

PROP TORQUE

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2002

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CAPTAIN'S REPORT

Peter Kidson (03) 6394 4380 p.kidson@microtech.com.au



Hi to all once again,

Well at last it seems the Insurance fiasco is finally over for now. Thank you to all those who chose to pay the added costs and help keep this club one of the best in Tassie. Lets just hope that the MAAA does not think it necessary to put the insurance part of our fees up next year.

As more and more of us get connected to the world wide web there are being made available to us lots more sites about models. Maybe those who have a list of sites in their favourites may like to share them and we could create a list for the clubhouse.

We have been asked by the Northwest club if we, in conjunction with them, would consider holding the Australian Pattern Association Championships in 2004. I must say it was a resounding yes by all the Committee members. I feel it would be good for the club. For those not interested in Aerobatic competitions it would be a chance for you to see some mainland flier's and see the standard of their flying.

If we can get people like Alfred Pye, Dave McFarland, Chris White, these are some of the best pilot's in the world, I'm sure we would all benefit from watching them. I might add we have yet to be granted the opportunity to hold the competition but we are trying and you will all be advised when we hear from the APA.

At the last Committee meeting we discussed the available area for flying. As you all should know we have set a no fly area which is an arc behind the clubhouse. This includes not flying over Mr Youl's house. Any accident in that direction could cost us our 'free' field. The area is clearly marked on your safety booklet on the back page.

Club day is coming up for December, please try and make it be(Continued on page 4)

(Continued from page 3)

cause from there we go on to George and Kerry's place for the annual Christmas party. Last year was a lot of fun and George and Kerry have graciously agreed to make available their place once again this year. Last year there was a chuck glider event. This year will be the same but come up with your own winning design. Also included this year is a control line event for those interested. I first flew these in the early seventy's. I couldn't fly them then but I'll have a go and that's what it's all about.

Well that's about it from me, so I'll see you at the field.

P.S. My glider is being built from a polystyrene ceiling tile.. any guesses how?.

SECRETARY'S REPORT Gerry de Groot Ph: 0417 536 200 (BH) or 6369 5284 AH

gdegroot@vision.net.au

Hello All.

The November committee meeting was held on the 11th as scheduled. It was an interesting meeting and here are some salient points:

- Levy payments were received from a total of 28 members by the closing date. The bright pink stickers to go on your FAI license cards are on their way to you. 28/32 may seem a reasonable result, but it actually means that four members were not interested enough to pay up. 'Nuff said - they know who they are...
- The LMAC display at Railex was a great success, due in no small measure to the efforts of Geoff Hays and helpers. Chuck (Continued on page 5)

gliders sold briskly, the raffle went well, and, I'm happy to report, there was a lot of interest in our activities from an admiring public. Thanks also to those members who lent models for display. It was also interesting to see how well the displays of LMAC and the new SEAT club complemented one another. While there was perhaps a potential for rivalry, it never happened; the two clubs obviously complement each other very well.

- Mike Adams has kindly organised an Instructor Theory Course. Pete Kidson and Andrew McEntyre are 'going for it' and deserve our support, since a successful outcome here (plus a successful flying test result) will give us two more instructors.
- We have received two MAAA newsletters (Nos 4 and 5) that deal with insurance. Of particular interest was the article on model flying from the insurer's perspective. The committee regards this as so important that there is a special safety note elsewhere in this issue of Prop Torque.
- A reminder 'bout the LMAC **Christmas 'bash'** to be held on 7th December at George & Kerry's after Club Day. (In the previous issue I wrongly referred to a Novelty Fly-In competition on that day.)

That's it for now. Until next time, happy (and safe) flying. Gerry de Groot

Don't Forget—Badges are available for sale. Price \$10.00 (incl. 2 stickers).

Contact Kerry, George or any Committee member if you require some.

Show your support and buy one.



From the Editors

George & Kerry Carnie

"Glenhaven" 50-62 Fairtlough St Perth 7300
e-mail: gcarnie@tassie.net.au
6398 2141 or 0418 134 672

Hello to all.

Just a brief note this month as space is pretty tight. Reminder to call us if you're coming to the Christmas party. All food is free just bring along your favourite beverage. Your reply is required by the 29th of this month so we can cater for you. Raffle tickets are still available. Please support the club by buying some.

