N.E. Kansas Blue Sky Squadron, Inc.
Smoke Screen

I.M.A.A Chapter #291 **A.M.A. Charter #2826**

http://nekbssi.org/

Pres: Mark Davidson **VP:** Bill Miller **Secretary:** Sam Carkhuff

Treasurer: Sam Brown **Safety:** Don Regier **Editor:** Ainsley Charest **CD**:Aaron Charest

Presidents Conner

MARK'S REMARKS,

MARCH MEETING

Our March meeting will again be LIVE AND IN PERSON at the Museum of Kansas National Guard at Forbes Field Sunday, March 21 at 2 pm. It was so good to meet face to face in February after so many months of not being able to. There was a good turn out and a great spirit.

This month we will be talking about several items to get our field ready for the upcoming flying season. Here's the things I know we will be discussing:

1) **Flight Stands** - Many of our current stands are rotting and need to be replaced. It was suggested in February that we build 3 new ones this year and 3 next year. Bill and Bud were appointed to come to the meeting with recommendations. We are thinking about design changes as far as materials used, size, better wheels, etc.

2) **Mowing Committee** - We need to get a mowing committee set up for this season. Ideally I would like for someone to volunteer to be the mowing committee coordinator. There will be an opportunity to volunteer to sign up to mower at the meeting. This is a great was for you to serve our club. Ideally we would like to have enough mowers that no one has to mow more than once a month. Early in the season it may need to be mowed more that once a week depending on rain. I would like to have our goal to be that the field is mowed each week on Thursday or Friday so it will be in good shape for flying each weekend.

3) **Work Day** - We will set a date for a club work day in late April or early May. There are an number of field repairs that need to be addressed. If you know of things that need to be on the repair list please let me know.

4) **Gift to Museum of Kansas National Guard** - Each year we present this gift as a thank you for the use of this great facility during the winter months.

5) **Show and tell -** Last month it was great to see many show and tell items at the end of our meeting. If you have something to bring for “show and tell” please bring it. We would love to see what you have been working on.

If you have other items that you would like to have included on this month’s agenda, please let me know.

Club Website

If you haven’t look at our club website lately you will see in the archive section that we are including our monthly newsletter and monthly meeting minutes. Kudos to Darrin, our website coordinator, for getting this done.

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What Is Good Internal Resistance of LiPo Battery

The researchers and scientists created the lithium polymer batteries to overcome the limitation of lithium-ion batteries. However, these batteries have their own set of limitations. The LiPo batteries suffer from voltage sag and some other properties during the discharge cycle that can be explained by Ohm's law. Hence, the only possible explanation for such behavior of the lithium polymer battery pack is the internal resistance present in it.

So, today, we will explore what role internal resistance plays in the LiPo battery technology and its optimal levels. Let's begin.

How Do You Find the Internal Resistance of a LiPo Battery?

Before we learn how to find the IR in a LiPo battery, let's take a look at the definition of the term. To understand what is internal resistance, take a look at what Ohm's law states, "a circuit with load resistance R is connected to a voltage source with voltage V, then the amount of current that flows in the circuit is calculated by dividing the voltage by resistance."

However, if you take a look at the real-world examples, the statement never really holds up. There is a specific amount of current loss due to various factors like heat or wire resistance itself. And internal resistance or impedance is the property given to this opposition of the flow of current inside the circuit that creates the difference between input and output. In simple words, internal resistance creates a

difference between the voltage output and the no-load voltage, and heat is produced as a result.

It is a property that exists in all substances that conduct electricity. Hence, you can never get rid of the internal resistance entirely. And the bad thing is that this property affects the efficiency of the battery pack preventing the complete flow of power. The higher amount of IR means that the battery pack will be less efficient and provide less current.

To calculate the total internal resistance of a battery pack, you can add the individual cell resistance numbers together. According to Ohm's law, the internal resistance of a cell is calculated as,

IR = (Voltage- Potential Difference)/ Current

The formula will determine the amount of internal resistance present in the circuit. However, a consumer won't have to struggle that much to calculate the IR. Most battery packs list down the value of IR per cell on the packaging. Furthermore, there are advanced computerized chargers available in the market that will help the consumer to measure the IR of each cell they are using.

As a general rule, the IR must be as low as possible to make sure that the circuit can provide enough current to the device. But as the battery pack ages, the internal resistance increases significantly. The voltage drop becomes higher, and the battery starts to heat up until, eventually, it dies. That's why it is often recommended that you must keep the lithium polymer batteries and the other battery types as well in ideal conditions. Exposing the battery chemistry to extreme conditions affects the system and increases the IR within causing the battery to fail earlier than expected

When Do You Retire a LiPo Battery?

Now that we understand how internal resistance works, knowing when to retire a battery is the next question. To do this, you first need to know the average lifecycle of the battery which is up to 400 to 500 cycles.

The lifespan of LiPo batteries depends on other factors as well such as temperature, frequent use, physical damage, and some others. The amount of abuse you put on your batteries, the sooner they will go out. Still, the typical lifecycle of a LiPo battery of 500 cycles is around 12 to 18 months. With good care, you can make these batteries last for up to 2 years as well. But we recommend that you dispose of these batteries once they are three years old.

Along with this, as you purchase a lithium polymer battery; take the IR reading right away. As the battery ages, you can keep measuring the amount of IR increasing in the system. But make sure that you take the readings at the same temperature. The amount of IR also increases rapidly if the battery often experiences over-discharging, over-charging, overheats, and extended discharge rate for a longer period

How Much LiPo Internal Resistance Is OK?

If someone asks you this question, then there is no right answer. The lower amount of internal resistance depends on the individual circuit. Suppose you have a typical battery pack of 1300 to 1500 mAh capacity. For that much capacity, the internal resistance of the circuit should be lower than 10 to 15 m Ohm. Once the battery starts to get old, the internal resistance will rise to 15 to 20 m Ohm. And once the level goes above 20 m Ohm, it is time that you retire the battery and replaces it with another one.

So, if you ever have to ask is your battery safe for use, then you must replace it as soon as possible. And even if you don't have the means

to measure the internal resistance specifically, you will experience a change of performance in the battery that is a sign that the battery chemistry is becoming inefficient. Symptoms like battery not being able to hold the charge, sudden voltage drops, voltage sag, and reduced flight time also signify that the chemistry is affected permanently.

Article from Dongguan Large Electronics Co., Ltd was established in 2002, and the headquarters located in No. 8 Jingili Road, Dongsheng District, Dongguan City, Guangdong Province, China, which is a national-level high-tech enterprise combining with independent research, development, production and sales of lithium-ion battery pack.

Below is an experiment video about Lipo:

https://www.youtube.com/watch?v=hppXBAzdwOk&t=1s

Thanks for the info David

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Photos from the Great Show-n-Tell during February's meeting!

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Remembering Bruce Sisson

By:Vernon Nelson

March 5th, 2021 around noon Bruce Sisson passed away. Bruce was a past president of the then Blue Sky Squadron and was a very active member. Bruce was one of the nicest person that I had ever known. He had a heart of gold and would give you the shirt off his back. Bruce had several very serious health problems. Bruce had the best voice for PA announcers I have ever heard. I always tried to get Bruce to do our fly-ins when he was available. Below is a link of Bruce calling the landing for Howard Davidson from Muskogee Oklahoma at our fly-in. Rest in Peace our friend.

click on the link below (not the video picture and turn your volume up)

Big Bird 3

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New Projects

Vernon says he's about ready to unleash the Beast!!!!