

the

MONITOR

April

The MRCS Officers

2013

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Next Meeting: Date: Wednesday, April 3, EAA Building
Time: 7:00 p.m. video, 7:30 Meeting, Mettetal Airport

What's In This Issue:

Model Aircraft Power System Data Collection: A Personal Account – The March Business Meeting – March Show and Tell – Upcoming Toledo Show Announcement - Announcing the 2013 Mid-Am – Upcoming Events

March Meeting

The 7:00 o'clock video was "US Navy Carriers". It covered the history of USN carriers.

use tuned pipes on glow fueled 2-stroke model engines.

An analog or optical tachometer was used to 'set the pipe length' for the engine and chosen propeller while the plane was on the ground.

**The March Presentation
Model Aircraft Power System Data
Collection:
A Personal Account
By Ken Myers**



In the late 1970s and early 1980s, it was common for AMA pattern planes to



Helicopter Frequencies

21, 27, 29, 39, 41

Sailplane Frequencies

11, 12

The NorCal Avionic's tachometer, on the left in the photo, was also a receiver and transmitter pack voltage checker, voltmeter and ammeter. Both tachometers require natural or DC lighting for their readings.

Neither unit could/can retain data.

Tuning on the ground was followed by flight testing of the results.

The propeller/engine/pipe combination would 'come onto the pipe' when the propeller unloaded in the air and the pipe had 'warmed up.'

The tuning and flight testing was/is a tedious, repetitive process.

Onboard or telemetry data collection could aid this process by taking RPM readings in the air and reporting pipe temperatures.

Electric takes flight

In the early 1980s I entered the electric era. My first electric was a Midwest Sweet Stick with an Astro Flight, non-cobalt, 25 direct drive. A serendipitous meeting with Keith Shaw lead to a much greater involvement with electric power systems.

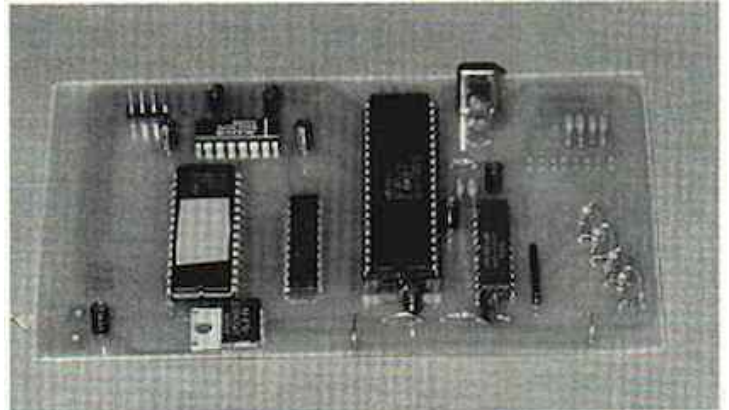


An Astro Flight Whattmeter, power meter, allowed me to check the electric motor and battery amps and volts under load. It could not record or log the data. For bench testing power systems, I used a video camera on a tripod to record the RPM, using an optical tachometer, and the Whattmeter data. The simultaneous data could be written down by playing back the tape and pressing pause.

Early inflight and bench testing data recorders

In 1992, Bob Kopski, *Model Aviation's* electric flight columnist, was reporting on electronic data logging and capture for display on a computer.

In the October 1993 *Model Aviation*, in his "Radio Control Electrics" column, Bob Kopski announced that Flightec (Phil Thayer) would produce a printed-circuit board for computerized data-collection.



Flightec RC Data Logger board—offered separately at a lower cost for more advanced users. Details in text.

It used a serial adapter and program written in BASIC to view the data.

Phil sent me a prototype unit. It had to be assembled. I never got it working correctly.

I was still very interested in computerized bench and inflight data logging.

In the November 1997 *Ampeer* I wrote, "I have a challenge for all of you "electronics" experts out there. Design a light-weight unit to go in a plane to measure RPM, Amps, and motor voltage, and store that data for download to a computer via a serial or parallel connection. Supply the computer software to display a graph(s) of that data through the whole flight, and do it for less than \$200. Yes, I know it has been done, but the units I've read about are overly expensive for the "curious", average modeller to afford. How about it? Can it be done, be accurate, and be relatively inexpensive? km"

In June of 2006 the optical tach/Whattmeter/video tape process was replaced with an Hyperion Emeter. It was able to save five data points that could be transferred to paper.

