The Knight Flyer

Jul – Aug - Sep 2017

Rain, Rain, go away...

The spring of 2017 was bad one for flying and for picnics.

The previous year saw a lot of sunny days and even a full scale drought.

High winds close down flying

This spring came with the exact opposite. There were a few days of teasing with great weather then it fell back into the rainy and cold pattern.

Our May picnic was cancelled three time due to extremely wet conditions at the fields.

Not so much the flying areas, but the parking lots were adversely affected.

Generally OK for one or two cars, but a disaster for a dozen or more.

So, even when our June picnic arrived with a forecast of sunny weather, the forecast was muddied with high winds.

Enough, already, with the cancellations! It was decided to have the picnic anyway. A half a loaf is better than none at all.

About a dozen Knights and their wives showed up, and though there was no flying, there was plenty of camaraderie.

Bob Waldraf and Greg Stromecki did the grill work. The dinner came together at 4 PM. The dishes brought to pass were exceptional, although light on the desserts.

Several old friends whom we haven't seen for quite a while showed up and it was great to talk about the old times.

Chuck, Hal & Tom in conversation.

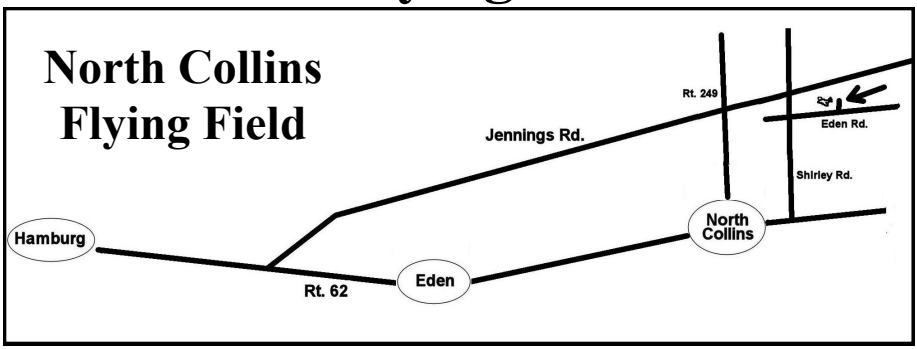
A lot of great conversation and good food. Hard to beat.

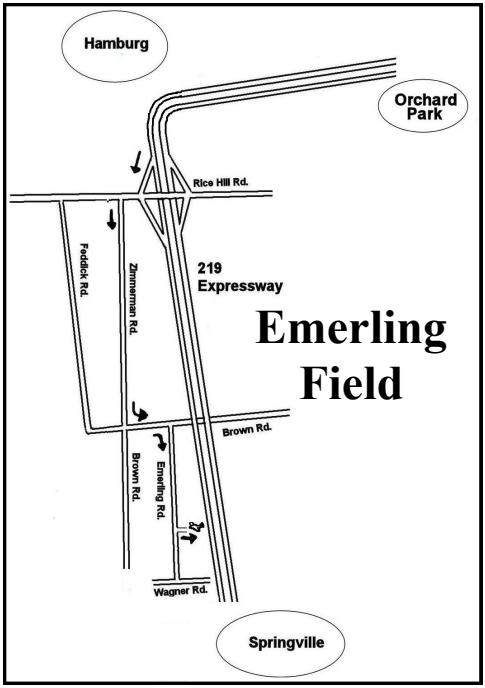
It was a lot of fun and no one seemed to mind that all those airplanes were hunkered down in the back of the cars.

Inside:

Finding our Fields ……..…… P2
Summer Stuff …...……..… ….. P3
Efficiency and Flight Time ……. P4

Our Flying Fields





Our flying fields are used for many things.

Of course, flying is the number one use, but our picnics, fly-ins and 'sometime' meetings are also held at these locations.

The club fields are located in various places around the county, so, many new members often ask;

"How do I get to the flying field"?

