it flying thanks to its unique design.

Derek uses a JETI DS16 radio setup. JETI radios are renowned for being very...
programmable and offer functionality that many jet owners find advantageous.

The JETI Central Box 200 is used to manage power distribution, though Derek does not regulate the voltage, sending 7.4V down the line via two Li-ion batteries.

The recommended Electron brand retracts were used as well as their electric braking system.

Retracts and braking is controlled via the Electron GS-200 module. This module features an inbuilt gyro that works to keep the plane tracking true when on the ground. It does this by applying brake pressure to the left and right retract as required.

To stabilise the B-2 in flight, a Bavarian Cortex Pro gyro is used. All the programming and adjustments can be made via the JETI radio.

To improve the scale appearance, Derek installed landing lights on each retract and navigation lights to each wing tip.

Prominent in the cockpit are two LED screens which feed vital turbine statistics, valuable preflight to ensure all the numbers are pointing in the right direction.

How does it fly?

After a two month build time, quick for such a project as Derek likes to see what he gets for his money, the plane was ready for maiden.

“It flies great, but first flights were a little daunting as it was an unknown airframe”, said Derek.

With more than five flights down, the plane is now setup to the pilots liking and comfortable to fly.

“You do need to fly it differently. You turn with the rudders and compensate with aileron”.

Derek did notice an instability in flight as the retracts were being deployed or retracted. Once deployed, the plane settles but ensuring that you have sufficient height and flying straight and level will ease the pilots mind during retract transitions.

A flight time of 6 minutes is the average, running twin 2 litre tanks full of Jet A1.

The plane is somewhat aerobatic with rolls achievable, but Derek prefers to fly the plane in a more scale like manner.

Being a flying wing, the airframe is very slippery meaning you do need to be Drag rudders on each wing provide a unique way to manage yaw in the absence of a vertical stab.
It’s big. 4 meters big to be precise.

Landing lights ablaze on the landing gear.
wary when coming in to land. Derek uses landmarks at the field to time his approach. He cuts the throttle before taking the final turn on the base leg. A glide approach is then used until touchdown.

The CG is critical but CARF have marked the correct CG point on the airframe making balancing easy.

When it comes to our fine hobby, it is often hard to come by those with a pioneering spirit. Those that take on projects that others simply shun and prefer to follow the masses with traditional style aircraft.

Derek Pontarolo is no such aeromodeller. He dares to go where no one else does and backs it up with fine building and flying skills. We tip our hat to you Derek and commend you for having the fortitude to do things that are a little different.

Derek told us to stay tuned. He has another project on the go that we are sure you will enjoy.
Engine monitor displays up front. Demon Cortex gyro behind into the JETI power distribution unit and receiver. The Electron GS-200, bottom left, manages the braking and on ground gyro system.

Turbine exhaust was designed by CARF and came with the kit.
I recently completed my annual migration to Wagga Wagga for the Anzac Day Military Scale event and, 3 weeks later, to Muswellbrook for “The Gathering” held every May.

Both of these are very popular venues and have been for many years with the Wagga Wagga event being the 45th this year (2018) and The Gathering logging up 30 years.

The Military Scale event is reasonably self-explanatory but, to fill in any gaps, the event is open to WWI aircraft, aircraft between the wars and other military aircraft and then the WWII aircraft.

The event is well run and organised over 3 days with static judging then flying 3 rounds for each section. It is a rather relaxed atmosphere with no pressures on the entrants and the very large flying area allows for a bit of ‘flying outside the square’ if you need to correct a manoeuvre or collect your wits with a bit of non-judged flying as only the flights before the judges in their visual area are being judged so even a relative beginner to competition flying would not feel unnerving pressure.

Depending on the number of entrants in the sections, two flight lines are run with two sets of 3 judges. All contestants have to have a caller who is also the ‘watcher’ when two models are in the air at the same time.

Due to this vigilance, even a close call is
extremely remote and, as all manoeuvres are called by the flyer and, sometimes, by the caller, both contestants are always aware of the intentions of the other flyer.

For the benefit of the pilots, there is a very large covered pit area with patches marked out - an area for placing your model and equipment (or carrying out adjustments or minor repairs) and plenty of room for many ‘bums on many seats’ to rest, talk, watch or snooze - whatever presses your buttons.

Behind the flying area there is an even greater sit/watch/talk/snooze area in the front of the large restaurant area (plenty of good food, coffee and drinks) and beside that is the very large car park and the Albury RC Model (portable) shop for browsing, sniffing, feeling and buying a large range of model products.

On the other side is the home-away-from-home area for large and small model trailers, caravans, motor homes and tents and close to that area is the rather exotic ‘comfort station’ (aka loo, toilet, relief station). It has ladies and gents toilets, a gent’s urinal and a hot/cold shower booth plus, as I also mentioned last time, a one way viewing window near the urinal where you can watch the wildlife, trees and people.

My mention of this struck an accord with somebody in the committee as it has been named ‘Winchie’s Lookout’ with a sign adjacent to the window which I was asked to autograph. Argh, the fame is too much - having a lavatory complex named after you (is there a message in there somewhere?)

The committee is ever forging ahead with improvements and the latest I was shown with some pride was the powerful diesel generator humming away in a dedicated section of one of the storage sheds with all the necessary wiring, connections and distribution outlets to provide more than adequate power for the kitchen, power points and whatever else requires 240V - a very good step forward to keep the club growing.

The event was a bit light on this year but still plenty of models being flown to keep the organisers and judges busy. One of the reasons I suspect was that An old stager with, possibly, a few hundred hours on the clock but it still fly’s well and is of very good scale presentation. Peter Noak is the modeller behind the build. Simon Harvey built and flies this monster Fokker DV11 much to the pleasure of all those watching the event. I think one of the main reasons it appeals is that he fly’s it at scale speed.
the Monday after the event was the start of the Nationals at West Wyalong which was a big attraction for many modellers as it had a lot of ‘firsts’ (event locations) due to the size of the property owned by the Free Flight Society.

As the Wagga Wagga event is held as close as possible to Anzac day, there is always a salutation to the memory of the men and women involved in the terrible war conflicts and the alliance between Australia and New Zealand. This year was a bit special as we had the City of Wagga Wagga 332 Squadron of the Australian Air Force Cadets in attendance to carry out the ceremony of lowering and raising the flags to the presentation of The Last Post. A very moving affair well carried out and a fitting tribute to all of those who made the ultimate sacrifice for us so we may live in peace.

Generally speaking, the standard of flying was quite good with some very realistic manoeuvres applicable to the particular aircraft and certainly entertaining for those in the ‘gallery’ - a large set of seats forming a grandstand for general public visitors.

It interested me to see the latter day style of a public ‘wave’ - mobile phones (tablets and whatever they are called) held aloft to take photos of the flying models which, really would be almost useless due to the distance but, during the lunch break, visitors were invited into the pit and flying area to view the models close up, interact with the fliers and, of course, take hundreds of ‘phone photos’ - some with little children admiring the models, a good public relations exercise for sure.

On another note - one thing for sure - no chance of going hungry due to the tireless work of the canteen staff constantly preparing steak or sausage sandwiches and freshly cooked chips from the deep fryer. Around lunchtime I saw many great handful size hot sandwiches being treated as only a good steak sandwich should be treated - sauces and gravy dribbling over your hand (and clothes at times) as you stuff the ‘good stuff’ down your gullet.

A great weekend for modellers - participating or watching and one that is well worth marking on your calendar for next year -2019 in April as always.

Musswellbrook event

Thirty years ago this year, 2018, two members of the Musswellbrook District Model Aerosports club, Dennis Waterman (dec.) and Bruce Abell conceived an idea to hold an event for the senior members of our fraternity and the name they came up with, The Veterans, stuck for many years. Veterans of modelling with free flight and control line models met at the field on the weekend after Mother’s Day each May and did what they enjoyed best, flew model aircraft. The event gathered impetus and a little bit of (fun) organisation crept in with the first being the dawn fly off.

At sparrow fart (early in the morning when the first sparrow awakes on his tree branch, cocks his tail and pharts then fly’s off in search of breakfast is the classification of ‘sparrow fart’ which occurs as the earth tips just that tiny amount to show the first sunbeams lighting the horizon), so, as I said, at sparrow fart on the Sunday morning a

Nice to see this very familiar biplane in a different livery for a change. Many are yellow but there is a good variety of colour schemes for a scale effect.
Bill Mansell has this model set up to finite scale detail. It now has quite a few hours on the clock and still commands attention when it is flying.

