NEWSBEAT

The official publication of the Malta Model Aircraft Flying Association
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July

From the President

After a very windy winter summer is here at last and with a vengeance. We look forward to those balmy evenings under the trees on site while gossiping away over a soft drink or a coffee between flights.

BBQ time

Saturday 26 June saw the first of a series of barbeques we plan to organize this summer. Under a full moon a considerable number of members and their guests enjoyed a perfect evening under the stars. Thanks to Manwel Vella, we could also watch the world cup football match between the USA and Ghana. Some pictures on page 3. **The next BBQ is planned for Saturday 17 July— I will send an e-mail reminder in due course to all those members who have given me a correct e-mail address.**

Flying Behaviour on site—the need for change

With Malta's entry in the EU, we have been seeing slow but sure changes in the way we go about our normal lives. These changes are being imposed on us with the objective of improving our status, although it can also be said that they can affect our lifestyle negatively. Examples which come to mind, is the recent introduction of a mariner's license, legislation regarding noise pollution, new fireworks legislation, new environment laws and others.

The EU is also looking deeper in the way the authorities regulate bodies such as insurance companies which will surely lead to such companies taking measures to ensure that their clients meet their policy's conditions, which brings me to what the Committee would like to say.

The Committee is therefore feeling the need for a gradual change in the way we perform our hobby as regards flying r/c models. These changes are a first step towards ensuring that we retain what we have acquired over the years and I therefore appeal to all members to do their utmost to comply with the following initial recommendations:

1. **It is observed that not all flyers are capable of executing left and right hand circuits and landings with the same ease. All active members are therefore being asked to acquire these skills in the shortest possible time.**
2. **It is also being observed that the majority of fliers execute a take off with the flier standing behind the model. Such practice is to be avoided as the flier will have no indication of the speed of the model before pushing the up elevator. Fliers are therefore to start a take off procedure with the model on the right or left about 10 metres in front of them.**
3. **The practice of the flier crossing the runway after taking off is to be stopped at all costs. When the wind direction is NW/W fliers should proceed to the designated spot for flying by crossing the runway as near as possible to the boundary wall BEFORE TAKING OFF.**

Needless to say, there are other procedures which all members must abide with—these are contained in the standing regulations and the main ones are being reproduced periodically in this Newsletter.

Any member who feels he needs help in achieving these minor procedures can contact any Committee member who will eventually guide him to a volunteer.

By the end of this year the Committee expects that ALL active members will have achieved these skills.

Electrics

For the benefit of those members who are indulging in electric flight, I am reproducing an informative article on the subject which was included in one of last year's Newsletters. This can be found on pages 5 and 6. I hope that budding electric fliers will find it useful.

Wings over ta' Qali 2010

A few words about this event which will be held by the Association only as in older times. Preparations are well on hand and contacts with foreign fliers have already been made. It is being hoped that fliers from UK and Italy will take part. In the meantime, any member who would like to offer his services towards the organization of the event can contact Frank Mercieca, our PRO on telephone 99406618. The Best of Show Trophy will also be up for grabs, together with other gifts and mementoes to all participants. So get down to finish that model or dust off your cherished models in preparation for this yearly main event.

See you at Ta' Qali

THE BARBEQUE IN PICTURES

Some reminders on Safety at Ta' Qali

- **NEVER FLY OVER THE PITS AREA**
- **Take frequency peg (35,41Mhz) when flying and return when finished**
- **Call your landings and take offs**
- **Turbines and large engines (>30cc) start up outside pit area**
- **Respect the 15 minute slot for choppers**
- **Do not allow your children in the pit area**
- **Running in of engines in designated spot only**
- **Avoid flying over inhabited areas and farms**
- **Use an efficient silencer**
- **Do not be an egoist**

CALENDAR OF EVENTS

Saturday 17 August	**Barbeque**
Saturday 21 August	**Official BarBeque**
Saturday 18 September	**Scale Competition**
SATURDAY/SUNDAY 30/31 OCTOBER WINGS OVER TA' QALI 2010	
Saturday 13 November	**Unlimited Event**
Wednesday 8 December	**Helicopter Event**
Sunday 19 December	**Xmas Drinks**

UNDERSTANDING ELECTRICS

Electrical Basics

When it comes to our electric flight there are four things we typically think about:

Voltage
Current
Power
Capacity

As you probably know there are other electrical things that you might normally measure, like resistance etc, but we don't normally need to worry about them for electric flight.