Main roads will take you to the location of prominent intersections.

The maps shown here will then provide the details to reach the actual field.

You can get to the NC field by taking Rt. 62 through Eden and North Collins out to Shirley Rd.

Emerling Field can be reached by taking Rt. 219 South to Rice Hill Road.

Mall Show Winners

The following people won the Mall Show contest

1. Mike Amborski
2. Bob Testerman
3. Bob Marcen
4. Bob Rogers
5. Greg Stromecki

FCC numbers no longer required.

The FCC number issue is tied up in court.

Members of organizations like the A. M. A. do not have to display the FCC number, since they already are registered and have an AMA number.

You are required to display the AMA number on your plane.

Summer Stuff

40th Stars Fun Fly

July 8, 9 2017
Olean Airport,
Hatch Hill Rd. Ischua, NY
Sat. 10 AM-5PM
Sun. 10AM-3PM
No pilot/camping fees
Sat. Wine & Cheese Social

Canandaigua Sky Chiefs Fun Fly

July 29-30, 2017
Chief's Airfield
Gehan Rd.
Canandaigua, NY
Food available

2017 Geneseo Air Show

Full Scale
Old Planes & Warbirds
Sat., Sun.
July 29-30
Geneseo, NY

Sky Rovers

Sat-Sun Jul 22, 23 2017
10 AM—4;00 PM
Ford Field, Phelps, NY
No entry /parking fee
Campers welcome, no hookups
Food available

Attention, all new members!!!

Flight Training– Flying Lessons.

Billy Hauth will be at the Emerling Road Field on Wednesday evenings throughout the summer, (weather permitting).

5 Pm until dusk. Check with Bill, re; his phone system for cancellations.

All of our new members are encouraged to take advantage of this opportunity. Don't try to go out and fly a virgin airplane with no experience.

This is a good opportunity to get some serious stick time.

You'll take your airplane home with you and have great time and many future flights.

How Efficiency Gives You More Flight Time

Weight is of paramount importance when considering an **electric** airplane.

The electric motor system, (motor, controller and battery), is much less powerful in terms of horsepower per unit of weight than our beloved gas engines. This is a fact of nature.

By improving the efficiency of our power systems by even small amounts, electric models have been made bigger, heavier and fly for longer periods of time.

All these factors greatly benefit our hobby and make everything a lot more interesting and fun.

A number of factors go into the overall efficiency of a model.

The motor, prop and battery are only part of the story.

And of course there are constraints on all of these factors, that limit just how much anyone can do.

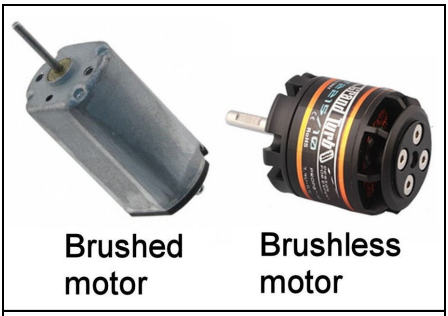


Fig. 1 Basic Electric Motors

Gas engines and electric motors are more or less comparable in weight.

Some electric motors, Fig.1, are much more efficient than others, as we'll see.

Solid State Controllers are negligible contributors to actual weight.

These three area's; the motor, the controller and the battery contributed to the great increase in our model size and flight times.

As electric flight developed, each of these areas became more efficient.

The Battery.

With electrics, ounces matter!

The real difference is going to be in the **source** of power, the battery which is the electric airplane's fuel system.

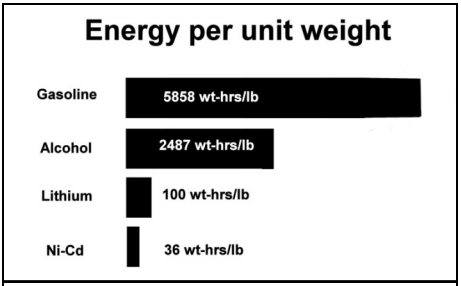


Fig. 2 Comparison of Energy Sources

Eight ounces of gasoline will trump an eight ounce battery any day of the week in terms of energy capacity, see Fig.2. Units are watt-hours per lb.