Nikolas Schadt of Wagga Wagga has spent many hundreds of hours (and quite a few dollars) bringing this excellent MF Messerschmitt 110 Destroyer model up to super fine scale detail outside and in the cockpit as well as the very realistic weathering. Model is 95” span, 2 O.S. 160’s for power and custom mufflers that are hidden within the cowls.
great gathering of brave souls (some with a slight hangover from the previous Saturday night dinner) hurled chuck gliders in the air on a signal given by The Mouth From the South aka Dennis Waterman. It was then a scurry (or a calculated slow speed walk by some of the ‘elders’) to wander off and retrieve models that went (often) great distances. Now remember, we are talking about modellers of many calendar years and many years experience creating balsa dust. The chuck gliders were, in the majority of cases, not a simple ‘hurl and watch it descend rapidly’ type model - these were models that were built to fly and fly they did - sometimes out of sight. After the all the huffing and puffing (by those who had to walk long distances or up into the hills to retrieve their models) died down, the master chef in the club kitchen had a barbecue plate covered in bacon, snags and eggs for breakfast with slabs of toast and great mugs of coffee.

As all the munching and burping came to an end, the air was warming with the sun now coming into full view heralding the perfect time for free flight models so rubber motors were wound, small diesels and glows started and tuned, rudders and dethermalisers (aka DT’S) checked and it was off into the air again with the beautiful pageant of magnificent models flying completely unaided until the engine cut, a few gliding circuits completed then the DT came into action, the horizontal stabiliser flipped up high and the model emulated an autumn leaf as it fluttered gently back to earth to be readied for the next flight. Some of the rubber powered models would climb to incredible heights and then just glide for ages due to their lightweight and almost bird like wings.

The sounds of the small engines was not so noticed but the awakening of the control line fliers soon added to the great collective hum and scream of pistons belting out a sound that is music to a red blooded modeller’s ears. On the control line circuits you would see aerobatic models, speed models, combat models, scale models and then all hell would break loose when a pulse jet drowned out all other sounds as it converted straight petrol into raw power out the rear tube. As the day progressed the array of models was added to by the radio control fliers with a great assortment of models - some old timers, some really oddball in character - it was a great venue for experimental models - sort of - ‘I wonder if a thing like this would fly?’ and some of the ‘experiments’ really gained attention such as a flying hand cloth. This ‘model’ consisted of a Cox 049 attached to a Turk’s Head cloth - the yellow soft cloth with so many cleaning uses. The engine was started, held vertically and let go to scream upwards with the cloth flapping behind it. When the engine stopped the ‘model’ reversed position and started to descend but…not too fast as the cloth began spinning like a wounded helicopter on auto rotation and the landing was reasonably soft.

On another occasion two characters wearing doctor type white coats went along the pit area with a strange looking electronic device to check any electric motors for leaking Ergs or over production of magnetic flux and, even more strangely, most modellers with electric powered models held them out for the inspection. Of course, it was all a bit of fun. Later in the day the two
‘doctors’ under the names Dr Gorgon and Dr Zola produced a powered model that was to be flown for experimental purposes (purpose not stated). It took off and flew sort of normally until it was above a collection of models at the end of the strip and…some of the models were quite expensive and some with very rare engines. Just as the model flew over them, one of the ‘doctors’ yelled that something had gone wrong as the engine had stopped and the model was disintegrating in the air. There was a puff of smoke (later found out to be talcum powder), the model broke into pieces and the lot started falling towards the parked models on the ground.

Oddly, all the pieces seemed to stay in a close group and then a parachute opened and the lot - all the pieces attached to each other with fine twine - floated sedately to the ground away from the parked models. Nothing else was changed, it is still a great weekend of fun flying of any type of model aircraft at their best. A note here about creature comforts - plenty of good loos and hand washing facilities, loads of excellent food, coffee and tea or soft drinks if that is your desire. If steak sandwiches tempt you, the ones served here are jaw breakers - a couple of meals in one and only the best ingredients used.

A final reminder, bring some spare cash with you - the stuff you keep in your cunning kick as there is always a number of car boot sales and even large display tables of model equipment and, quite often, some very rare model kits and engines for sale. This year I purchased for an extremely reasonable price an excellent condition (in running order) Forster 29 petrol engine, circa 1947 and a number of knick knacks for the workshop.

Progressing

Over a number of years I became more involved and, on the passing of Dennis (The Mouth) I was nominated to be The Beast From the East - a sort of safety officer and carer of general demeanour in a friendly fashion. Grandfathers were bringing sons and sons were bringing sons and, over time, it was not so much the realm of the old pharts - it was a great gathering of modellers of all ages and disciplines so, slowly but surely the name was changed to The Gathering. Nothing else was changed, it is still a great weekend of fun flying of any type of model with, really only one rule (other than common safety rules) - no ‘hot dog’ flying - that is, no screaming RC beasts flown with disregard to other models, the assemblage of modellers and a general disregard for the ideals of the meeting - a pleasant, friendly relaxed flying weekend.

If you fly a model aircraft - any type and even if you are not a great accomplished competitive flier, you will enjoy The Gathering. Really, you don’t even need to bring a model but do bring a comfortable seat so you can sit, relax and watch model aircraft at their best.

If you fly a model aircraft - any type and even if you are not a great accomplished competitive flier, you will enjoy The Gathering. Really, you don’t even need to bring a model but do bring a comfortable seat so you can sit, relax and watch model aircraft at their best.
If you are an avid reader of this magazine you may have noticed that we have taken a close look at a lot of biplanes recently.

Maybe it's because there seems to be a bit of a buzz in the air around biplane models or mere coincidence. Either way, we always enjoy a nice bipe.

There's a brand that we have always respected and they have recently released a new biplane. That brand is Sebart and, the plane, the Miss Ultimate 50e ARF.

If you are an avid RC pilot you would have heard of the Italian brand Sebart. Not only is the owner, Sebastian Silvesti, a world-renowned RC pilot, but his company produces some of the best flying models around.

Renowned for their high quality and excellent flying characteristics, Sebart models have been a choice for everyone from beginners, F3A aerobatic competitors, scale lovers, 3D aerobats and jet flyers.

The latest addition to the Sebart range is the Miss Ultimate 50e. As the name suggests, the Ultimate is a 50 size, ARF model with a wing span of 59” and designed for electric power.

The name “Miss” harks to a previous Sebart model, the Miss Wind, an F3A style pattern biplane. We are not sure why the “Miss” name was carried over as this Ultimate bears no resemblance to this previous model albeit the biplane configuration.

**Brief history**

The Sebart Miss Ultimate is a designed along the same lines as the full size Ultimate aerobatic biplane.
The full size Ultimate was the creation of Gordon Price, a man on a mission to beat the monoplane domination of aerobatics in the 80’s.

The Ultimate was based on a Pitts biplane but improved to compete against more modern aircraft.

Not only did the design look more modern, it pushed the limits of what an aerobatic aircraft could achieve.

Large, full span ailerons on swept back wings gave it amazing snap performance. The ability to couple the ailerons to the elevator, so when the elevator went up so did the ailerons, allowed the Ultimate to square off transitions like no other.

It offered the best a monoplane and biplane could offer in its day.

The big banger of the range, the 10-300, 300 standing for 300hp, provided a 3000ft/min climb rate and amazing 360°/sec roll rate. G limits were a whopping +7/-5.

Still available as a kit, The Ultimate can be considered the ultimate aerobatic biplane around.

The model form

Ever since the inception of the full sized Ultimate, RC modellers have had a fascination with it and models of various sizes and brands have been available over the last 25 years.

A quick Google search shows that RC models of the Ultimate are easier to find than the full size models!

The Sebart model reflects many of the
Full length ailerons on both wings and the swept wing design is the defining feature of the Sebart Ultimate. The wings are one piece so no need for wing tubes here.

Sebart have designed their own scheme with a red and black or yellow and black schemes offered. Our preference is the red and black, as we reviewed, but either scheme provides a high aesthetic appeal.

The airframe is a traditional balsa and ply affair but, surprisingly for a modern day aerobatic plane, the fuselage and wings are fully sheeted.

The fully sheeted design is normally considered to add unnecessary weight in an aerobatic model but in the case of the Sebart Miss Ultimate, it works and works really well.

The Sebart Ultimate is not a small plane with its ample wing span, for a biplane, and 164cm fuselage length. 3.74kg is the recommended weight with the flight pack loaded. We consider it to be a mid-sized plane that sits a little under the 30cc size aerobatic model classification, a handy size for any club environment.

The build quality is of the highest level. From the covering to the assembly of the airframe, this Sebart model has continued the brands persona as a high-end producer of model aircraft.

Running gear

To get the Sebart into the air you will need the usual array of servos, receiver, electric motor, ESC as well as a 6S battery.