In the CD report, Geoff gives a run down of the 7 cell event and the funny side to my exploits at "looping" my wheelchair. With the current emphasis on safety I'd like to add to Geoff's comments. Under normal circumstances I would never fly the model "along the flight line". This was a competition with only myself and timekeepers on the flight line. Conditions were blustery at times and in the heat of the moment, "going for the spot" I turned my model (the old Defender) back into the wind to my right, only to find the wind was preventing a tighter turn than I anticipated. Unfortunately I can do a lot of things in my wheelchair (as some have witnessed) but a quick reverse requires two hands and at least one had to hold the transmitter. To my embarrassment, I tried to lean backwards out of the way and flew inverted for a moment (no not the model ... me!). The model contacted the radio antenna. An able-bodied person would have taken one or two steps backward (as we often see the glider pilots do) and nothing would have eventuated.

All I can say is if you didn't witness this event—bad luck because I won't be doing it again. The 30 points isn't worth it. My thanks to Jacques for assisting with the minor repair that allowed me to gain second place. Next time I fly 7 cell I'll be flying my new Organic. Can't wait.

Until next month...

Put a spark in your life—Fly Electric George & Kerry



November 2002

Hangar Talk



(submitted by Dave Jacobs)

I had an interesting and informative chat with Jacques Wakae at the field the other day and asked him a few elementary questions about his *Electrasite* notes in Prop Torque. I think I know what a B.E.C. means now. I must ask him about the ECL and TTL logic. Also further down the page he mentions F.E.T.S.!

Sometimes I pretend to know what he is talking about however I have a suspicion that he knows I haven't got a clue anyway! An interesting comment he made was to the effect that he had almost no feedback from his articles and presumed that his notes were clearly understood. Perhaps I am a particularly slow learner and not able to assimilate information because of advanced years!

Anyone new to the hobby must scratch their heads trying to understand what different abbreviations mean. An early experience for me was with the free flight fraternity. They told me I should have a D.T. I had heard about delirium tremens and got a little anxious as to what sort of outfit I was getting myself into. The D.T. turned out to be a **DeT**hermaliser which would stop my model going O.O.S. "Out Of Sight".

A few years ago I told my wife I was going to the U.F.O. club at Greg's place. She had a funny look on her face but relaxed when told it was an Unfinished Flying Objects activity. Then the control line boys have a "rat race". That must be entertaining! Perhaps it is held at White City after the Jack Russell's finish their event. Anyway getting back to where I started, Jacques said if he doesn't get any feedback from his notes, he feels the more advanced material can be digested by his readers. In most cases this could be true of course, however the point he was making was if you don't understand, just ask.

My project at the moment is an Art Chester Jeep for my new S.T. 90 (Super Tigre 90) Six foot wingspan.

Regards, Dave Jacobs.



Contest Directors Report Geoff Hays 6344 1920 / 0408 559 806

It seems as though it has been a while since we had a report on a contest that has just been run, well it has really as we completely missed the October thermal glider event due to unfavourable weather conditions on the set day of Saturday, October 19th and Sunday October 20th. Another attempt to run this event was set for Sunday, November 3 but this too was no good due to gale force winds right across the State, so not for the want of trying we cancelled this event altogether.

But I am pleased to say our November 7 Cell Electric event went ahead as scheduled. It was a good day <u>BUT</u> where were our contestants? We only had 3 instead of the usual 6 or 7 starters and on a good day at that.

We ran the usual 7 Cell Electric format to which all did 6 rounds, dropping their lowest round. All had quite good scores for each of their rounds; Greg averaged 309.4, George 291.2 and Dave 283.4

Now most people would know what a horse might do when it takes fright, well some of us witnessed a similar action during round 5; George was coming to the end of his flight time and was coming down for the landing when he got his model a bit out of control to where he wanted it to go. Lower and lower it came at quite a pace along the flight line. Now George just happened to be sitting in his wheelchair (not unusual for him to be doing that Geoff. Ed.) piloting this wayward model on the flight line, closer and closer it came and surely contact was inevitable and you guessed it the usually placid wheelchair took fright and reared up throwing our George backwards on to the ground, the model striking a part of his anatomy (not serious) and went on to strike the tyres breaking the tailplane.

After George was back in the saddle so as to speak and things calmed down a bit someone was heard to say to George you are supposed to loop the model not the wheelchair. There was no injury to the rider/pilot

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at all (*just his pride Ed.*) and the model was repaired to go on and V complete round 6 with a good score emanating. Well done George.

All in all a good day and during the breaks, the pattern flyers got in some practice for their next event at NWA on the 24th November.