All batteries contain far less energy per unit weight than an equivalent weight of gasoline or alcohol. This can be clearly seen in the length of the run-time.

Eight ounces of fuel will allow an average model the ability to fly for twenty minutes or more.

A Ni-CD battery weighting the same eight ounces will permit a flight of a mere 4 to 5 minutes with a much lighter model.

For years, the Ni-Cd battery was used in our equipment due to it's discharge characteristics.

It had a flat discharge curve, which meant that it provided the same voltage during it's complete discharge cycle,

unlike Carbon or Alkaline batteries.

The lithium battery was a significant improvement over any other type of battery. It had nearly triple the energy density as the Ni-Cd and the same nice discharge curve. This was a significant improvement in efficiency.

More power, less weight!

The motor.

With the old style DC motor, RPM was a simple function of the voltage.

As the voltage increased, the RPM increased. Of course with the increase in RPM, the current also increased.

The current was supplied by the battery, which was soon exhausted.

The type of motor we use now are variations of **brushless** motors.

The brushless motor was a huge improvement over the older type.

(It's not really new, it's been around for a hundred years, but new controllers make it simple to use).

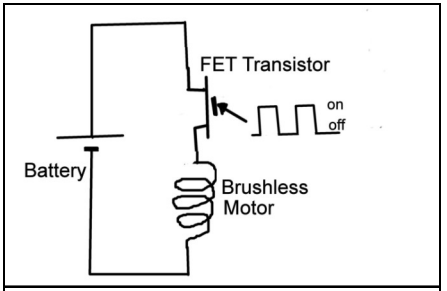


Fig. 3 FET switch controls current pulses

RPM is a function of time. Pulses of current are delivered to each winding at the appropriate time to cause the motor to rotate.

This is the reason they are more efficient. **Maximum** current is applied in bursts at the proper time as determined by the selected RPM.

Each pulse of current goes only to the particular winding where it is needed to cause the motor to rotate.

No current is wasted and no losses are incurred through the use of brushes.

The voltage still determines the RPM, but through the clever use of switches each winding gets the current only at the time it's needed and only for the duration required. See fig. 3.

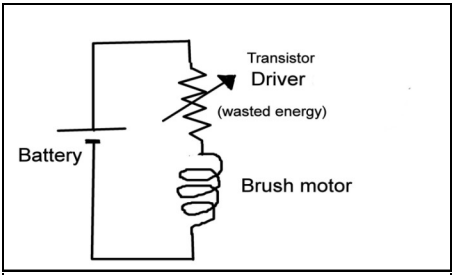


Fig. 4 Current flow to brushed motor

Current is supplied only at that time and is zero the rest of the time.

This burst of current goes only to the winding needed to turn the motor.

The motor therefore only uses current when required.

The controller.

The motor controller, only has to supply this current at the specific times when it is needed, and only to the winding where and when it is needed.

With the old motor and old controller, current was continuously flowing.

On average, that was half the current all the time, See Fig. 4.

The average current was usually wasted and went into simply heating the driver transistors.

This wasted energy had to be provided by the battery, resulting in smaller motors or shorter flight times.

If we could use current only when we actually need it, energy could be saved.