The easiest way to think about all these things is to imagine electricity as water.

Voltage is electrical "pressure". It is measured in volts (v). Thinking of it like water, voltage is the the number of metres of pressure you have - so if the resorvoir is 50 vertical metres above you, you have 50 metres of pressure.

Current is electrical "flow". It is measured in amps (A). Thinking of it like water we would measure it in something like litres per minute.

Power is the combination of voltage and current (power = volts x current). We meaure it in Watts (w). This is easy to imagine with water as well. Think of one of those huge water wheels - the kind that were used to power saw mills in times gone by. Now imagine hitting it with a super soaker water pistol. Even though the water is at very high pressure, there is very low flow, and so the super soaker will probably not generate enough power to turn the wheel. Now imagine the gently babbling stream that feeds the wheel, and under the force of almost no pressure, but with a high enough flow rate, generates enough power to turn the wheel. Finally imagine the firehose - the best of both worlds - high pressure and high flow rate - it would probably make the wheel spin quite quickly.

Capacity is a measure of how long you can draw a specified current from a battery. It is measure in Amp Hours (Ah), or more commonly for the scale of equipment used for electric flight, mill-Amp Hours (mAh). Using the water analogy this is simply how many litres you have in your reservoir. It is a little more complicated for electrical power and we will talk about it a bit later.

How Much Power Do You Need to Fly?

To figure out the power you need to fly a model depends on the weight of the model, and the type of model it is, as well as what you want from it.

In one of those quaint exposures of the inadequacies of the Imperial measures system which the US still cherishes this is normally expressed as Watts (a metric unit) per pound (an imperial unit). For those that want to work with a measurement system that makes sense, one pound equals approximately 450g for the numbers below.

50-70 Watts per 450g - Minimum for reasonable performance flight. Slow flyers and slow park flyers
70-90 Watts per 450g - Slow flying scale models, Trainers.
90-120 Watts per 450g - Sports aerobatic. Fast scale models.
120-150 Watts per 450g - Advanced aerobats. High Speed Models. Excellent Vertical performance
150+ Watts - Very High Speed, Unlimited Vertical Performance.

Note - You must include the weight of all the plane's components in your calculations - anything that leaves the ground with the plane needs to be included - batteries, the engine, speed controller, etc.

So, if you have a 900g delta wing, that you want to have unlimited vertical performance, you are going to have to try and generate 300w (900/450 = 2, 2 x 150 = 300).

If you have a slow flying scale plane that weights 350g then you need to try and generate a minimum of 54 watts (350/450 = 0.77, 0.77 x 70 = 54).

Understanding the Limits of Your Equipment

Most electrical equipment will have limts on the amount of current it can handle, as well as sometimes the number of volts it can handle. Some equipment also states a power limit as well.

Batteries, and particularly the Lithium Polymer type, are rated in C for the amount of current they can discharge. So, if you have an 800mAh 20C battery the maximum current you can draw from it is 16A (20 x 0.8=16). With the battery's volts in hand (say a 3s 800mAh rate at 20C) you can generate the maximum power this battery can provide - 16A at 11.1v = 177watts. Batteries may have a burst rate, and a continous rate - so 15C at burst, 10C continous. Using the 800mAh battery again you might be able to draw 12A in burst, but only 8A continously.

Speed Controllers are often rated by the amount of voltage, and current they can handle. The amount of current that is drawn through the speed controller depends on the engine. In general you need to make sure your speed controller can handle at least as much, and ideally a little more current and power than the engine. Obviously your speed controller needs to be rated at the voltage for the battery - it will not reduce voltage either (there isn't room for a transformer there).

Engines are usually rated at the maximum current draw they can handle. They will often have a burst and continous rating. Sometimes engines are also rated for the maximum power they can handle. For example, and engine might say 18A or 200watts. This engine could handle a three cell LiPo (11.1v) @ 18 A = 198watts, but couldn't handle a 4 cell LiPo (14.8v) @ 18A (266watts). However, if you restricted the throttle so that the current never got above 13.5 A you could use a 14.8 volt battery with the motor (provided the motor can handle 4 cell LiPos).