6 servos are required to complete the build. 4 micro servos are required for each wing aileron and standard sized servos for the elevator and rudder.

Our choice of wing servo was the Dualsky DS5090 servos, a newcomer to the servo market from a renowned electronics manufacturer. As the wings are very thin, we did pack the servo up a little to allow them to fit but the length and width were sport on with the precut servos slots.

Full size servos are used for the elevator and rudder with the ever reliable Hitec HS-5585MH chosen in our instance. We have always found these digital, metal geared servos to offer great performance and reliability as well as being an affordable high-performance unit.

Standard servo arms, as supplied, were used all round and worked well with the M2 size ball links. M2 sized ball links are quite small so be wary if using aftermarket servo arms that may be drilled for larger sized ball link screws.

A Spektrum 9 channel receiver controls the servos and, to be on the safe side, a separate battery was used to power the control gear.

When it came to selecting a motor, two options were considered. The recommended Hacker motor or the alternative Dualsky motor.

The Dualsky motor was chosen as it is readily available locally in Australia. The model is the Dualsky ECO 4130C 470kv. It fits perfectly to the Sebart Ultimate with the spinner to cowl gap spot on
without any spacers required. The propeller size was the recommended 16x8.

Mated to the Dualsky motor is an 80 Amp Dualsky electronic speed controller. Surprisingly, this ESC came with an on/off switch allowing you to connect the battery and later power the motor via the switch.

A 6S 5000mAh LiPo battery is used as the flight pack which suits the power setup and size of plane.

The build

The Sebart Ultimate is a typical ARF build with all the usual steps but with a few twists.

The quality of the kit is top class so there was no concern about the fit and finish of the model.

There are a few things to be mindful of when assembling the Ultimate.

All hinges are CA hinges. Make sure that you apply the CA once as double dipping will harden the hinge putting more load on the servo and compromising performance.

The wings have a very thin profile so make sure that you check the height of your aileron servos to make sure they fit. You can always add a spacer to lift the servo up a little higher as we did.

The undercarriage is solid aluminium, a sturdy design that will handle many landings. We did opt to up the size of the wheels a little from 2” to 2.25” for a little piece of mind when flying off grass strips. The bigger size wheels fit perfectly inside the fiberglass wheel pants.

Something often seen in other Sebart models is the inclusion of a pull/pull wire setup for both the elevator and rudder. It’s a common sight for rudder setups on larger planes but elevator pull/pull setups are not so common. The Sebart Miss Ultimate does have both in an attempt to reduce any play that may exist in the tail surface. All this for more precise control.

Setting up the rudder wires are simple but the elevator wires a little more complex.

The elevator pull/pull wire setup has 4 wires extending from either end and side of the servo horn. There are two wires connected to each elevator half. Setting it up is a little on the fiddly side but provides an excellent result.

It is important to pay attention to the pull/pull wire setup to ensure that you adjust them to the correct tension. The aim is to ensure that the wires are not too tight, so to not overstress the servo, and not too loose so that the control surfaces move involuntarily.

At the field

The task of assembling a biplane at the field may seem daunting but our experience is that modern day biplanes are getting easier to get ready to fly.

The Sebart Miss Ultimate lower wing is held in with wing bolts that screw in from underneath the fuselage.
The top wing is held to the fuselage cabane strut via two socket head cap screws and locking nuts.

The interplane struts, the struts that are on the outer wings that hold the wings in place, have a simple tool less design for connectivity.

The struts slot into the wings and a carbon rod is slid into holes in the wings which then connect to the struts. Held in by friction, the wings are securely connected.

**Flight test**

The Sebart Miss Ultimate has exceptional looks on the ground but how does it fly?

Renowned aerobatics pilot, Adrian Koro, was the test pilot for this review. Adrian has extensive experience in flying various aerobatic models, so his expert opinion would provide a true reflection of how the Ultimate flies.

How will the fully sheeted plane, with its added weight fly? What about the biplane configuration?

The first comment Adrian described was how "buttery smooth" the performance of the Ultimate is.

“It’s not as aggressive as a 3D monoplane that is designed to be lightweight, but the added weight and design gives the airframe smoothness and precision”, said Adrian.

All 3D manoeuvres are easily achievable making this airframe unlimited in its aerobatic performance.

Though the ailerons are not as large as an aerobatic monoplane, there are 4 ailerons, so the roll rate is excellent.

The elevator and rudder size are consistent with other 3D inspired models so provide plenty of power.

The Dualsky motor was a perfect match offering sufficient power for such an aerobatic model with unlimited vertical performance.

Knife edge performance was spot on without any need for mixing to keep the plane tracking straight and flat spins are graceful.

The recommended CG works well but did require the flight pack to be located at the front of the plane.

Adrian describes the Sebart Miss Ultimate as being a hybrid like plane that sits between a pattern style aircraft and 3D beast. It suits lovers of the Ultimate biplane and pilots that enjoy a precise flying plane that is comfortable flying big sky aerobatics or down on the deck hovering around.

True to Sebart form, the Miss Ultimate has impressed us with its high-quality airframe and excellent flying characteristics.

Well done to Sebart for producing another fine model. The Sebart Miss Ultimate is available from hobby shops around Australia.
The look and the quality of the Sebart Miss Ultimate is truly top notch.
LAVISH  LAMA
AEROSPATIALE SA 315B LAMA
Scale helicopters are not an overly common sight at most flying fields but those involved in the movement are among the most passionate modellers around.

At the recent Wings Over Westernport event down south in Victoria, we came across a number of amazing scale heli examples, one being the Aérospatiale SA 315B Lama owned by avid modeller Wayne Gorsuch.

Wayne got his start in the hobby at the age of 9 flying control line. At age 12 he progressed to radio control and 47 years later he is still going strong.

Flying both helicopters and fixed wing, Wayne’s passion is all things scale.

The Aérospatiale SA 315B Lama, or better known as the Lama, was first flown in 1969. It was designed for use by the Indian Armed Forces in hot and high flying applications. In fact, it still holds the record for the highest flown helicopter at an altitude of 40,814 feet.

When we had a chat with Wayne about his Lama scale heli, he was quick to tell us that he did not build the model but new all about its history.

Three Lama models were scratch built by Jeff Sussman from the Melbourne Radio Control Helicopter Club.

The model was built from drawings, a complex task with its intricate frame.

The running gear is based on a 700 series size heli with the addition of a 3 blade head as per the full size version. Flight control is managed by a Mikado Mini VBar.

Wayne’s Lama is powered by an electric motor and two 6S, 5000mAh LiPo’s.

The tail is torque tube driven, which fits the scale look well, running cut down 450 size heli main blades.

The model weighs in at 18kg, no lightweight especially for a heli. Flight times range between 3 and 4 minutes.

The level of scale detail is remarkable. It’s one of those models that keeps you looking and finding more details to “wow” over. A close look at the tail assembly and landing gear shows...
an extreme level of detail. Nothing is hidden in the Lama design, so the workmanship has to be of the highest level which Jeff Sussman achieved.

3D printers are allowing scale modellers to achieve new levels of detail and Wayne’s Lama is no exception. The mock turbine and its ancillary fittings are all 3D printed and later painted.

Wayne says that he is not finished with adding further scale detail with the cockpit next on the list.

When it comes to flying the Lama, Wayne said that a few tweaks have been needed to settle the flight characteristics of the heli but he has sorted them with adjustments to the VBar flight controller.

Being a heavy heli means that the Lama is flown in a scale like manner with no hint of aerobatic performance.

It’s helicopters such as Wayne’s Lama that keep the scale heli movement alive and motivate others to continue their journey in scale heli building.

Well done to Jeff and Wayne for building such a model and bringing a lot of joy to those that see it in the air and on the ground.
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Keeps fuel foam to a minimum.
CP-07
Allows lubricant to flow evenly into bearings.
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Increases the load at which scoring and seizer occurs.
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Winter is upon us and building is full steam ahead, with two models on the go. This issue I am really pleased to share a kit based on a little know plane from 1930, the Granger Archaeopteryx.

Only one full-size version was built and I think it’s a really beautiful aircraft. When Stevens Aeromodel released this laser cut kit 2 years ago, I bought one right away. Not a large model at all, only 44” wing span, and a tiny 250 size brushless on a 2S battery is all it needs for a relaxed afternoon flying. So let’s get started, I’ve been looking forward to building this for two years!

In typical laser cut style, a box arrived packed full of sheet balsa and ply, along with lots of hardware, motor, ESC, and two tiny HS-45 servos.

There’s no full-size plans, just three A3 sheets with details of the clever elevon wing tip setup, full-size decal pattern and undercarriage build.