Scores for the 7 Cell Electric were as follows -Our next scheduled event at Symmons Plains will be a Novelty Fly-

Contest Scores 2002-2003				
7 Cell Electric Contest 16 November 2002				
	Contestant	Score	Points	Division
1st	Greg Robertson	1547	110.00	Α
2nd	George Carnie	1456	110.00	В
3rd	Dave Jacobs	1417	107.32	В

In on Saturday December 14 commencing at 9:30 am. Events to include:-

- Taxi challenge;
- Carrier deck take-off and landing;
- Balloon burst:
- Touch and goes with spot landing and
- Bomb drop scatter!!!!

In closing, our display at the recent Railex Expo went very well indeed and I would like to thank all of those who helped me in any way to make it the success it was. To those who supplied models and equipment and helped in the set up, manning the display for two days and then in the dismantling and clean up, your help was most appreciated, thank you.

Well that's it from me for now so as always, Happy Landings all.

Geoff CD



Contest Scores 2002-2003					
	POINTS TOTALS After 9 Contests				
Division A		Division B			
Contestant	Contests Entered	Points	Contestant	Contests Entered	Points
P. Kidson	5	494.22	A. McEntyre	5	493.19
K. Hay	5	483.67	G. Carnie	4	381.67
G.Robertson	4	440.00	D. Jacobs	4	371.73
			J. de Groot	1	110.00
			J. Lovell	1	110.00
			P. Haworth	1	103.43
			G. de Groot	1	95.44
			K. Gray	1	88.90
			D. de Groot	1	87.10
			B. Nye	1	45.66
			R. Cooper	1	29.74

Electrasite

Basics of brushed motor controllers

Basic Function

The function of a controller is to accept a variable length pulse from the receiver and supply a proportional voltage to the motor ranging from zero Volts to the maximum voltage of the on-board battery pack. Since variable voltage is not easy to implement in a small and lightweight package an alternate method is to apply the full battery voltage in very short bursts and to vary the duration of on and off times. As examples, if the on duration was equal to the off duration that would equate to 50% of the battery voltage, quarter on-time would equal 25% voltage, etc... This repeat of on/off times is referred to as 'the Switching Frequency'. Naturally no switching occurs at zero Volts when the device is off and at Maximum Volt when the device is switched hard-on. Fast switching with very fast rise times (the time it takes to go from 0 to max. Volt, typically 25-30 nanoseconds) can induce radio interference, therefore controllers are built with slower rise times of 2 to 3 micro seconds, this however generates additional heat in the controller but a compromise is required. Each motor design has its own most efficient frequency, so generally controllers have switching frequencies from 1000 cycles to 3000 cycles to suit most available motors.

Additional Functions

These are all cost dependant as with increased complexity you require more; design work, testing time, real estate (board size), components, programming, etc...

Some standard add-ons are:

Basic Brake Function; A short is placed across the motor when the controller is off.

Soft Brake Function; An intermittent short of progressively longer duration is placed across the motor.

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Timed Brake Function; The short is applied some time after zero Volt and may only stay on for a set time.

Brake Enable/Disable; Can be programmed either by switch, wire jumper or stick position, depending on brand.

Motor Cut-off; The battery voltage is monitored and notice of low voltage (usually around 5.5 Volts) is given by various ways, some favored methods are:

motor cuts-off, motor pulses on/off, motor goes to part throttle, motor gradually slows down, rudder signal is routed through the controller and modified to waggle the rudder.

Note that apart from the waggling rudder, most methods depend on the motor, if the motor is already off you get zero warning! Some methods leave the motor permanently off, some others allow you to throttle back up, either partially or full and may not cut the motor again.

Soft Start;

Useful when using a transmitter switch instead of the throttle, the motor only has two speeds, off or on, transition time is slowed down to around a second by the controller to avoid, prop, hub or motor damage.

Throttle Pacing;

Used on throttle stick control with paced transition times, once again to prevent equipment damage due to heavy-handed use. Similar to paced fuel supply on jet engines during throttle acceleration.

BEC:

Available in most brands for low cell count (+/- 12 cells) and average current controllers (below 50 Amps), supplies a regulated 5-Volts with peak current capabilities of 1A, 1.5A, 3A and 5A (so far) depending on brand and cost, if possible select one that uses multiple regulators in parallel, they will give you a better heat dissipation.

