PROP TORQUE

Official Newsletter of Launceston Model Aero Club Inc. PO Box 1204 Launceston TAS 7250

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From the President

Hello All

Thanks to all who took the trouble to come to the recent AGM. The roll-up of fifteen members was OK, but not exceptional. You can see more details in the Secretary's report, where Geoff has listed the office-bearers for the coming year. As a side note, this coming year is my sixth as president of LMAC. Based on eleven Prop Torques per year, that will have made 66 president's columns; no wonder it is sometimes hard to pick a new topic not covered before!

One thing that was discussed was contests, in particular the regular free-flight scramble that LMAC holds twice each year. There was some concern that the FF events might not be held because of crop planting in surrounding paddocks. However the farm manager has assured the club that FF can be run again this year. This is good news as it has become a very popular event. It seems that there is also growing support for a radio-assist type competition involving FF type models such as Tomboys.

I recently purchased a new LiPoly battery for my Astropower Leisure "Electrician". This helped to reduce the flying weight considerably, as the original battery was 8x3800mAh NiMH weighing 570g. The new battery is 2250mAh for 210g, a saving of 360g. In the more 'comfortable' imperial units, this is a saving of 12.7 ounces and has meant a reduction in wing loading from about 13 to under 10 ounces per square foot. While those facts may be interesting to some, there is another reason for mentioning LiPoly batteries here. I notice that Model Flight's web site has for some time added a note saying [quote] "Due to new Australia Post regulations we cannot use Australia Post or Airmail to dispatch any parcels that include a LIPO BATTERY. Note - Our Courier Services can still ship parcels with Lipo batteries." The reason for this note might be that under international regulations, just about anything containing lithium is classified as Class 9 Dangerous Goods (this class comprises substances and articles that present a danger not offered by other classes). However, the Australia Post regulations are complex and it would be interesting to know the full story.

If you look up the US Federal regulations applying to classification of lithium batteries (see www.master-instruments.com.au/.../Ultralife_**Batteries_Lithium_Battery**_Transportation_Regulatio.pdf) you will see that there is a threshold quantity of lithium before a battery has to be classified as Dangerous Goods. The lithium content is calculated by a formula and as an example, a 3000mAh 3S1P battery will have an equivalent amount of lithium of about 2.7g, less than the 8g limit, below which, at face value, the battery would be "Excepted" and not subject to the regulations. So it would appear (and I don't claim to be an expert in this) that at least some lithium batteries are *not* dangerous goods. We will wait and see if other model suppliers adopt the same position; but if anyone intends to post

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a LiPoly battery, especially if its a larger one, it would be as well to check with Australia Post for details of their requirements before you send it.

Finally, I look forward to catching up with members at the flying field on a good flying day, of which there haven't been too many lately...

.....***Gerry.***

From the Secretary's Desk

Hi all,

Well here is June and the last month of the current financial year.

You will all have received your renewal notices by now, and many have returned them all filled in and together with their subscription for the next 12 months. It is a big help from an administrative point of view to have them all in early so that the MR1 registrations can be done in bulk instead of in dribs and drabs.

Since our last newsletter we have had two AGMs that are the state and our own.
The state meeting had delegates from all the Tasmanian clubs and was chaired by the President Dean Williams who was re-elected again this year for another term.
Vice President is Clive Butler from P.F.L and Garry Anderson is Secretary/Treasurer from N.W.A.

It was agreed at the meeting that the subscriptions for the New Year be left as it was for the previous year. The meeting was informed the MAAA insurance premium had increased by $10,000.00 this year due mainly to increase in membership but still it remains the same for us as last year.

Our own AGM was reasonable well attended but whilst we had more than a quorum it would have been better if we had a bigger number present. One could perhaps take it that those who did not make it are happy with the way things are going and a change was not needed.