All the instructions to build this kit are in one 74 page booklet. Yes, there are a lot of steps to follow and care must be taken as there are lots of left and right hand pieces, so take your time and you will be rewarded.

Firstly, I must mention you won’t be needing a snap-off blade type knife, only a sharp scalpel blade will get into the incredibly thin laser cuts.

The fuselage is first and early on it’s not terribly exciting. All the parts are easy to identify and the tab and slot construction keeps everything aligned and square from the very start.

Thin CA is used most of the time, but for the plywood parts I chose (as always) to use Super-Phatic adhesive. Sometimes plywood can feel a little ‘waxy’ and I find this glue works much better. It still weeps into the grain like CA as well.

Only a few time throughout the build did I need to pin parts down or use squares to make sure the parts are aligned correctly. When doing this, it was easy to do it to one side and continue with another part of the build.

The fuselage goes together easy enough. There are two rows of slots on each side that later accept stringers - a nice touch I thought and will look good when covered.

The curved top deck from the nose to behind the cockpit area were sprayed with Windex to soften and then formed over a small hobby spray can and left overnight to completely dry.

The curved deck was then glued in place and the rearward deck stringers added - note that with many parts not only were they numbered but also had tiny arrows indicating ‘place towards the front’.

So the whole fuselage was built around a 1/16” ply core that supported all the formers and created a very light structure that felt surprisingly strong.
Minimal tools required. Interlocking parts help alignment.

Fuselage taking shape... literally!

Complete hardware is supplied, even a precut windscreen.

Instructions are amazing! Very comprehensive and easy to follow.

Extremely fine laser cutting is suitable for a precise scalpel only.

The old windex on balsa bending technique!

Separating the laser cut parts may will test your eyesight.

Part numbers and helpful arrows denote “towards front”.

My favourite Superphatic adhesive is great for plywood parts.
Next came the fin and rudder. Just a few parts, numbered and cut in a way that they could only fit together in one possible arrangement. Very easy, just a few pins to keep it flat and a dot of thin CA at each joint and it’s done.

The upper nose is attached to the fuselage and the lower part is held on with magnets. Both are layers of 3/16” balsa that is sanded too final shape. Magnets are used in three locations. Glue one side in flush and when it has thoroughly dried, place a magnet on to it and make sure you get the polarity correct. Double check this, before gluing the opposing magnet in.

The magnets are very strong for their tiny size and really pull the parts together as they are placed near each other. The hatch was a very firm fit thanks to the incredibly thin gap left from the laser cutting, so I decided to sand a little of each edge to allow for the covering film.

A note about the built up nose, there is just enough overlap to sand down to, so take your time. Go top to bottom and alternate sides when sanding constantly checking your progress to ensure a symmetrical result.

As with many areas of the model where you will be sanding, the burnt edges of the laser cutting are the perfect guide to knowing how much you have sanded away and how much is left.

Most of the time I was sanding with 120 and 240 grit paper as the areas were so small and of relatively soft balsa. The balsa selection was excellent throughout. Generally speaking, it was all soft-medium straight grained balsa, I didn’t really see any hard, quarter grain sheet anywhere.

The wing is next and like the build so far it really looked more complicated than it was. Again, you need to take care and pay attention to left and right hand parts. Just follow the instructions step by step and you can’t go wrong.

A central ply try starts off the wings, adding leading cross-braces and spars. The instructions then call for the 1/4” leading edge stock… but it was no-where to be found!

I looked everywhere, read the instructions over and over and the materials list. They say that the 2 x 1/4” L.E. strips are taped to the back of a sheet of cardboard that all the sheet parts were attached to. They were...
Laminated nose block during shaping...

...and the finished shape ready for the next step.

Removable access below the motor is built the same way.

The burnt edges help with shaping, but take your time here.

Rare earth hatch - double check the polarity before gluing in place!

The completed nose of the little Granger Arche... just Granger ok!

Bottom hatch also uses a rare earth magnet.

Mark one side of corresponding magnet before gluing in place.
definitely not included in the kit. Lucky for me, I have plenty of balsa in supply and had some 1/4” square stock, in the right grain and weight.

It didn’t bother me a bit, but not good that they were overlooked when packing. Understandable for a smaller manufacturer like Stevens Aero and the overall quality is amazing as is their customer service that I have experienced many times.

This hasn’t deterred me from building another of their kits, however I’d expect a little extra care would be taken next time?

Moving on, the wings were again straightforward with care taken to dry-fit parts, ensure it was flat and square to the building surface before adding glue.

For the ply parts I stuck with ‘Super-phatic’ glue and medium CA for the brass tubes in the wing tips. Stringers were supplied oversize and were the last to trim flush with a super-fine saw.

The wings are build flat with no dihedral to speak of. There are still many ply parts to be used, but on closer inspection these will form the struts and landing gear.

As with the fuselage, you are left with a beautiful wing that is very light and strong. Once it is sanded and you stand back, it’s just amazing to see how it’s all come together.

The instructions are incredible, and I forgot to mention earlier that there are all 74 double sided pages to read through as you build it. Yes, there are a lot of steps to follow in a 74 page manual.

The kit included a black and white, stapled print out but you can also go online and download it in full-colour and use a tablet or you phone to build it if you prefer.

Having said that, the included black and white version is perfectly fine.

And onto the those brass tubes - not to join on the wing tips but a pivot point for the full-floating elevon control.

The two elevon tips were built next and feature a unique and very interesting aspect of the full-size aircraft. A plywood root with a curved horn that extends down connects with a short wire to tiny servos in the root of the main wing on either side.

Full-size diagrams for this part of the build are supplied as is a very complete bag of goodies including nylon washers and clips to retain the connecting wire through the brass tubes.
So the major components are built and sanded ready for covering but we are still left with a few balsa parts for the dummy engines and half a sheet of 1/16" ply parts. These will form the struts and undercarrige.

And it’s at this point you are required to cover the bottom of the wings so this is where I will leave you for part one of the build.

In the next issue we’ll cover the linkages and the clever elevon setup as well as the struts, undercarrige and preparing the model for it’s maiden flight.

So far it’s been a very enjoyable build. I’ve really like seeing it come together rather than just wanting to build it as quickly as possible to get it in the air.

There is a little sanding and massaging of some parts for a perfect fit - this is rarely needed. Even though it’s all laser cut and you just expect it to ‘fit’, you don’t mind taking time because so much of it goes together quickly.

I used a couple of heavy angle brackets and small square pieces of 1/4" thick steel to keep things aligned and straight while the glue dried. If you look at my bench, sanding blocks, glue and a knife were pretty much all that was involved. Two small pegs were used to clamp laminated pieces together.

Again, 10/10 to the team that designed this kit, sorry, make that 9.9/10 because of the missing leading edge strips.

The Granger is certainly an interesting choice and I have never seen the full size aircraft before seeing this kit, so thank you Stevens Aeromodel for choosing to kit it because I think it’s beautiful and can’t wait to see it in the air.

I hope you look forward to seeing the maiden flight as much as I am. Glad to be building this during winter too. As I’m writing this is blowing a gale outside, this will be a strictly calm day flyer.

If you haven’t already, do check out the kits available at Stevens Aeromodel. They also produce a regular ‘Balsa Builder’ magazine for those starting out in the hobby.
There is no denying that the team at Flat Out RC love a flying event, especially one that invites the general public to come and enjoy all matters of radio control flight.

Not only is it fun for the pilots and the spectators but has the added benefit of introducing our wonderful hobby to a new audience, a surefire way to attract new pilots.

When Stephen Gray from the Western Port Model Aircraft Club contacted us about a public display they had planned, we were eager to attend. The event is called Wings Over Western Port, WOW for short.

The event was originally scheduled for the 15 April but a weekend of terrible weather made the club reconsider the timing and made the wise decision to cancel it.

Others would be despondent but not Stephen and his team of organisers who went to work to make sure the event would happen at a later date.

27 May was the rescheduled date and, fortunately, the weather was perfect for a display day.

Held at the Western Port clubs field at Crib Point, an easy 1-hour drive from Melbourne CBD, the concept of the day was to “demonstrate different types of models, all things radio control as well as other special interest groups”, as the flyer read.

The day consisted of a variety of aircraft gracing the sky in a well-coordinated fashion. Each aircraft category had their allotted time throughout the day ensuring that there was no dull moment and the public could experience as much as possible in a one day event.

A broad range of aircraft were scheduled to fly including, aerobatic planes, scale models, scale and 3D helicopters, drones and pylon racers.

There’s nothing like an aerobatic display to get the crowd on their feet. Ido Segev and Craig Bavery lead the aerobatic demonstrations. Both world class display pilots, the crowd were in awe of their skilful, low down aerobatics.