Opto-Coupler;

Is a small electronic package that combines a Light Emitting Diode and a Phototransistor in close proximity. The signal pulse (Continued on page 13)

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(Continued from page 12)

coming from the receiver lights the LED, which activates the transistor without any electrical connection occurring between the receiver and the controller. This provides the best possible interference suppression. Note that BEC and Opto-coupler are mutually exclusive and controllers are sold as one or the other although some manufacturers are now supplying controllers which have both capabilities on board, all that is then required is to make positive and negative connections on the controller board for BEC use and break for Opto-coupling.

On/Off Switch;

Cuts supply to the controller logic, also to receiver and servos if a BEC-type controller.

Additional safety factor is as good as the state of the FETs and good luck can provide but you must consider the high increase in possible points of failure like the switch itself, extra solder joints, extra wiring and since the switch is normally mounted to the fuselage, any major movement of the controller will rip those wires clean off.

Arming Switch;

Varies in implementation, a push-button type alters the logic of the microprocessor which until button is pressed may either; ignore incoming pulses from the receiver, refuse to drive the gates of the power FETs or some other method of interlock, an on/off type switch can physically isolate either incoming pulses or gate drive signals.

Additional safety factor for the arming switch by itself is medium, failure of switch or wiring does not compromise controller/supply integrity.

Signal Conditioning;

Ensures incoming pulse is within valid parameters, substitutes invalid pulse by previous valid pulse.

Pulse Omission Detection;

The motor is switched off if no pulse or valid pulse has been received within a set period of time. Throttle re-enabling may then follows same restart procedures as for 'Motor Cut-Off'

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Motor Cut-Off Point;

The typical 5.5 Volt cut-off point can be adjusted by external means or is calculated by the microprocessor depending on the voltage of the battery when first connected.

Throttle Range;

Basic and FAI type controllers use a fixed throttle range, normally from 1.2ms to 1.8ms.

This tends to give you a dead band at top and bottom of your stick travel.

Some controllers have a fixed bottom point and calculate the top end depending on how far you moved the throttle.

Some controllers also calculate the bottom point. If the calculations are constant it is possible for the controller to receive a corrupted pulse width which is still within the valid range, but outside of the throttle travel capabilities of your transmitter, in that case you may not be able to reach full throttle or worst, be able to shut the motor off completely at some time in the flight.

LED Display;

One or more LED can be used to indicate various status/error conditions or are used as a controller setup interface.

Melodic Motor:

The motor can be made to hum at various frequencies by applying a very short 'ON' time; this may not work well with all motors, works best on motors with strong magnets and gearboxes. Prop may rotate or sound may be near inaudible on weak magnet type motors. This is now commonly used in lieu of or in conjunction with LED displays for controller setup purposes.

Programmable Controller;

Favored setups can be stored permanently in Electrically Erasable Programmable Read Only Memory (EEPROM), the jury is still out on these as they sometimes loose their settings, something to do with software problems occurring when power connection is not clean (fumbling with the power connectors), some manufacturers have now reverted to switch banks instead.

Current Limiting;

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This is a feature, which can cause a few problems if the controller is not carefully matched with the motor for correct current load. Its main function is to limit the current flowing through the controller so that it does not exceed about 20% of the stated maximum. Common problems are; on a fully charged battery it is possible to trip the current limiting which prevents you to use the full battery capacity for take-off (you must partially discharge the battery before flying). If you use a low current motor with a high current controller then there is no protection against motor burnout (just like with a normal controller). If a motor is stalled, then the limited current flow through just one wind may still well cook your motor.

The only thing that this feature really does well is to protect the controller.

Heat Sinks;

If the controller is to be used mainly at partial power, then you should either buy a controller with a heatsink attached or one of about twice the peak motor current rating.

Special note on Safety and Insurance!

Well, we've all been through the pain of paying a lot more for our model flying insurance. What does it all mean? How will this affect me, you might ask?

The MAAA has been "to hell and back" on insurance and has now published, in newsletters 4 and 5, the full implications of what has been negotiated on our behalf. That's right, this has all been for us - to protect us from (potentially) financially-crippling legal claims, if we were unfortunate enough to be involved in a model flying accident.

We all know that we are supposed to fly "safely", but exactly what responsibility does this carry? If you read the MAAA newsletters, you will see that the obligation is not just avoiding accidents, but also to follow the rules. These rules include the safety rules set down by the Club for its operations (as set out in your safety booklet.) However, the rules are not some arbitrary decisions designed to make life difficult, the Club's safety rules are there to minimise the risk of accidents. That is why the insurer is vitally interested in all flyers observing the safety rules.