How Much Current Does An Engine Draw

The current an engine draws depends on the propellor it spins and gearing. Generally if you buy a new engine information on propellor combinations, and how much current they draw will be included.

If it isn't, and you can't find it on the Internet, or you want to experiment with a different propellor then you really need a way to measure the current flow to make sure the engine is not drawing too much current for either the battery, the speed controller, or the motor.

If want to measure your current draw you will probably find that most cheap multimeters will only do 2 or 3 amps. I use a clamp meter, where the clamp is placed around the positive lead from the battery, and the current is measured through magnetic inductance. This has the big plus of being a lot less hassle (because you don't have to connect the metre in series) and a lot safer (as you aren't messing around with bare wires). Can strongly recommend a clamp metre if you are into this stuff.

Propellors with a larger diameter will draw more amps because they are moving more air. Propellors with a more aggressive pitch will draw more amps to a point, although the best pitch for a propellor is normally determined by how fast the engine spins (the kv rating for brushless engines - 1000 of rpm per volt).

There are two ways to reduce the amps a system draws - reduce the prop size, or limit the throttle throw if you have a computer radio.

A note on props

Props have two ratings, and by now you have no doubt figured out the first number is the diameter in inches. The second number is the pitch. What this number actually represents is the number of inches that the propellor would advance through the air in one rotation assuming no slippage.

Choice of propellors can significantly change the way an aircraft behaves. For example. A big propellor will give your aircraft a lot of thrust, and allow it to reach top speed very quickly, but top speed will be quite limited. A smaller prop will take longer to accelerate, but will have a higher top speed. Which prop you need depends on application. For a 3D model typically you are after thrust and quick acceleration. If you are building a warbird, you will probably favour higher speed at the cost of acceleration.

A few more thoughts on batteries

Flight times and capacity

If you know how many amps your model draws whilst "cruising" it is pretty easy to estimate an approximate flight time. For example, if you have an 800mAh, which draws 8A while cruising you will have an approximate flight time of 6 minutes (800/8000(8A)=0.1 of an hour, or 6 minutes).

Our model of imagining a battery as a reservoir of water holds pretty well for a lot of examples, but not under all circumstances. For example, given two batteries - a 2 cell 1200mAh LiPo, or a 3 cell 800mAh LiPo, which would provide the longest flight time.

The answer is perhaps not as simple as you might think. Because the 3 cell has higher voltage you do not need to draw as much current to achieve the same power.

Let's say you need 30watts to cruise your light parkflyer:

For the 3 cell: power = volts x current therefore 30 = 11.1 x A, A =30/11.1, A=2.7
For the 2 cell: power = volts x current therefore 30=7.4 x A, A=30/7.4, A=4.1

So, flight durations are as follows:
3s 800mAh: (800/2700=0.3 of an hour, or about 18 minutes)
2s 1200mAh: (1200/4100=0.3 of an hours, or about 18 minutes)

So, even though the 2 cell has higher capacity, because the current draw is so much higher to provide the same power, it ends up both these batteries have about the same flight time.

35Mhz Frequency Allocations

Edgar Buttigieg 55

Claude Markham 56
Mark Pavia
Emanuel Pavia
Carl Pavia

Mario Amaira 57

EMPTY 58

EMPTY 59

George Camilleri 60

Mario Aquilina 61
Charles Bonanno

Joseph Muscat 62
Saviour Micallef

Louis Gatt 63
Nicholas Mizzi

Joseph Briffa 64
Mark Muscat
Edwin Van Der Maat

Brian Busuttil 65
Joe Cassar
John Cassar
Kurt Camilleri

Ray Attard 66
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Diego Giordano
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David Schembri

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Joe Filletti
Lawrence Scerri
Stephen Vella
Vincent Zammit
Stephan Zammit

Alan Mercieca 88
Frank Mercieca

Jeremy Borg Myatt 89
Rudolph Borg Myatt
Alex Farrugia
Chris Poulton

Henry Attard 90
Joseph Bonett
Ramon Tabone
Edward Portelli
Daniel Cardona

If your name does not appear in the above list and you are utilizing the 35Mhz frequency, it means that you have not given this information to the Association. It is in your interest to know who operates on your frequency and it is advisable, therefore to inform the Association of this detail.
This list will be updated regularly.

IF UNDELIVERED PLEASE RETURN TO

MMAFA PO Box 22 Balzan BZN1000

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