Daniel Arapakis, our very own pylon racing world champ and local club member, was well received with his pylon racing demonstration. It’s not often you
Monster Pilot RC Decathlon dominated the skyline when flying.

A well organised event by the club.

A nice line up of PC-9s.
see kids screaming for joy at a flying field but Daniel’s flights did the trick. A great sight indeed.

Speed and noise are a great crowd pleaser. Fitting this agenda were the turbine jet group whose high speed, low passes were received well.

Many scale models graced the air including warbirds, a large-scale Decathlon, WACO and everything in between. A great selection of scale helicopters, thanks to the members of the Melbourne Radio Control Helicopter Club, were displayed and flown. The attention to detail in their helicopters was impressive.

The sight of multiple scale aircraft in the air together was a great way to showcase multiple models as well as keep the crowd entertained.

The action was not only in the air but on the ground with spectators able to see models on display close up but much more.

In an attempt to create an event that would draw a great crowd, the club broadened the appeal by inviting select interest groups to participate. Groups included a model boat club, historic car club and even a full size Bell 47 helicopter on display.

Addies Hobbies and RAB Hobbies represented the hobby industry and
their support of the event was greatly appreciated.

The members of the Western Port Aeromodellers Club did an excellent job in directing traffic, cooking and serving food and keeping all the pilots in check.

Our overall feeling of the event was one of positivity and excellence. Positivity in that all involved worked hard to showcase the hobby to the public as best as possible and excellence in thought to build an event that the public would value.

The coordination of the flight line was impeccable. The planes on display and in the air were of the highest quality as was the flying standard. And most importantly, the public in attendance was abundant and all looked like they were enjoying the experience.

Among all the talk of how we can build participation in aeromodelling, there is no better way than to have people see the hobby first hand. The WOW event achieved this in spades and we hope that this event will become an annual occasion.

Well done to Stephen Gray and his helpers at the Western Port Model Aircraft Club. A job extremely well done.

Visit the Flat Out RC YouTube channel to see some of the action we captured at this event.
There’s a young lad on the radar as one of Australia’s up and coming RC pilots.

He was born in the Rhine Valley in Germany but now calls Australia home. His name is Marius Baumgartner and freestyle aerobatics is his passion.

Earlier this year we had the opportunity to catch up with Marius, who had made the 11 hour trip to the Flat Out RC Aerobatic Fun Fest. What we encountered was a 16 year old that has a strong passion to excel at aerobatic flying.

We sat down and asked him a few questions about his journey in RC so far and where he is heading.

FRC: Born in Germany and now call Australia home. How old were you when you came to Australia?

I was three years old. I came with my parents as my dad was offered a job working in Canberra.

I attend school at Narrabundah College in Canberra.
FRC: How did you get into RC planes?
My mum actually got me into the hobby.
We were passing by a hobby shop and she saw a plane hanging in the window. To cut a long story short, we went in and ended up buying it. I took it for a fly, and it ended in catastrophe. I crashed it.

We didn’t give up though and purchased a Hobbyzone Cub. A three channel plane. I kept on going to the park to fly it and taught myself how to fly.

About a year after getting into the hobby I joined a club.

FRC: How did you get into aerobatics?
I’m not exactly sure myself but I did buy a Phoenix Models Sbach from the local hobby shop.

FRC: How old were you when you started flying?
I was around nine years old. I crashed the Hobbyzone CUB a lot.
I started to hover it around and enjoyed it. When I discovered YouTube and started watching videos of people flying aerobatics, I fell in love with it.

I started following brands such as 3D Hobby Shop and Extreme Flight and realised there was a whole lot more to just hovering around.

I would watch the videos and then slow them down to learn the manoeuvres.

Every weekend I would go to the flying field and practice and try new stuff out.

Once I saw an aerobatic plane on the front cover of a magazine doing a knife edge pass and saw the rudder deflection. That taught me how to fly knife edge.

I’ve now been flying aerobatics for two years.

FRC: Who did you look up to for inspiration in aerobatic flight?

There are a number of people overseas that I like to watch.

Jase Dussia from the US is great. Gernot Bruckman from Austria. Ido Segev and Joe Smith.

My connection with their flying was by the way of YouTube.

There was nothing locally that inspired me but the internet meant I could see what was going on around the world which drove me to continue and learn.

FRC: What aircraft did you choose to fly once you decided to commit to aerobatics?

My first real aerobatics plane was an Extreme Flight 44” Stick. There were none in the country, so I got it shipped from Germany.

I now have a range of small and large Extreme Flight planes which I find amazing.

I’ve tried a few other brands of planes but there is nothing that compares when it comes to freestyle aerobatic airframes.

FRC: You are now also having a go at IMAC competition.

To be quite honest, the main reason why I am trying IMAC competition is because of the freestyle component that is run at some events.

IMAC will also help with improving my flying precision.

I’ve now competed in a couple of events and have more planned.

FRC: Have you had any challenges at club level flying aerobatics?
The first club I was a member was ok for a while when I flew smaller planes but when my planes got larger and I began flying lower they didn’t like it much.

FRC: How did that make you feel?

I felt that what I was doing was actually helping the club, that wanted to grow, as the way I fly was more appealing to younger members than scale planes flying circuits. I thought it would help them but they thought otherwise so I left.

FRC: As a junior member of a club, what are you looking for in a club?

I expect a friendly environment that embraces all styles of flying from scale to aerobatics to drones.

I used to scratch build experimental planes with a friend and my original club didn’t like that. If you can’t fly a plane you designed and built yourself at an official flying club then where can you fly it?

FRC: What is your aerobatic flying aims?

Right now, I am looking to get into IMAC a bit more and get my name out there so people know that I am actively supporting freestyle aerobatics.

FRC: How often and who do you go flying with?

Every weekend I go to the field with my mum and dad who are also into flying.

If I am practising for IMAC I will take my IMAC plane and practice the sequence as much as I can.

I also work on my freestyle aerobatic routines I make up and focus on precision and connecting manoeuvres.

FRC: What are your career aspirations?

I’d like to be an airline pilot. Being in any aspect of aviation is the goal.

Marius is an articulate young man that is destined for a bright future. His commitment to improving his skills in aerobatic flight is testament to his inner drive to succeed.

He has strong support from his parents and is enjoying his new club in Canberra.

We have observed Marius’s development over the past two years and, if his development continues, he will become one of Australia’s best freestyle aerobatic pilots.
“The future has arrived” is a statement that is often used but rarely believed.

Believe me when I say that the iX12 transmitter is the start of a new era in radio control transmitters.

I know it’s a big statement but read on to see why.

Spektrum radio gear is seen at flying clubs around Australia and could be considered as the most used brand of radio in our nation. We have great support through the local distributor, and their products have proven to be reliable.

The iX12 is the latest radio in the Spektrum range. It’s a 12-channel radio that looks like a conventional transmitter but, once you turn it on, you quickly realise the difference.

Using Spektrum’s DSMX, 2.4GHz technology, the iX12 is compatible with all DSM2 and DSMX Spektrum receivers. The DSMX protocol has proven to be extremely reliable which has helped cement the Spektrum brand in Australia.

Android powered

When you press the power button, the large, 4-inch, colour, touch screen comes to life with an animated logo.

The reason for this different interface from the norm is the new Android operating system that drives the iX12.

If you are not a tech head, Android is an operating system that is most commonly seen in smart phones.

The smart phone and tablet world are dominated by two operating systems. Apple’s iOS and Google’s Android system. Apple hold their system close to their chests and won’t let anyone else use it. Android is open to use by all hardware manufacturers.

Spektrum have taken the Android system and brought it into a radio control transmitter and the benefits abound as a result.
Imagine having the power of your smart phone in your transmitter? Imagine the possibilities when your transmitter becomes a true computer?

By moving to an Android operating system, your transmitter is turned into a smart phone like device. You can access different applications, connect to the internet, play music, watch a movie, check your email and more. For some, this may sound like the end of the world as we know it but for others this is just the beginning of new experiences at the flying field.

Once the iX12 is turned on, you will see an array of icons that link to software apps. There are a wide range of apps that come preloaded and more can be downloaded via the Google Play store. For example, if you have internet access, you could load a weather app to keep track of future weather conditions at the field.

The most used program is the Spektrum Airware app.

The Airware app is best viewed as the radio control aircraft functionality. It’s a replication of the traditional transmitter functionality but gains the benefit of the touchscreen interface, colour and freedom to design more user intuitive screens.

As a familiar Spektrum user, I found adapting to the Airware app interface simple. Any Spektrum user will quickly adapt to the new interface within minutes and a newcomer to Spektrum will benefit from the intuitive interface.