In January of 2009 the Emeter was replaced by the much more capable Hyperion Emeter 2. The 2 has a remote data unit (RDU) that can be carried onboard to collect data. All data can be logged and then viewed on a computer.



Emeter on left & Emeter 2 with RDU on right

Seagull and Medusa were some of the earlier pioneers.

The Seagull wireless telemetry used a wireless dashboard flight system using 900MHz transmission. It had a range of up to 1.2 miles.

The systems were very expensive; \$370 to \$520.

They also had a USB Flight Data Recorder for those not needing wireless telemetry. It was \$170.

It could be used to gather the following data; GPS positioning, RPM, temperature, air speed, amps, servo current, exhaust gas temperature, cylinder head temperature, and G-forces.



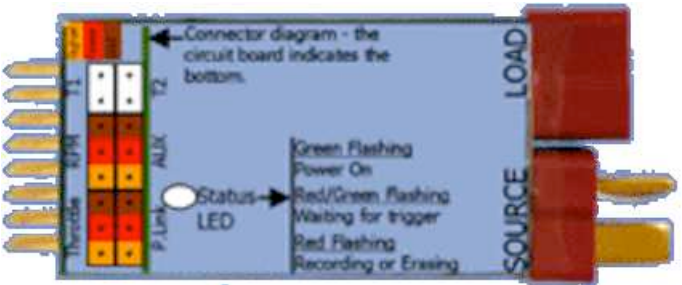
Seagull™ Wireless Telemetry

EAGLE TREE SYSTEMS

Labels in diagram: Servo Current Monitor, G-Force, EGT Thermocouple, Ring Thermocouple, In-Hz GPS, Jet ECU Monitor, Seagull Telemetry Transmitter, Data Recorder/Seagull Airborne Components (Pro Model with Optional accessories shown), 100 Amp Current Monitor, Brushless RPM, Optical RPM, Magnetic RPM, Micro Temperature, Loop Temperature, Prog. Static Table, Jet ECU Monitor, Seagull Telemetry Transmitter, USB Connection to Laptop, Netbook, or PC, Live Telemetry Handheld Display with programmable Audible alarms, Powerful software for Live and recorded data display and analysis.

During the 1990s, several more logging and telemetry units appeared on the market. Some of them logged the data in the aircraft and others used telemetry to send the data back to a 'receiver' unit.

Medusa produced the Analyzer Pro and Oracle Data Recorder. They are no longer available. They also had the ability to record most of the data needed by RC pilots.



Eagle Tree Systems still has the Seagull products available and the eLogger V4, which is very similar to the Medusa Oracle.

Data logging Electronic Speed Controls

In the January 2007 *Ampeer* I reviewed the Jeti Spin 44 amp ESC and Spinbox. The ESC logged data; temperature, RPM, volts and amps. The data could be viewed on the Spinbox. Other means of viewing the data are now provided by Jeti.

<http://www.jetimodel.com/index.php?page=products&old=0&category=82>

The Castle Creations Ice ESCs also have this capability. The ICE data can be viewed on a computer.

Neither companies' ESC data collection is very accurate when compared to other data recorders!

2.4GHz Radio System Telemetry

The advent of bi-directional 2.4GHz radio systems has allowed companies such as Spektrum, FrSky, Futaba and Hitec to provide real time data telemetry to some type of ground receiving unit.

Many times the data is sent back to the transmitter, but not always. Both Spektrum and Hitec have the ability to display the recorded data on handheld devices.



Hitec data on the iPhone

Spektrum Nitro data collection shown



Spektrum data on i-devices

While data collection is often associated with electric power systems, both gas and glow planes can benefit from collected data.



Spektrum

<http://www.spektrumrc.com/Air/Telemetry.aspx>

FrSky

Modules and data transmission ‘receivers’

<http://www.frsky-rc.com/Products.asp?BigClassID=17>

Hitec

<http://www.hitecrd.com/products/aircraft-radios-receivers-and-accesories/telemetry/index.html>

Futaba

A search of Tower Hobbies for Futaba Telemetry yields the info.

Upcoming Usage

In the fall of 2012 I became much more interested in in-flight data collection.

While my Emeter 2’s RDU (remote data unit) can collect the data I want in the plane, I also wanted to try out another unit.

For my inflight testing this year I will be using the Eagle Tree Systems eLogger V4 with the Brushless RPM Sensor. I also purchased the PowerPanel LCD Display Expander to be able to use this system as a typical power meter.