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The following extracts from Newsletter No.4 tells it from the insurance broker's perspective:

Inadvertent/accidental breach of rules is not likely to prejudice any claim under the policy, but a claim as a result of a breach of the rules which was neither inadvertent nor accidental could cause serious problems, eg.

- Insurers may decline liability, which could mean a court battle (if insurers won, then, a member/club/association may find him/herself/themselves being sued individually without protection of insurance)
- 2. Insurers may withdraw cover for breach of policy conditions, which would mean that when seeking alternative cover, full disclosure would have to be made.

I can assure from personal experience with the above circumstances, you do not want to go there.

And.

In summing up. I (ie, the broker) would advise:-

- All flying must comply with the rules and regulations of the MAAA.
- 2. Contrary flying should be a reportable offence and should be dealt with severely.
- 3. All Clubs and Members should be made aware of this.
- 4. Gung-Ho/Rambo type flying has the potential to cause massive problems to all insured parties (especially the innocent)

There is a strong message here: if you fly in a way that knowingly disregards the safety rules and if an accident does happen, you will probably not be covered at all.

It gets worse: if there is an accident under such circumstances, we (the club, or the MAAA) may not be able to get insurance in the future (it has been hard enough this year!) and then none of us will be able to fly. That outcome is something that no-one would want on their conscience.

I urge all flying members to carefully read the two newsletters and think about the implications.

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HOBBY CLEARANCE SALE

* GMS 47 size motor Was \$229.95 **Now \$189.95**

* Voltmeter

Was \$24.95 **Now \$18.95**

* Modeltek on board glow

Was \$99.50 **Now \$29.95**

* Modeltek in flight low battery indicator.

Was \$42.10

Now \$19.95

* DC Peak detection charger

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Now \$89.95

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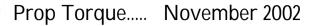
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*Limited stock available



118 –120 Brisbane st The Mall Launceston PH: 1800 806 867 Fax: 03)6331 7165

Email: dleonard@birchalls.com.au



Directions to George & Kerry's for the LMAC CHRISTMAS PARTY

Plenty of Room to meet people & Enjoy Yourselves

When: SATURDAY, December 7 at 4 pm

Where: "Glenhaven" 50-62 Fairtlough St Perth

RSVP: 6398 2141 by Friday, November 29



(Continued from page 16)

So in conclusion, please take seriously such matters as:

- models over the 7kg weight limit needing a Permit to Fly
- strictly observing the areas allocated for flying (which *excludes* the forbidden quadrant behind the flight line
- not taxiing, or launching *any* type of model from within the pits area
- keeping all airborne models well away from the flight line, especially when doing low passes or when landing.

Next issue I will outline what to do if there is an accident at the field.

Gerry de Groot

Coming Events



DATE	EVENT	DETAILS	TIME
Dec 7	Club Day	LMAC	
Dec 7	Christmas Barbecue	Perth	4:00 pm
Dec 9	Committee Meeting		
Dec 14	Novelty Fly-In	LMAC	9:30 am
"BOLD" te	xt denotes LMAC events		

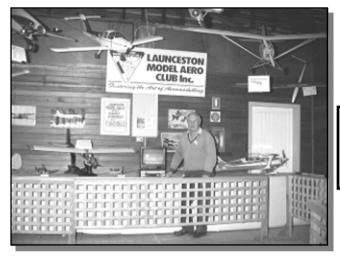
Contests to be on the day specified. If weather is not suitable, then the next day, Sunday. If that too is not suitable then the event is cancelled and we move to the next contest scheduled.

"Club Day" is the first Saturday in each month.

"Cafe Symmons" will operate each Contest Day and Club Day.

(Please come along to both these events. These are important fund raising events for your club. Ed.)

Candid Camera



Our stand at Railex— Excellent job done by Geoff and all his helpers.

Jacques Wakae with his latest "rocket" and FVK Absolute powered by a Hacker B50-7 brushless motor, Hacker FAI 105A controller and a 16x11 Robbe prop. Interesting tussles between his and Greg's (shown in an earlier issue) will no doubt eventuate.





Regular visitor John Madden's "Nothin' Special" 2m wingspan 5.2 kg model uses a OS90 with a 3 bladed 13x8 prop and is covered with Econokote. John always seems to have a different model. He has 19 in his hanger with 13 ready to fly.