As most of the membership would be aware our committee and executive positions run on a rotation basis of 2 year terms. The committee this year is comprised of the same as last year, except that Greg and Kevin have changed rolls, Kevin Hay is now Vice President and Greg Robertson is now filling the last year of Kevin's term of Committee member .
Gerry is President, I am Secretary and George is Treasurer with Merv and Terry remaining as committee members.
We all look forward to serving you the "club" again this year and we trust that we all will have many great days of flying in 2009-10.

We hope that after our next Committee meeting we will have finalised our event calendar for our new year. It is not an easy task to please everyone with this and also to be able to attract our membership to compete but we will give it a go. Some changes may occur this year due to special circumstances with our flying site.

We have only one birthday this month, that of Peter Ferguson we wish him all the best for his special day and the year ahead.

Well that about wraps it up for me for now, so keep on flying and as usual,

Happy Landings all

Geoff.

Contest Director's Report

20th June Scale Day,
Hi guys Saturday looked like it had some promise with some clouds hanging around but mostly fine with no wind so to speak with the sun

shining the majority of the time.

Well that was before 10.00 AM. Just after I had spent 45 minutes or so assembling the Fly Baby & Stampe that all changed for the worst: to be fair it didn't rain but the wind was rather ferocious.

We were outnumbered by the guys from North West Aeromodelers (NWAM) . I must apologise once again as my aging memory fails me, if I have missed any names: there was Derill Kay, Graeme Poke, John Bowden, Roger Clear, Robin Day, Phil Rayner and John Madden.
Derill flew his Ryan STA with great authority , John had his Cessna & SE 5 ,Graham had his Staudecker I believe it was, while Roger flew a large petrol powered Cub and a lovely P51 Mustang. John Bowden's Mustang met a rather tragic end due to possible radio failure on the far side of the irrigator.
From our club we had Greg & Alice ,George & Kerry , Bill & Faye , Terry ,Geoff and I. Terry flew his new Extra 260 & George had a lovely electric powered PT-17 Stearman yet to fly for the first time.
I would possibly be safe in saying that we all spent more time in assembling and packing up our models than actually flying them because of the poor weather. It was decided not to hold a contest in view of this.
Otherwise we had a great gettogether for the barbeque lunch & chat.
I would like to thank the guys from NWAM for making the trip and the ladies for lunch.

Chris…

From the Editor's Desk

Land- and Air-craft
These are the details of the Transition vehicle shown in a household garage and at a petrol station last month, thanks to information from Gerry de Groot. The details are in the form of an advertisement from the web site together with one of their publicity photographs showing the aircraft with a chase plane, during a test flight, which looks quite spectacular.

I apologise for not having being able to marry the pictures with the following information released by the company in last month's newsletter.

The "*Transition® Roadable Aircraft*".

Every pilot faces uncertain weather, rising costs, and ground transportation hassles. The Transition® combines the unique convenience of being able to fold its wings and drive on any surface road with a modern personal airplane platform. Folding the wings for road use and deploying them for flight at the airport is activated from inside the cockpit. This unique functionality addresses head-on the challenges faced by today's Private and Sport Pilots. Terrafugia's award-winning MIT-trained engineers have been advancing the state-of-the-art in personal aircraft since 2006. Now you can streamline your flying experience with the revolutionary integration of personal land and air travel made possible by the Transition® Roadable Aircraft.
Features include convenience front wheel drive on the ground, automotive-style entry and exit, automated electromechanical folding wing, no trailer or hangar needed. Cargo area holds skis, fishing poles or golf clubs.