Being a new, touchscreen interface, rather than buttons meant I had to spend a little time to work out how to navigate between menus. As I learn by doing, I did refrain from reading the manual but in hindsight a quick glance of the manual may have brought me up to speed a little quicker.

Setting up models in the transmitter can be handled in a number of ways. You can setup them up as per traditional manua methods, import files from other Spektrum radios via the SD card or download setup files directly from the transmitter.

The ability to download setup files via the inbuilt Google Chrome browser is a great advantage. You navigate to www.spektrumrc.com and gain access to many of the latest E-flite and Parkzone models and more. These files can be downloaded and then imported into the Airware App. This simple workflow further improves the ease of configuration making it quicker for you to get your aircraft into the air.

A total of 250 models can be stored internally, more than enough for a lifetime of aeromodelling.
Having access to the internet is what transforms the concept of the capabilities of a modern-day transmitter. Not only can you download setup files, but software updates can occur automatically. The transmitter can continually be updated over time. You could say this transmitter will never be out of date.

Internet connectivity can be achieved via WiFi to your home access point or even by your smart phone hotspot.

Further blurring the line between smart phone and transmitter, the iX12 allows you to play music, watch movies, a handy feature if your local club members aren’t stimulating enough.

The audio advantage

Telemetry functionality is found on many modern high-end transmitters and the iX12 radio goes one step further thanks to programmable voice and audio alerts. You can program the iX12 to read out valuable telemetry information, not only when an alarm is triggered but on demand at the flick of a switch.

You define what data you want read out. If you change flight modes, the radio can alert you as to which mode you have entered. You can even use the inbuilt text-to-speech functionality to create your own personalised alerts and upload your own sound files for a truly customised experience.

An inbuilt speaker will broadcast the audio alerts, or, for more discrete use, you can plug in headphone as well as connect Bluetooth headphones or speakers.

Ergonomics

When it comes to the transmitter ergonomics, Spektrum have not deviated far from their other models. I felt there was little difference in the feel of the iX12 from the DX9 or DX18 transmitters.

In fact, I happened to have a DX9 radio handy and a back to back comparison had me struggling to notice the design differences.

The gimbal mechanisms provide a smooth feel thanks to a quad-bearing designs. Whether a pincher or thumb, the radio feels comfortable in the hands.

Traditionally, any gimbal tension or mode conversion would involve removing the back of the transmitter but the iX12 goes one better. All gimbal adjustments can be made from the front of the transmitter. Travel limit, ratchet, gimbal centering screw, and gimbal tension is all adjustable. Changing modes is also easy through the front access screws.

Wireless trainer link

Buddy box setups that connect two radios together for training purposes via cable have been around for years. Wireless training solutions have also been available in recent times.

The iX12 expands the wireless training link by allowing two wireless enabled Spektrum transmitters to connect. Once bound, they will stay bound without having to go through the binding process again.
Furthermore, for professional drone pilots seeking a two-person setup, a pilot and a dedicated camera operator, the iX12 can easily be configured for such operation.

FPV’ers also gain a benefit from the advanced wireless technology with the iX12 able to connect to Spektrum FPV headsets allowing control of headtracking and remote channel camera.

**Long range transmission**

A first for Spektrum, the iX12 allows for the integration of long range RF systems such as the Team Black Sheep Crossfire protocol. Though long range FPV use is illegal in Australia, many FPV’ers are moving to the Crossfire system for the ultimate in short range connectivity and low latency performance, an advantage for drone racers.

Module connectivity is made available through an integrated auxiliary serial port on the back of the transmitter.

**The verdict**

Will the iX12 transmitter make you a better pilot? Probably not.

Will the iX12 make it easier for you to setup your planes and adjust settings? Yes!

Though this is not the first Android powered radio control transmitter on the market, the second we know off, it is the most affordable to date and we all know what happens when you get a great concept and make it affordable.

It feels like other Spektrum radios but the functionality and the opportunities this radio offers makes it impressive.

Let’s face it. Not many of us will ever have the need for a 12 channel radio but when you think that the iX12 will not go out of date any time soon you start to realise the value it offers.

When you buy a Tesla car you are told that the first day of owning it will be the worst as software updates will improve the car over time. Same goes for the iX12.

The Android operating system dramatically broadens the scope of what can be achieved.

Who would have thought that a radio control transmitter would ever play music, allow you to watch a video on the screen and import plane setups online!

I think you can now see why I believe that the future has arrived in radio control transmitters. Not only can Spektrum build their own apps on top of the platform but other developers as well.

If you are an avid smart phone user then you’ll love the iX12. If not, then you may want to consider an alternative as the learning curve may not agree with you.

Would I spend my hard earned on one? Without a doubt I would.

Thanks to OMP, the local Spektrum distributor, for supplying us with a review iX12 which is available at all good hobby stores around the country.
You’ve played around with drones and now want to make a career out of it.

You may have been flying a DJI Mavic or Phantom but now need something that gives you the ability to capture the shot as best as possible when under the pressure of a commercial situation.

Enter the DJI Inspire, DJI’s professional series of drones.

We all know that DJI is the leader in the consumer drone market but, from the start, they also saw a need to have drones suitable for professional use.

These commercial drones needed to be able to withstand a wider weather envelope, carry more professional cameras, have extended flight times and basically be a solid aerial photography platform that allowed for creative freedom.

The DJI Inspire drone was first seen in 2014. It started a new trend of ready to fly, commercial drones. It featured a quad rotor design, retractable landing gear and a 4K capable camera.

Fast forward to late 2016 and the Inspire 2 was released and still remains their most current model in the DJI commercial drone range.

Overview

The Inspire 2 is designed for performance and not necessarily convenience such as the DJI Spark or Mavic Air.

It is a large drone that has a maximum take-off weight of 4250g so if you are expecting Mavic like size and weight then think again.

This added size is a key advantage when it comes to stability in adverse conditions. The Inspire has the capacity to carry a heavier payload in bigger batteries and more professional camera gear.

The format of the Inspire 2 is the same as the Inspire 1 version but the newer version does come with a magnesium-aluminium alloy shell with carbon fibre arms. This offers a lightweight yet stiff frame.

The Inspire retractable undercarriage is continued which provides a 360° camera view angle. Simply take off the aircraft, flick a switch on the transmitter and the undercarriage will raise out of the camera’s view.

Maximum speed is 94kph when in sport mode which gives it great performance for high speed chase scenes.

Flight time varies depending on the camera chosen but expect between 23 – 27 minutes of flight time.

Fuelling the Inspire 2 are two 6S, 4280 mAh batteries, that are purpose built for the Inspire 2, and feature a self-heating function to enable the batteries to be used in cold temperatures.

Control

The Inspire 2 is controlled via a conventional looking transmitter that comes with the drone.

The transmitter is similar in its design to the Phantom 4’s and offers a minimalistic
feel to reduce clutter and confusion when flying.

The transmitter works in conjunction with the DJI GO 4 app that controls features such as the camera settings and automated flight features.

A smartphone or tablet is able to be used to operate the DJI GO 4 app. DJI’s own Crystal Sky tablets are the preferred option for the serious users thanks to a super bright screen and integrated operation.

A second controller can be used to enable two-person operation where one fly’s the drone while the other operates the camera.

**Sensors**

A big development in drone technology, and an area of significant improvement, is in the area of collision avoidance.

The Inspire 2 offers the ultimate vision systems out of any DJI product.

Downward, forward, backward and upward facing sensors provide full collision coverage as well as work to provide accurate indoor hovering and positioning when GPS connectivity is unavailable.

An added feature, thanks to the sensor technology, is the Smart Return Home. The Inspire 2 uses its forward and downwards facing sensors to map the route in which the drone has flown. If the video transmission signal is lost, the Smart Return Home will activate and will fly the drone back along its original path. A forward-facing camera is also used to scan for obstacle as far as 200m away.

**Camera choice**

When it comes to professional drone photography, the camera used is critical.

DJI offer a wide range of cameras for the Inspire 2. In the case of our review model, the DJI X5S camera was attached.

The X5S is a micro thirds camera that offers up to 5.2K resolution at 30 frames per second.
per second or 4K resolution at 60 frames per second. Stills are a whopping 20.8 megapixel with 20 frames per second shooting capability.

The camera gurus will appreciate the 12.8 stops of dynamic range and a claimed improved signal to noise ratio.

The X5S allows compatible micro four third mount lenses to be used, with eight currently supported. Focal lengths of 9mm to 45mm are possible allowing the photographer to choose the right lens for the job.

The X5S camera offers pro spec performance, fitting for the Inspire 2’s design agenda.

