

Undertakers Need Not Apply

COFFIN TIME?
SUMMARY
REFLECTIONS



IMMERSE YOURSELF
A WEEKEND WITH
FINAL GLIDE AUS



WHAT DO YOU FLY?
I FLY WHAT I DESIGN - IT
WORKS FOR ME.



MEMORIES
PATREON T SHIRT
GIVEAWAY

FGA PATREON NEWS



Not Just a T-shirt

I am about to send a shirt of mine to one lucky FGA randomly selected Patreon. Its a memento of times gone by - a shirt with a history - no ordinary shirt.

In early 2016 Tony Cake (ImmersionRC) droned on about having “one last go” at racing. I reluctantly agreed to join to compete as a team in the Paris leg of the Drone Champions League. The course followed the famous Champs Elysees.

I arrived in Switzerland without a working drone and was sidelined into finalising the design and building the quads used for the race. Finished up with less than a day to go. I hate rushing but that’s racing. We hopped into the car to drive the 6 hours to Paris. As soon as we arrived at the hotel I spent valuable sleeping time finishing off all the racing quads. I was very tired but “ready for competition” when everyone awoke. I proudly put on my red DCL team racing shirt and we walked the course. I was not the only one concerned that the race control system selected by the organisers would be problematic (despite public words of

confidence by the manufacturer). As it turned out almost all the pilots experienced similar problems. Drones kept falling out of the sky as pilots lost vision due to serious interference from surrounding high apartments and retail shops. At one point we all fell out of the air at exactly the same time in a practice race. The organisers kept going despite pilot complaints. I and my fellow racing group failed to finish any race. I spent hours to get mentally prepared but you cannot prepare for something you have no control over. I left Paris in disgust. Every race I have ever competed in (including the 2015 Drone Nationals) had been fraught with issues. Paris was the final straw. I had had enough.

Tony drove us back to Geneva and it was while I was waiting for a train to the airport that disaster happened. My bag was stolen and all my computer and travel equipment was gone.

I was gutted. I lost everything of importance. Computer, backup hard disks, all my video footage from the previous 9 months, my complete digital photo album, travel headphones, passport (with USA and China work visas). The only things I had were my clothes and the DCL racing T shirt I wore. Worse was to come.



When my girlfriend and father let the world know and asked for financial help to replace my equipment the general public was generous but a nasty vocal section of the community directed personal vitriol and hate in my direction. It was my darkest hour and it scarred me. I have not yet really recovered and these same cretins still follow me around. So the red DCL shirt I am giving away reminds me of the highs as well as the lows of life of celebrity life. I want one of my Patreons to wear it and to know its history.

Postscript: I posted my views about the frustrations faced by racing pilots who are forced to compete with problematic vision. It's not as though this problem is new - everyone who races is conversant with this problem especially in high profile courses designed to wow the public (such as in Paris). I pleaded with race organisers many times to be more mindful of these issues and spend more effort in appreciating the time and effort that pilots are required to put in to attend. Racing pilots should not have to keep putting up with the same issues. Even the well known race equipment provider from the Paris race agreed in private conversation with me that his system has issues. But publicly admitting to problems will never happen. I therefore don't race competitively any more.



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One hour of my time could save you countless hours of frustration and stress.

Cut through the hype and misinformation - immerse yourself in FPV for a whole weekend.

Get answers and mix with like minded souls.

Gift vouchers available



WHAT Do You Fly Bro?

I list all my preferred components in the description box on my YT videos. I have always wanted to design a quad setup that I MYSELF would be happy to fly so although I have checked out and compared many quad products over my time in this hobby the reality is that I have come back to flying a small number of quad configurations. There are good reasons for this - most of the individual components you see below are ones that I have had a hand in designing (or testing).

ImpulseRC Reverb
 FatShark Dominator HDO goggles
 RapidFire with VAS Mad Mushroom and IRC 8dbi Patch
 ImmersionRC Tramp 5.8 VTX
 Spironet antenna
 Foxeer Predator Camera
 KISS FC V2
 KISS 32a
 Dinogy 1300 4s battery
 Rotor Riot HypeTrain motors
 HQ 5x4.5x3 V1S
 FrSky Taranis with X4R receiver
 GoPro 5 Session



FRAMES

I kept flying my original Alien for almost 2 years (with slight modifications) - until recently. There was little advantage in changing to something else. I have seen so many new frames come and go but you realise when a frame is “a keeper” when it continues to set the standard for other frames to follow (all 350+ of them). I only recently retired my original Alien and its backup to the AMA and to ImpulseRC. And my current “go to” frame is one that I designed myself - the Reverb. I worked with Sean Blakemore and the boys at ImpulseRC on both the Alien and the Reverb.