Performance data:
Cruise: 100 kts (115 mph,)
Rotate: 70 kts (80 mph)
Stall: 45 kts (51 mph)
Range: 400nm (460 miles)
Takeoff over 50' obstacle: 1700'
Fuel burn: 5 gph
Fuel tank: 20 gallons
Useful Load: 430 lbs.
On road: 30 mpg, 65 mph.
Proven 100 hp Rotax 912S engine.
Full vehicle parachute available.
Modern glass avionics.
Safety cage and Crumple zone.
Side impact protection.
Classified in USA as a Light Sport Aircraft (LSA)

Become a Sport Pilot in as little as 20 hours of flight time in a Transition®-specific course. For existing pilots, get comfortable quickly with the familiarization training included with every Transition® delivery.
Terrafugia Inc.
5 Cranes Court
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T: +1-781-491-0812
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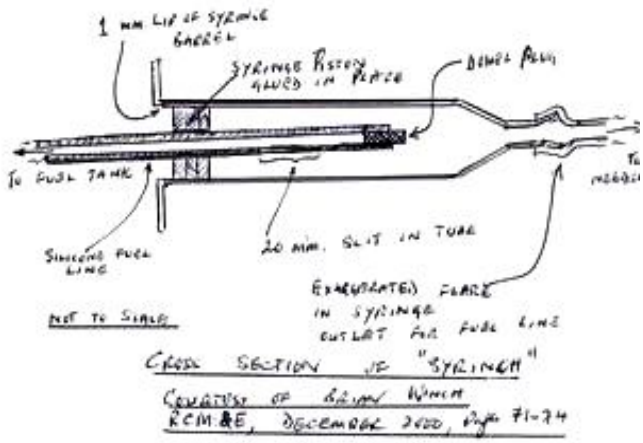
For more information, contact:
sales@terrafugia.com www.terrafugia.com
Anticipated purchase price: $US 194,000.

It would be an interesting challenge to model one of these!

"Syrinch":
a float chamber/valve for model planes.

Some time ago Chris Klimeck was describing a way of controlling fuel flow, where there are physical reasons why the tank can't be put at the right height in relation to the needle valve in order to maintain a stable static head of pressure in the system. He mentioned an article by Brian Winch on the use of a one way valve that stops reflux and syphoning of fuel back to the tank when the engine is not running, at the same providing a static head of pressure for the motor, under all attitudes and with varying depths if fuel in the tank.

The original article described a duck bill valve. Having remembered the same or similar idea, I eventually tracked down the final article, which Brian Winch himself could not locate for various digital recording reasons I think, i.e. Hard Disk problems? (!). In this he described a simple, ingenious way of making such a valve which he named the "Syrinch according to WOO", (RCM&E December 2000, pages 71-74).
It consists of a 3.5 mL syringe, which has had the plunger removed and altered so that its piston head is taken off the piston rod and drilled out to accept a length of 5.5mm. silicone fuel line. This fuel line protrudes into the syringe for about 35mm. and is blocked at its end with a 5mm. long plug of 3mm dowel, (or a 0.177 airgun pellet!) This end should land up about 10 mm from the far end of the syringe when the piston has been glued into place with cyano, rubber cement or silicone. The other free end of the tube attaches to the tank outflow.
Before placing the tube and piston in place, a single slit about 20 mm long is cut into one side of the tube with a razor blade. This slit acts as a one way valve. The outflow from the syringe is attached to the fuel tubing destined for the carburettor nipple.
It may be necessary to flare the spigot with a black hot nail in order retain the tube. Larger syringes may be used for the larger motors.
"The valve is used vertically so that there is no air in it", and is attached to the fire wall. This is a quote from Brian Winch in a recent email, and is slightly different to the original description. There are obviously many ways to make it, this design is for those who do not have the tooling or lathe skills to make the chamber and outlet. It occurs to me that a piece of brass or aluminium tube might be easier to manage passing through the piston, rather than the silicone tube itself.



Next month I have various interesting electric and trimming articles found by Jacques Wakae to report and discuss.

Richard.

STOP PRESS:
Venue: LMAC.
On 18th July there will be a
Free Flight Event starting at 9 AM &
an Old Timer Event at 11 AM.