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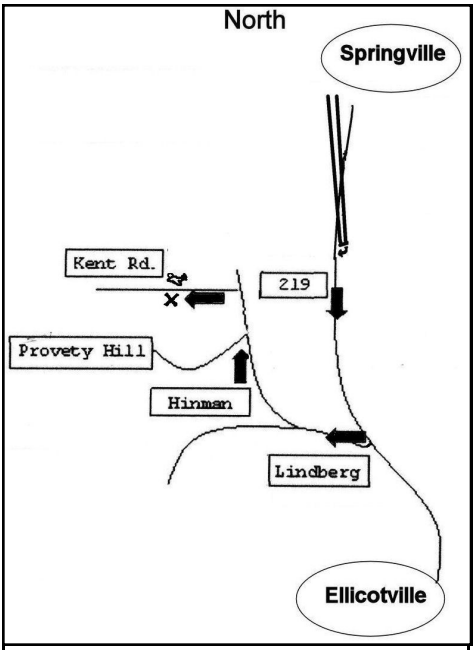

Ray's Field,

July Fun-fly Picnic to be held at Ray's Field

Our July picnic will be held at Ray Barron's place on Sunday, July 16th.

It will feature barbequed chicken.

For several years, Ray has hosted this picnic and it is a favorite.

The flying field high in the hill's is superb. This is a picnic that you will really enjoy.

If you are going to Ray's picnic, on 7/16, **please call or email Ray**.

He needs to know how many will attend so that he can order the food.

His phone is **699-4716** and his email is: **rgbasb@hughes.net**

Continued from Pg. 5

This little trick is accomplished by a special kind of transistor, called an F.E.T. It stands of Field Effect Transistor.

This transistor is used in a switch mode, which means that it is either all on or all off.

When "on" it supplies full current to the motor winding. When in the "off" mode, zero current flows.

The use of Field Effect transistors resulted in simple on-off bursts of current to the motor windings.

When the current was full **on**, the drop across the transistor was nearly zero. In terms of watts, (voltage times current), the power loss is near zero.

When the current was full **off**, the power loss is again nearly zero.

Current from the battery went directly to the motor winding, with none being wasted in the switching devices.

Very efficient!

Greater efficiency, better flying.

The use of a light weight Lithium battery, an efficient controller and a brushless motor resulted in a very efficient power system.

All these improvements in efficiency translate into models that are bigger and fly for longer periods of time.

A lot of add-ons such as retracts, flaps and multi-engines become a reality due to the added capacity.

This resulted in a much better power to weight ratio for the electric power portion of the model.

This added capacity makes for better models and more fun.

On the horizon: Two new types of battery are being developed. One is a Magnesium-ion battery with about 180 wt-hr/lb and the other is a Lithium-air battery with a whopping 450 wt-

More Summer Stuff

Knight's Air Show

Sat. & Sun.
Aug. 12 & 13
2017
Nike Base
Hamburg, NY

Flying Dutchmen

48th Annual
Scale Rally
Sat.- Sept 9, 9-5PM
Sun.-Sept 10, 9-3PM
2017
Kitchner, Ont
(near St. Jacobs)
On-site camping
$10 $15 w Hydro
Fri nite– corn roast
Sat nite 5PM
pilots only
Wine & Cheese

The Great Electric Fun Fly

Sat-Sun
August 19-20, 2017
N. Hampton Park
Brockport, NY
RCCR

Southern Tier Float Fly

Sept.16, 17th
2017
Hornell, NY

Knight's Club Picnics

Aug. 20	**NC Field**
Sept. 10	**NC Field**
Oct. 1	**NC Field**

KNIGHT'S SWAP SHEET

If you have something for sale, or looking for that special something, put your request in "The Swap Sheet". Free to all club members.

3rd Q 2017

Schedule
Fri. 7/21, 8/4, 8/25, 9/15

St. James Church 7:30 PM
New members 6:30

Board Meeting
Tue. 7/18, 8/1, 8/22, 9/12

Major Tom's Hamburg 7:30 PM

Officers

President: George Fox
Vice Pres: Bill Hauth
Secretary: Greg Stromecki
Treasurer: Ray Barren

Board

Bob Rodgers, John Scarantino
Bob Waldraff & Mike Woelfel

Editor: Jim Devlin
Webmaster: Stu Brierley

The Flying Knights of Hamburg, NY

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