A surprise addition is a secondary FPV camera at the front of the Inspire. This camera allows the operator to switch to the front facing camera to see which direction the drone is facing and what is in front of it. At the flick of a button on the DJI GO 4 app a window will pop up showing the view from the FPV camera. The angle of the FPV camera is adjustable and the pop-up window on the DJI GO app customisable on the screen.

Automated flight features

DJI is renowned for their automated flight features and the Inspire 2 benefits from all they have to offer.

One nice feature is TapFly which allows you to separate the FPV camera view from the main camera allowing you to set an automated route to fly. While the Inspire flies along the set course, the operator can focus on camera framing, a handy solution for one-person operations. The FPV camera can be used so that you can keep an eye on both the drone trajectory and the main camera framing.

A professionals opinion

Nothing like talking to a pro to get a true gauge on how good a product is.

To see what all the fuss is about the Inspire 2, we invited our resident pro drone expert, Melbourne based Kieran Barrett, to show us around his Inspire 2 to find out why it is the go to drone for commercial photographers.

Kieran has worked in the professional drone industry for the past 5 years and now operates his own drone photography business called Rotorscope.

Having owned a Phantom 4 Pro, Inspire 1 and now the Inspire 2 you could say his opinion is valid.

Kieran’s first comment was how fast the Inspire 2 is, stating that it feels a lot faster than the Phantom 4 Pro he previously owned and the Inspire 1.

The high-top speed has helped Kieran keep up with fast car chase work he has been involved in.

Complementing the drones high speed is the gimbal. Though drones, such as the Phantom 4, could be flown in windy conditions, Kieran felt that the gimbal could not keep up. This problem does not exist in the Inspire 2.

When compared to the Inspire 1, the Inspire 2 has a more rigid frame, giving the feel of a higher build quality. Kieran noted that the power of the Inspire 2 motors is substantially greater than the Inspire 1.

The sound of the drone is important when it comes to professional video
work. Kieran finds the Inspire 2 a little louder than the Inspire 1 but the sound is more of a low drone in these larger quads than a Mavic or Phantom that has a more high-pitched note.

Kieran has been impressed with the sensors technology in the Inspire 2, in particular the hovering accuracy without a GPS signal. "It gives you the confidence to fly indoors safely", said Kieran.

When it comes to the camera performance, Kieran chose the X5S camera and finds it suitable for his shooting requirements. "The higher spec X7 camera is great for those wanting more lens choice but the X5S still offers great value for money".

When asked how the camera performance compares to the Phantom 4 Pro, Kieran’s opinion was that he preferred the quality of the still photography from the Phantom 4 but the Inspire 2 won the video stakes by a mile.

As with the Inspire 1, the camera gimbal is able to move 360° offering unlimited photo framing capabilities. It’s a simple feature but one that is missing from lower spec drones. No longer do you need to reposition the drone to face forward to get the shot. Just move the camera.

The Inspire 2 does allow for two-person operation with one pilot flying the drone and a camera operator able to control the camera positioning independently via a second transmitter which Kieran has used extensively.

Kieran is experiencing above 20 minute flights for normal flights and around 15 minutes for fast flying using the standard battery. The standard charger will charge two batteries in around 1 hour and a multi-battery charger is available for heavy users. Kieran’s recommendation is to have at least 5 sets of batteries for a full day of shooting.

Transporting the Inspire 2 in the standard case it comes with is not the most convenient. Not only do the props need to be removed but also the gimbal and the drone set to a transport mode to fit into the case. An aftermarket case will allow for the Inspire to be housed more conveniently but the trade-off is the large size of the case.

Kieran does use the DJI Crystal Sky Ultra Bright monitor and has high praise for its performance. Not only is it ten times brighter than a smartphone or iPad but integrates seamlessly with the Inspire 2. For example, when you turn the transmitter on, the monitor will turn on automatically. The high brightness of the monitor means there is no need for a monitor hood in bright sunshine conditions.

The final verdict from the professional is that the Inspire 2 is the baseline for commercial drone use as it offers an excellent, ready to fly, platform with the functionality for effective commercial use.

It’s not a cheap drone with prices ranging from $4,699 for the drone minus the camera and gimbal and as high as $31,799 depending on the configuration chosen.

The DJI Inspire 2 is a photographers and filmmakers dream. It offers the latest technology in an easy to use aerial platform.

No doubt the future will bring even more improvements but if you are looking at a career in drone photography then it would be hard to go past the DJI Inspire 2 at the moment.
Although I have been aeromodelling for 62 years there was not much activity for quite some time due to the intrusion of that 4 letter word, “work.” I did however gather a lot of stuff which, now that I have retired, have become projects. One of these was a Klaus Krick kit of the Klemm L25d which I bought new way back in the 80s or 90s.

I looked forward to a kit with quality German engineering and to having a model which, although scale, should both build and fly without too much difficulty. Furthermore the aircraft modelled had an inverted in-line engine so the cowl should hide a model engine nicely.

There was one catch. As a child survivor of the holocaust I could not bring myself to model an aircraft that originally carried the swastika on its tail. There is a Klemm L25 on the Australian register, VH-UUR, but this aircraft has an uncowled radial engine. Doable, but not as easy to make look scale as the cowled engine version. Then I found that an English company, British Aircraft, (BA,) built the L25 under licence as the BA Swallow. There is a Swallow 2 flying in Australia. It is the oldest aircraft on the Australian register and quite well documented with photos via a Google search.

So, it shouldn’t be too hard making a Swallow 2 out of a Klemm L25. Should it?

A closer look showed some differences, and the more I looked the more I found. The kit came with good English building instructions but I had to modify the plans. This is the story of the challenges these modifications presented.

Sadly it appears that the English “dumbed down” the design somewhat. The graceful curves of the Klemm wing trailing edge, including the aileron shape, are made into straight lines on the Swallow. The turtledeck of the Klemm, sloping straight sides with a rounded section top and tapering to the tail is changed on the Swallow to a flat top on the rear fuselage that stays the same width as it goes aft.

The curved top of the fuselage at the nose segues to the flat top in the fuselage section from just behind the tank bay to the front of the front cockpit. The cockpit cut outs are a different shape to the Klemm, as are the windscreen and the bit of fuselage between front and rear cockpit is much shorter on the Swallow. Although the Klemm was aerobatic, (used to train “civilian” pilots who would shortly be flying for the Luftwaffe), British regulations required strengthening the fuselage with some external stringers on the BA version.

The biggest challenge was in the tailplane and fin. Not in the rudder shape or the tailplane’s tip shape; that was easy. On the Swallow the fin and rudder are a different shape, again the graceful curves being changed to straight lines. The fin is different, overlapping the tailplane only part way on the Klemm and the fuselage turtle decking stopping in front of the tailplane. On the Swallow the fin comes all the way to the front of the tailplane and the turtledeck overlaps the front of the tailplane. On both there is a gap between the bottom of the fin and the top of the tailplane. Keeping this very
obvious gap to remain faithful to scale meant that the fin could not attach directly to the top of the tailplane as happens so often with models of e.g. the Tiger Moth which also has this gap on the real aircraft.

On the Klemm model the fin is built directly onto the rear post and the tailplane is then slid in under it from the front and held down with a screw at the front. This is impossible on the Swallow with its longer fin and overlapping turtledeck. This was the greatest challenge in the entire build. To add to the difficulty, the elevator horn is central and inside the rear fuselage. The tailplane and elevator have to be installed before the fin goes on.

So with all these changes the obvious thing was to find a 3 view. Although Mr Google will find lots of pictures of BA Swallows, both the Australian aircraft VH-AAB and a number of English specimens, I could only find one small, low res 3 view which I printed out together with lots of photos to use for reference during the build. This was a bit daunting but I have seen some top scale modellers design and build world class models from less.

Although the 3 view was too small for accurate measurements, by extending the lines I was able to measure angles, which was a huge help in determining the shape and dimensions of the wing outer panels, ailerons, tailplane and fin and rudder.

The kit model was designed to be powered by a .19 2-stroke glow engine. I have an HP 25 rotary valve head 4-stroke which I thought would be ideal for this plane. I hoped it would have enough power, being lovely and quiet but not very powerful. However I found it would not fit in the cowl and as I wanted to keep the cowl intact I cut off the ends of the engine bearers, made a plywood firewall and bolted on a Turnigy G25 850kv. This also turns
a prop that, so far as I could tell from the view, is more or less scale diameter.

I drilled a lot of holes in the ply former behind the firewall so air that enters the cowl and goes under the firewall can go back into the fuselage and exit via the open cockpits. The ESC was put below and behind the engine and a compartment for a 3S 2200mah Lipo made where the fuel tank was designed to go, with a cover on the bottom of the aircraft held in place by a balsa tongue at the front and magnets at front and rear. This does not support the weight of the battery which is strapped in with Velcro but all the same it is always wise to attach such a cover with a length of strong carpet thread so if it does come off in flight it is not lost. I made a box between the engine bearers and the firewall for some lead which was needed to balance.