All three items were delivered to my door via Tower Hobbies for \$85.97, including the free shipping. That is well below the \$200 mark I was looking for in 1997.

Data presentation

Most loggers/recorders are provided with software that presents data in a graphical and numeric manner. I prefer a numerical presentation in a spreadsheet.

Emeter 2			eLogger			Ice 50		
Volts	Amps	RPM	Volts	Amps	RPM	Volts	Amps	RPM
12.94	0	0	12.86	0.18	0	12.81	0.00	0
12.94	0.2	0	12.86	0.18	0	12.81	0.00	0
12.9	1	180	12.82	1.1	3105			
12.89	1.2	1911	12.84	0.97	3105	12.81	5.40	3070
12.84	2.7	4731	12.77	2.5	3105			
12.63	6.1	7225	12.64	5.63	3990	12.67	8.20	4373
12.43	10.2	6471	12.45	9.42	4767			
12.02	18	4859	12.06	16.71	5737	12.37	18.10	5642
11.52	28	5708	11.53	26.99	6738			
11.52	28	6188	11.12	33.97	7025	11.47	33.80	6879
11.14	34.8	6822	10.99	36.05	7002			
11.1	35.6	7062	10.93	35.99	7060	10.58	36.60	7011

There is usually some way to open the ‘captured’ file in a spreadsheet.

**How NOT to set up data logging
A Warning!**



Horizon Hobby has provided a video on YouTube, “HorizonHobby.com How To - Using Spektrum Telemetry Part 1”, that demonstrates how **NOT** to set up data logging.

<http://www.youtube.com/watch?v=GmcUNFnJYug>

Whenever the power system is being worked on, the prop MUST be removed!

After Ken’s presentation, **Keith Shaw** shared info and showed a 1984 telemetry system from Germany that measured RPM and airspeed. He also noted that Castle Creations is working on a new ESC called the Edge that will provide data to 2.4GHz radios systems with telemetry capabilities.

The March Business Meeting

Arthur Deane opened the meeting by passing around a get well card for Rick Sawicki who is recovering from knee surgery.

Lynn Morgan noted that this is the last meeting for paying dues without the late penalty being applied.

Scott Rellinger gave the treasurer’s report.

Scott also tendered his resignation after serving as club treasurer for 18 years!

The written resignation reads:

Wednesday March 6, 2013

Scott Rellinger
15003 Ellen Drive
Livonia, MI 48154

To the Officers, Board of Directors and
Membership of Midwest RC Society, Inc.

Please accept this as my letter of resignation from my position as treasurer of Midwest RC Society, Inc. At this time I am unable to devote the time necessary to be actively involved as club treasurer. After eighteen years of continuous service, as treasurer of Midwest RC Society, Inc., it is time for me to resign my position. I honorably and respectfully step down from my duties as treasurer due to increased demands of my family life and work life.

Thank you for electing me and allowing me to serve as your club treasurer over the past eighteen years.

Sincerely,
Scott Rellinger

Scott's resignation was accepted and then the membership voted that he be given a lifetime membership to MRCS for his long and dedicated devotion to the club.

Arthur Deane noted that the bylaws provide that the officers and board of directors of the club may appoint a member to fill a vacancy. **Mike Russell** has been appointed to fill Scott's position of treasurer for the remainder of 2013.

Ken Myers made motions that his recommendation to change the bylaws and field rules be accepted. The changes were passed.

ARTICLE 8: MEMBER STANDING, section 3 of the bylaws now reads:

3. Flying members are required to have a current AMA membership. All first-time flying member applicants, as well as present flying members seeking membership renewal, must show proof of current AMA membership.

Field Rule 1.0 Safety now reads:

1.1 Fliers must provide proof of AMA, AMA Park Pilot, or MAAC membership. Provisional Student pilots may only fly specific aircraft, designated by their primary flight instructor and reported to the head flight instructor, without direct pilot supervision. Student pilots and visiting pilots fly flights under the supervision of MRCS "Pilot" members.

Ken also noted that MRCS member Jon Quisenberry was in the hospital with congestive heart failure.

March Show and Tell



George Lemieux brought in is big, beautiful Balsa USA 1/4-scale Sopwith Pup. He noted that it is not a true scale model. The engine is too far forward and the wheels too big. He didn't care for the joining rods between the top and bottom ailerons and change the aileron control to a pull-pull type of setup. He still has a lot of work to do on the model including the flying wires. He noted that the kit is still die cut and that the balsa wood is not of the best quality.