As for the other components I have always wanted to contribute to making high quality products that would endure. Most importantly I wanted something for me - something that “I” would enjoy flying. As it turns out many people liked my ideas and also appreciate the time I have taken to helping grow this hobby with recommendations that don’t disappoint. Even more importantly I have tried to shine a light on hype where I see it - when products have major inadequacies yet are marketed with gusto to unsuspecting buyers.

MOTORS

Very early on when I first started in this hobby, the largest most reputable motor manufacturer was Cobra.

They made what appeared to be an incredibly powerful motor compared to others until

I found an anomaly - there was a strange difference between the specs they

quoted and the actual product itself. In short, they cheated. Once the word got out their market

share plummeted. I hate it when people are devious and try to fool the community. Today, T-

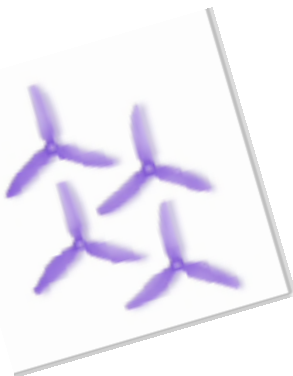
Motor is the largest motor manufacturer by far (for good reason) and then there is the rest. When I was asked to develop a template specification for a motor to suit my own particular freestyle flying needs, I spent time coming up with a design brief for what became the HypeTrain motors. Eventually the HypeTrain motor was born (manufactured by T Motor). Although there have been slight cosmetic modifications to the HypeTrains with newer versions, the motor is still



essentially the same motor. Unfortunately I no longer get benefits from the sales of those motors due to the wording in my agreement with RR.

PROPS

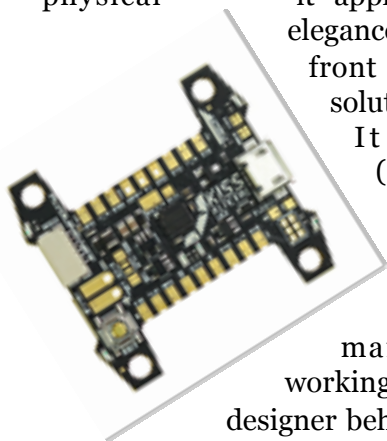
Having a long background in RC models meant I was naturally drawn to explore better propellers. In 2016 I spent 4 months working with a specialist university



professor and Zhong Zhong from HQ Prop to develop the V1S prop line. The 5x4x3 is the only product to ever bear my name (Zhong's doing). I don't put my name on products I help create simply because I acknowledge every product is a collaboration of a number of people and not just one person - designer, engineer, materials expert, marketer etc. The V1S line of products continues to be one of the most popular propellers on the market today.

FLIGHT CONTROLLER/ESCs

I hate it when things get complicated. It's so frustrating. Good design goes beyond just the physical

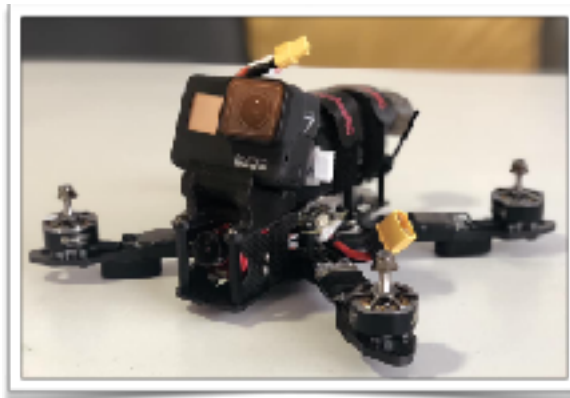


- it applies equally to the elegance, ease of use and front end in firmware solutions as well. Keep It Simple Stupid (KISS) products by Flyduino have always appealed to me. Over the years I have maintained a close working liaison with the designer behind KISS products.

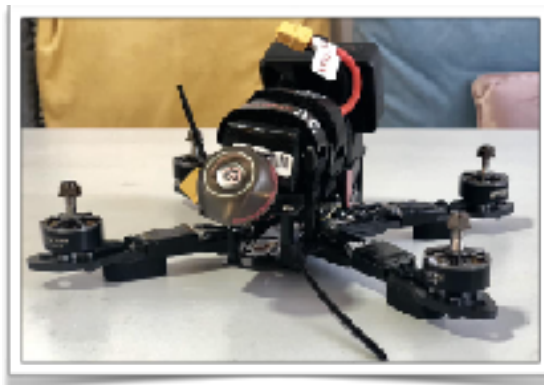
I have also had in-depth discussions with other firmwaare businesses and acted as senior tester for alternative products but to my mind KISS endures and sets the standard I have always looked for. I believe I have contributed to help make their products so much easier to use. Despite the hype by others I see no reason to change away from KISS.