The photos of VH-AAB showed different cowl apertures to that on the German aircraft the kit models so I used some resin and microballons to fill holes and the Dremel to adjust sizes and shapes of others on the plastic cowl provided.

I found a photo of the instrument panel in the rear cockpit of VH-AAB, (the front cockpit has no panel). I fiddled around with the computer to get this panel picture the right size then printed it, cut it out and stuck it in the plane after painting before attaching the windscreens.

The other modernisation I did was to dispense with the single central aileron servo, pushrods and bellcranks and use a separate aileron servo in each wing. This meant making a cover for the aileron compartments in each wing and routing a servo extension cable where the pushrods otherwise would run. The Y lead in the centre section, extension leads and of necessity the servos had to be installed prior to covering, or at least prior to covering the top of the wing. One of the major, and satisfying challenges of altering a kit is thinking through these changes. Most of the work is in your head.

I finished the fuselage with a layer of ¾ ounce fibreglass cloth and De Luxe Model products Eze-Kote. Much easier than resin, and water clean up. The flying surfaces were covered with Sig Koverall. This is the same as the fabric used for modern full size aircraft but a lighter grade suitable for models. It is easy to use and strong. Although a little more work and a bit heavier than film coverings, it is more authentic in texture and the finished weight of the aircraft, nose weight and all, came in at 100 gm less than the specified design weight! I used dope on the Koverall, as specified, and automotive paints for finish.

OK, The 64 dollar question, how does it fly?

Before flying I was frustrated at being unable to bind the radio. It turned out that I had a crook bind plug!!

The maiden was performed by fellow club member Graham so I could take some photos. He reported that it flew nicely, brought it in close for photos and only later realised he hadn’t even touched the trims. I took the sticks
myself for a short while and only dialled in a little right aileron.

The Turnigy G25 870kv was perfect. It flew this plane, originally designed for .19 glow, with authority at around ½ throttle. Much to our delight it was not quiet but without being too loud sounded just like a full size aero engine. Presumably it’s prop noise and reverberation from the large fabric covered wings. Whatever the explanation it certainly added realism.

The 13 inch diameter prop seems to be about scale size. It was a light grey colour so I sprayed it black and painted the tips yellow. It retained its balance even after painting, but do check!

Note that this was not only the aircraft’s maiden flight but the maiden outing for my new 70-300mm Canon zoom lens. (I wore its predecessor out!)
When it comes to safety in our sport, the biggest risk we face is when we are starting our models. Spinning props have caught many out but here are a few tips to consider when starting your gas model plane.

Develop a routine
When starting your gas model, there are a number of steps you need to take:

Plane in the stand, transmitter on, choke on, ignition on, choke off, off you go.

Before starting your engine, take a moment to slow down and go through your starting routine in your mind.

If you have friends hanging around, make it clear that you are trying to concentrate to keep things safe.

A methodical approach is what you are looking for and being able to repeat the process time and time again.

Restrain the plane
First step in your routine is to ensure that the plane is secure and restrained. If you are using restraint poles, make sure the plane is hard up against them to prevent the plane from moving forward when started.

Never consider starting your engine if it is not restrained.

Choke with ignition off
Most gas motors will need some choke application to get them firing. It’s a process of getting fuel into the engine so it can fire.

Try choking the engine with the ignition off when you are initially choking.

The less time you have the ignition engaged, the less chance of a prop strike.

Protect your hands
Most gas engines need to be hand started.

Depending on the state of your tune, you might be flicking for a while.

Though difficult to fully protect your fingers, try using a welders glove when hand starting.

Not only will it be more comfortable for your hands when against sharp props but, if you do get struck by the prop, it will provide some cut resistance.

Flick with purpose
The aim when starting your gasser is to get it started and into the air.

When you hand start your gasser, we find that many do not crank with enough force, not only to start the engine but to ensure that your hand is moved as quickly away from the prop as possible.

Flick with the purpose and get your hand out of the way of the prop. We prefer an upwards motion starting at around the 5 o’clock mark and moving anti clockwise upwards and away.

Some engines are susceptible to starting in reverse and this is often due to the prop flick not being forceful enough.

Engine starting is a given but you can control your actions during the starting process. Paying considerable attention during the process is imperative to staying safe.
I thought you might like to put this pic on your wall. I finally got to maiden my new jet on the weekend. It was a Valentine’s Day present from my husband. We both fly RC planes. It’s an awesome jet to fly very stable and very fast.

The FMS 80mm Futura flies pretty well straight out of the box. Very little trim was needed to make it fly level and straight.

It is very stable when flying, even in some wind. Fly’s like it’s on rails. Very smooth in the turns. Sounds amazing and flies very fast.

I would recommend it to anyone who has experience flying beginner planes if you wanting to get into jets. My husband flies the Avanti S and, on flying my Futura, he said they have very similar characteristics but the Futura is more economical than the Avanti S.

We fly on the Southside of Brisbane.

Well done Amy. Glad to see you are enjoying your jet and flying.

FMS do make some nice foam planes and we hear some of their jets are awesome to fly.
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Drone Showcase will show state of the art at Avalon Airshow

With drone operations now the fastest growing category of commercial aviation in Australia, the 2019 Avalon Airshow will feature a Drone and Unmanned Technology Showcase, where visitors will see the latest products and hear how unmanned technologies are changing the way we work in industries such as film, photography, farming, mining, construction and drone racing.

Flat Out RC is proud to be the official 2019 Drone Zone media partner.

The 2019 Drone Showcase follows from a successful inaugural event at the 2017 Avalon Airshow, which saw more than 8000 people visit the Drone Zone pavilion, with more than 600 attending to hear industry experts detail the rise of drones and remote piloted aircraft systems (RPAS) in fields such as business and industry, agriculture, search and rescue, security and entertainment.

Visitor demand and feedback has seen the exhibition area double in size for 2019 and the conference and seminar program expanded to 15 sessions plus three days of drone flying, robot and camera demonstrations in a purpose-built netted display area.

In 2019 the Australian Association of Unmanned Systems (AAUS) and the Civil Aviation Safety Authority (CASA) will provide expert presenters to join with industry and government speakers to inform and showcase the latest technology.

Seminars will detail the role drones can play in boosting farm productivity, reducing maintenance and facility infrastructure costs and revolutionising aerial imaging, including workshops on drone filming and photography. Drone Pilot Schools will be on hand to explain the steps to obtain CASA approved commercial drone pilot certification and the new sport of Drone Racing.

The showcase will also display winning entries from the AAUS Drone Photo and the Asia Pacific Drone Film Festival.

“With drones of all shapes and sizes providing new business opportunities and revolutionising the resources, film and photography, emergency services and transport sectors, the 2019 Drone and Unmanned Technology Showcase will provide a forum unlike any other in Australia,” said Drone Showcase organiser Rodd Craig.

“The flourishing drone industry is driving advances in sensors, communications and new applications that allow unmanned vehicles to move in to new roles and tasks every day. Visitors to the 2019 Drone Showcase will see the latest advances and hear how this new technology may change their own industry.”

The 2019 Drone and Unmanned Technology Showcase will display the latest developments in the Australian commercial drone industry.
If you have an upcoming event then make sure you let us know.
Send your event to details to info@sillmarketing.com.au
37th Mammoth Scale Fly-In
15-16 September, 2018

One of the countries longest running and most prestigious events is nearly upon us in the Mammoth Scale Fly-In hosted by the Valley Radio Flyers in Shepparton, Victoria.

This event sees a wide range of large scale aircraft participating including some of the best examples in the country.

Pilots are welcome to come and fly but you must have a plane that is a minimum 80” for a monoplane and 66” for a biplane.

This event is open to the public and provides wonderful entertainment for the whole family.

More details are available online at www.valleyradioflyers.com.au

Location: Valley Radio Flyers
935 Kerrs Rd,
Karramomus, VIC 3631,
(South of Shepparton)

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Pinnaroo Fun Fly Weekend
7-9 September, 2018

One of South Australia's friendliest fun fly events is back!

The annual Border Model Flyers are hosting their Fun Fly Weekend at their field in Pinnaroo.

Not only will there be an opportunity for general flying but also Scanner racing, limbo and more.

Camping is welcomed onsite and BBQ lunch is available.

Bring any type of aircraft and be prepared for a load of fun.

Location: Border Model Flyers
South of Pinnaroo on Mallee Highway,
South Australia
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