Keith Shaw shared his version of Radical RC's 1905 Wright Flyer. Keith has added a lot of details including a dummy engine, pilot, motor chain drive and 'cross country tanks' containing the A123 2300mAh cells that drive the brushless motors. He said that the wing warping works very well. He has made a dolly for dolly launching the model. The dolly is steerable and works very well.



Bill Brown also shared a Wright Flyer but his is the Model B version. **Jim Young** helped Bill with the CAD plans and Mark Freeland, of Retro RC, did the laser cutting. He has had a lot of help on this project and has gathered a huge amount of information on the full-scale plane. It is built to 1/10 scale.

Bill has the basic dummy engine completed but it still needs more detailing.

His version is based somewhat on the Vin Fizz version. Vin Fiz was a soda pop that sponsored a cross USA flight of this type of aircraft.

Bill has sat in and photographed the full size recreation in Dayton, OH. He has signed up to take a flight in the replica when the winter weather breaks.

In creating this model, he has spent the most amount of time on research.

R/C Model Show "The Toledo Show"

At the SeaGate Centre

401 Jefferson Avenue Toledo, Ohio 43604

April 5th, 6th, & 7th, 2013

Show hours: Fri/Sat 9am to 5pm - Sun 9am to 2pm

Tickets readily available at the door!

Admission is only \$10.00 per person per day

Kids 12 and under are FREE!

Mid-America Electric Flies Saturday, July 13 & Sunday, July 14, 2013

Hosted by the:
Ann Arbor Falcons and Electric Flyers Only

Flying Site Provided by the:
Midwest R/C Society

Contest Directors are:

Ken Myers phone (248) 669-8124 or
kmyersefo@theampeer.org

<http://www.theampeer.org> for updates & info

Keith Shaw (734) 973-6309

Flying both days at the Midwest R/C Society Flying Field - 7 Mile Rd., Salem Twp., MI

Registration: 9 A.M. both days

Flying from 10 A.M. to 5 P.M. Sat. & 10 A.M. to 3 P.M. Sunday

Pilot Entry Fee \$15 a day or \$25 both days

Parking Donation Requested from Spectators

Saturday's Awards

Best Scale

Most Beautiful

Best Ducted Fan

Best Sport Plane

CD's Choice

Sunday's Awards

Best Scale

Most Beautiful

Best Mini-Electric

Best Multi-motor

CD's Choice

Planes Must Fly To Be Considered for Any Award

Saturday's & Sunday's Awards:

Plaques for 1st in each category

Open Flying Possible on Friday

Night Flying Possible, Weather Permitting,

Friday & Saturday Nights

Refreshments available at the field both days.

Potluck picnic at the field on Saturday evening.

Come, Look, Listen, Learn - Fly Electric - Fly the Future!

Merchandise drawing for ALL entrants

To change your email address contact Ken Myers at kmyersefo@mac.com

The 2013 membership application is available at the club Web site,
<http://www.midwestrcsociety.org>,
 for downloading with the link on the homepage.

IMPORTANT: Channels 36 & 56 May NOT be used at the 7 Mile Rd. Field

Upcoming Events:

April 3, Wednesday, Midwest monthly meeting at the EAA building, Mettetal Airport. 7 p.m. aviation related video, 7:30 meeting.

April 3, Wednesday, HORIZON Hobby Pre-Toledo Visit with the Skymasters, Ultimate Soccer Arenas, 7 p.m., this is always interesting! Joe Hass 248-321-7934 or <http://www.skymasters.org> for info & flyer

April 5, 6 & 7, Friday, Saturday, Sunday, Toledo RC Expo, Seagate Center, Toledo, OH, Web site info <http://www.toledoshow.com>



July 13 & 14, Saturday & Sunday, 29th Annual Mid-America Electric Fliers, MRCS 7 Mile Rd. field, Ken Myers, 248-669-8124, Web site info & flyer <http://www.theampeer.org>

Midwest RC Monitor
 Editor: Ken Myers
 1911 Bradshaw Ct.
 Commerce Twp., MI 48390

The Next Meeting:

Date: Wednesday, April 3, 2013
Time: 7 p.m. Video, 7:30 Meeting
Place: EAA Building, Mettetal Airport