FPV GOGGLES and VTX

I have been very privileged to maintain a long working association with Tony Cake at ImmersionRC and Greg French at FatShark. I recommend their products. Fatshark is renowned for creating the best FPV goggles money can buy. They set the benchmark some years ago and continue to bring out amazing products. I get to test these new products before they are released to the market. Other manufacturers are trying desperately to create better equivalents but FatShark quality remains true and ImmersionRC equipment is also renowned for quality. Fatshark have a lion's share of the FPV goggle market for good reason.



I have also spent time working with various other camera, antenna and radio manufacturers. I have tried to make them aware of possible improvements they could make to their products - some have taken heed of my comments and changed their designs for the better, some have not. As for batteries I buy whatever I can get locally.



So Wot's Happening?

Since returning to Australia and stepping back a little from the FPV scene (especially now that I am not in the USA) I have had time to reflect about my own future and the future of the hobby I love. My reflections first and then, more about my future plans?



No matter how you characterise it - in schematic graphs or strategic business models; no matter what reasons you come up with to justify what people claim is happening; the hobby is exhibiting a slow down in growth rate - not what was expected by people who hype this hobby up and by the celebrities depending upon the hobby's continuing upward trajectory for their fame and fortune.

The slowdown in overall sales is causing anguish and hand wringing by people who are in this hobby for all the wrong reasons - namely, to profit from an opportunity as quickly as possible. The majority of the rank and file pilots simply go out and fly for the joy of it and leave the reading of the tea leaves in the tea cup to others.

The current largess in demand for product is being rationalised by business savy entrepreneurs as "if we all hang on long enough, this hobby will eventually reignite or

regenerate and the survivors (meaning us) will be able to cash in their investment" (and move on to the next big thing I assume). Smile.

I look instead with interest at the number of "drones" sold to the general consumer market and wish I had shares in DJI who has captured over 75% of the consumer RTF drone market - representing 2 million customers. The self build FPV mini quad niche is miniscule in comparison. People with an interest in the hobby (including racing) who have invested heavily expecting to reap a financial reward are expressing concern. Many entrepreneurs with no qualifications other than an enthusiasm in believing that FPV recreational drones are an opportunity to make money entered the scene recently wanting to cash in on the expected market growth. Unfortunately for everyone the growth spurt never eventuated and there appears to be a number of factors that are constricting the flow of profits. What's driving sales is existing pilots who keep adding to their stable of quadcopters in the belief that they might find something better than what they already have. Many may show disappointment but most still enjoy the building process. The majority of fliers got into this hobby because FPV had a profound effect on their lives. Not so everyone.

So are we all just swimming in blancmange?

1. The industry is being measured by YT (and social media) **views and subscriptions**. Popularity is what drives community perception of success because it's an easy measure and anyone can enter the popularity fray. The reality is that popularity is a poor measure of business success - including profitability. It also results in people doing crazy things to enhance their chances of being seen and concentrating their efforts more on shock tactics to get noticed. The world is currently filled with thousands of social media channels all vying for attention - the noise of millions of voices makes it almost impossible to get noticed. The reality is that consumers and their loyalty are fickle. Never trust the numbers.

2. The **number of sellers of quad parts have exploded**. Literally every enthusiast can open an online store with minimal effort and a large number of people have. In many cases people are selling the same products (rebranded, renamed, recycled, re-engineered, cloned). The market is saturated with enthusiasts hyping up offerings as “unique” yet consumers can buy the same product from many different sources, in each case making a small margin. Sales by the “majors” have been diluted. Doom and gloom all round.
3. The **pace of innovation has slowed** considerably and today’s differences between individual components are minimal. Marketing has therefore become very innovative as “choice hype” escalates - (anecdotal figures only) 54 flight controllers, 350+ frames, 45 motor manufacturers, countless battery manufacturers and in some cases up to 8 different brand stickers on exactly the same product. Demand is being serviced by a wider array of agents.



4. The **true innovators are being trumped by copycats**. Clones abound. Minicule differences are accentuated as epic (when they are not). Price tends to be the major driver. People get sucked in by “discount” hype and learn valuable lessons AFTER they have made their investment. The gems stick out above the crowd but why buy an original when you can buy 2 for the price of one and think you have a made

a bargain. So called “independent” reviewers criticise products yet introduce their own alternative brand which is not any more innovative. The community wonder why people have become cynical and innovators are reluctantly leaving the FPV scene.