Safety and Lithium cells, by Richard Cooper
There have been many articles written about safety of operating Lithium-Ion-Polymer or "Li-Poly, or Lipo" cells and batteries of cells. Recently Jacques Wakae found a series of frightening video sequences of exploding and burning Lipo batteries on the internet. He maintains and I think, so will everyone who sees these videos that they are vital viewing for all members of model aero-clubs and their safety officers in particular.
The videos are available at
http://www.youtube.com/watch?V=z3o2mWRPdw8mode=related&search=
and in fact are part of an advertisement for the "LipoSack", which is a fireproof container capable of containing the explosive power of the Lipo battery. The videos demonstrate the violence of their burning very well, and similarly show how well the LipoSack can contain the energy.
How and why do Lipo cells burn? I have obtained the following information from Lithium Batteries: A modeller's user-friendly guide. By Andrew Gibbs, published as part of a series called Gibbs Guides, from www.gibbsguides,com.

A Lipo cell consists of a series of parallel plates imbedded usually in a solid pure polymer or a gel electrolyte, and surrounded by a thin foil envelope or bag. This may swell if the cell is overcharged, and burst under pressure, with explosive force, when it will burn.

The reason for the cell's flammability is its chemistry, consisting of a lithium cobalt dioxide cathode, which is thermally unstable. This means that the compound will break down if the temperature rises. The oxygen produced as the dioxide is heated produces an increasing amount of oxygen gas, which makes the resulting burn self sustaining, and self generating- a state known as thermal runaway. Increasing lithium on the cathode reduces thermal instability, but will be lost from the cathode if the cell is overcharged even by 0.1 Volt, resulting in electroplating of the anode and exposing the lithium cobalt dioxide which then decomposes, releasing oxygen. So overcharging is one cause of explosion. However if the cell is discharged below a critical voltage, traces of copper can form between the anode and cathode which may cause a short circuit and local rise in temperature, which will result in a similar thermal runaway to that caused by overcharging.

Prevention of Lithium cell fires.
Several suggestions offered by Andrew Gibbs in his publication include the following:

1) Prevent overcharging by using a proper Lipo charger. If overcharging has or does occur internal short circuits may result leading to overheating and fire,

2) Prevent over discharge by using the correct Lipo compatible speed controller. There are also temperature monitoring devices for installing in the aircraft, taped to the Lipo battery, that will protect the circuit and battery.

3) Maintain your Lipo batteries, and regularly check the balance between the cells using the inbuilt monitor in most lipo chargers. Failing this, make sure each cell is charged separately and that voltages in the pack of cells are kept closely matched between cells.

4) Prevent or avoid excessive discharge rates, by following the specifications of the manufacturer. Excessive discharge rate results in overheating: the temperature monitor mentioned in 2) above can be used for this.

5) Avoid short circuits at all costs. Even a one or two second short circuit will cause swelling and damage a cell irreversibly! A short circuit for only a few seconds will cause a fire. Don't forget that a gold ring finger can cause a short circuit and a serious burn on the finger at the same time!

A Lithium cell fire cannot be extinguished and damage to property around can be severe: temperatures of 700 degrees C can be generated. A fire extinguisher therefore can be used to limit damage to the area.
The LipoSack would appear to be a very valuable and essential piece of equipment.
The fumes from Lipo cells fires are highly toxic! This is another reason to use LipoSack and to evacuate the area soon.

Lipo cell contents are also toxic: dispose of cells with care: don't puncture them!

Candid Camera

Left: Some of the competitors and models at our recent Scale Day.

Below: Chris Klimeck uses his hands to describe some interesting maneuvers to Graeme Poke from NWAM.

Above: Derril Kay rushes to assist the pilot in John Madden's SE-5a only to find he'd already bailed out!

Left: John Madden taxies out his nice Cessna 182 (CMPro kit). Conditions were pretty blustery and John was very pleased to land the model in one piece.

More photos and commentary can be found on the web site.

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COMING EVENTS

July 4th	Club Day		
July 18th	Free Flight & Old Timer	Symmons Plains	9am / 11am