5. **Places to fly are being squeezed** by regulators. Governments all over the world are clamping down on the use of recreational quads. Strict rules and regulations being enforced and areas free to fly are now shrinking. The air once enjoyed by enthusiasts is now being covered by commercial interests with eyes on automated delivery, retrieval, and investigation - products, people and research. Recreational fliers are being shunted into severely confined spaces and quad extremists who go public are being signaled out for punishment and shame. This includes all manner of drones (ready to fly consumer drones, self built RC models and FPV quads). Its causing existing pilots to go underground. Newbies have started to reflect on their potential investment - “is it worth the investment?”
6. Despite an explosion of info about creating your own quad **the building process remains very complicated**. Consumer quad sales are booming but self build quads are still far too complex. With so much choice on what to build these days and so many avenues to learn how to build and fly you would think things would get more streamlined. Although self built quads are a lot less finicky today and ready made quads are so much easier to fly out of the box there is still the issue of maintenance and repair to consider. The initial investment becomes only a small consideration. The money spent on repairing and maintaining is what catches most people out. And the celebrities and self help clubs (including those that charge for access to their data bank) make it all look easy. Its not. No wonder people get frustrated, people lose their quads, people smash their quads, people get bored. Fresh faced newbies arrive and go through a similar process. Its a nerdy sport populated

by middle aged men who enjoy tinkering. The issue of initial buy price gouging by retailers is a furphy - the cost of ongoing maintenance is the elephant in the room. The young ones don't call it FPV quads - they call it something else (STEM, coding, toy copters, whatever). Newbies to the scene find their entry to be quite perplexing. Like most technical hobbies building a quad takes skill. Flying with confidence takes even more skill and lots of practice. Because the hobby is mainly filled with men the emphasis on competition is amplified. Racing quads is seen as having huge potential. Racing quads has not been anywhere near as successful as a mainstream sport as even the most devoted had hoped. Its just another hobby or sport that they can chose to join. Many take a quick look and move on. Only a small number remain hooked.



Questions - Answers

PAUL

I am building my second Reverb and wanted advice on 6S with KISS V2 hardware. I'm not good at PIDs. Will I have issues if I simply use default? My current 4S Reverb is my favourite quad out of the 10 rigs I have.

ANSWER

If you go up to 6S with the right gear then PID's should not be a huge change and I foresee default pids working fine. It might only be an issue if you go 6s while keeping an insanely high KV motor. If you use around 1700kv motors you should be fine.

DAVID

I need your advice. I am keen to build a 6" Reverb but wonder about the issues this will bring using 6S battery and bigger props.

ANSWER

When you go up in diameter props the frequency of the vibrations gets lower. This can get low enough to effect the control input of the PID loop which is harder to filter out. This is why people with larger props have more issues. Yes 6S is an improvement but not as big as people make out. The only way to compare apples with apples is to use the same watt hour battery and motors that produce the same RPM which no-one is doing. People always use a bigger WH battery and higher KV motors so they feel more power and have longer flight times. They also are heavier but seem to forget that. So yes there is an improvement but it's only small. If you are prepared to take a small increase in weight then things improve more but at the expense of more weight.

A reminder: here is the video I recorded last July talking about 6S.

<https://www.youtube.com/watch?v=LVwZNQx5PNg>

Keeping You Up to Date

Since I've been home I've started work on the commercial side of drones. Mostly in the training and licensing side of things. Here in Australia gaining commercial license is more involved than some other countries and I have been working with companies teaching such courses.

My other source of meagre income, apart from a declining commission from the Reverb, is holding small group weekend training sessions for enthusiasts. My "Spend Time with FGA" is an all inclusive weekend where attendees immerse themselves in all things FPV. I customise their time to suit their personal requirements. Overnight accommodation and meals are part of the deal. I have been very heartened by the positive feedback. See my web site for information and feedback comments.

I realise many of my Patreon are from outside this country so I am more than happy to negotiate with you if you are visiting in the future and want to attend. Currently I have a pilot from NY who has booked to attend while travelling in Australia. There are more travellers who respect my knowledge and are reserving seats. Come join them.

Discounts are available for groups - including parent and child. The maximum I can accommodate at any one session is 3.

Thank you for your ongoing support. Your contribution, no matter how small, helps me more than you might realise. I also hope this newsletter is of some value.

Cheers. Chad

