

the

Monitor

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Newsletter Editor: Ken Myers	Next Meeting: Date: Wednesday, May 3 Time: 6 pm at the flying field, early birds get best parking	

What's In This Issue:
 April Meeting - Some New Battery Developments And Other Power Storage Options - The Business Meeting - Monthly Club Fun Fly Planned - Upcoming Keith Shaw Birthday Party Electric Fly-in 2017 - Upcoming Watts Over Wetzel - Upcoming 33rd Annual Mid-America - Upcoming Events

The April Meeting

The 7:00 video was from the AMA Ultimate Model Aeronautics Video Library. It was part of Volume One. The section "Warbirds Over Delaware" was shown. It showed many of the great warbirds and scale models flown at this meet.

Some New Battery Developments And Other Power Storage Options

A Presentation by Ken Myers

Ken Myers began his presentation with highlights from the August 2016 MIT News.

<http://news.mit.edu/2016/lithium-metal-batteries-double-power-consumer-electronics-0817>

Doubling battery power of consumer electronics

New lithium metal batteries could make smartphones, drones, and electric cars last twice as long.

"Founded in 2012 by MIT alumnus and former postdoc Qichao Hu '07,

SolidEnergy Systems has developed an "anode-free" lithium metal battery with several material advances that make it twice as energy-dense, yet just as safe and long-lasting as the lithium ion batteries used in smartphones, electric cars, wearables, drones, and other devices."

"With two-times the energy density, we can make a battery half the size, but that still lasts the same amount of time, as a lithium ion battery. Or we can make a battery the same size as a lithium ion battery, but now it will last twice as long," says Hu, who co-invented the battery at MIT and is now CEO of SolidEnergy.

"The battery essentially swaps out a common battery anode material, graphite, for very thin, high-energy lithium-metal foil, which can hold more ions — and, therefore, provide more energy capacity."

"... the first application will be drones, coming this November (2016). 'Several

Helicopter Frequencies

21,27,29,39, 41

Sailplane Frequencies

11, 12

customers are using drones and balloons to provide free Internet to the developing world, and to survey for disaster relief,' Hu says."

"We can make the battery half the size and half the weight, and it will travel the same distance, or we can make it the same size and same weight, and now it will go 400 miles on a single charge."

"Hu developed a solid and liquid hybrid electrolyte solution."

"The end result was a battery with energy-capacity perks of lithium metal batteries, but with the safety and longevity features of lithium ion batteries that can operate at room temperature. "Combining the solid coating and new high-efficiency ionic liquid materials was the basis for SolidEnergy on the technology side,' Hu says."

"Through Hu's MIT connections, SolidEnergy was able to use the A123's then - idle facilities in Waltham - which included dry and clean rooms, and manufacturing equipment-to prototype."

"After three years of sharing A123's space in Waltham, SolidEnergy this month (Aug. 2016) moved its headquarters to a brand new, state-of-the-art pilot facility in Woburn that's 10 times larger - and can house the wings of a Boeing 747" Hu says - with aims of ramping up production for their November (2016) launch."



<http://www.solidenergysystems.com>

<http://www.nature.com/nature/outlook/batteries/pdf/batteries.pdf>

Ken wondered if these cells might be 'vaporware' as it is now April of 2017 and they don't seem to be available.

He also noted that John Grazan, of Revolectrix, had, just in the past couple of weeks, been in Japan meeting with representatives of SolidEnergy who were demonstrating their materials to one of Japan's largest cell makers.

Next Ken shared some history of the LiFePO₄ development, as it has a direct relationship with some newer developments.

Lithium iron phosphate battery (Summary)

Recommended background reading on the lithium iron phosphate battery (LiFePO₄).

https://en.wikipedia.org/wiki/Lithium_iron_phosphate_battery

Quoted and paraphrased from the above source:

1.) LiFePO₄ was developed by **John Goodenough's** research group at the University of Texas in 1997.
 2.) In 2002, Yet-Ming Chiang and his coworkers at MIT (Massachusetts Institute of Technology) reported that they had successfully doped the cathode with appropriate cations¹ - such as aluminum, niobium, and zirconium allowing development to move forward. Products using the doped nanophosphate materials, developed by Prof. Chiang, were in high volume mass production by A123Systems and were in use in industrial volumes by major corporations including Black and Decker, DeWALT, General Motors, Daimler, Cessna and BAE Systems among others.

1. Cations (cat-eye-ons) are positively charged ions. Cations have fewer electrons than protons.

Ken explained that after much infighting and many lawsuits between MIT and UT and with the demise of A123 Systems, Inc., John Goodenough has a new team at the University of Texas working on a new battery technology.

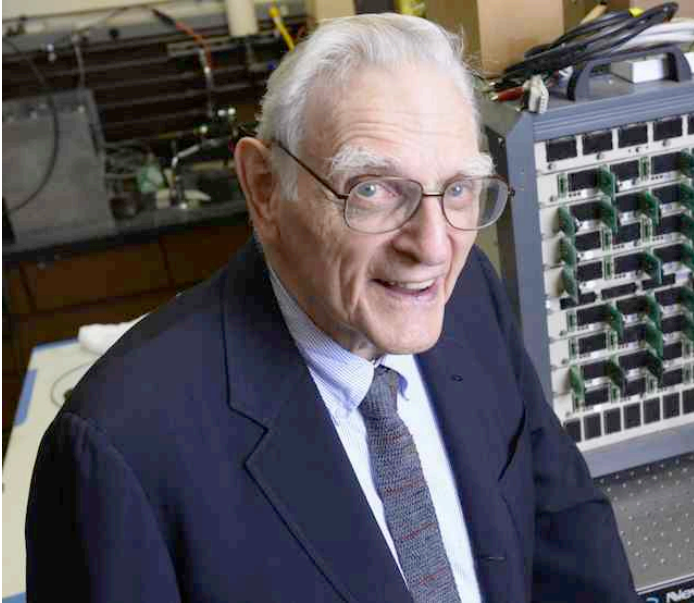
UTNews (The University of Texas at Austin), February 28, 2017

<https://news.utexas.edu/2017/02/28/goodenough-introduces-new-battery-technology>

Lithium-Ion Battery Inventor Introduces New Technology for Fast-Charging, Noncombustible Batteries

"A team of engineers led by 94-year-old John Goodenough, professor in the Cockrell School of Engineering at The University of Texas at Austin and co-inventor of the lithium-ion battery, has developed the first all-solid-state battery cells that could lead to safer, faster-charging, longer-lasting rechargeable

batteries for handheld mobile devices, electric cars and stationary energy storage.”



John Goodenough

Goodenough’s latest breakthrough is a low-cost all-solid-state battery that is noncombustible and has a long cycle life (battery life) with a high volumetric energy density and fast rates of charge and discharge.

“The researchers demonstrated that their new battery cells have at least three times as much energy density as today’s lithium-ion batteries.”

“The UT Austin battery formulation also allows for a greater number of charging and discharging cycles, which equates to longer-lasting batteries, as well as a faster rate of recharge (minutes rather than hours).”

“Today’s lithium-ion batteries use liquid electrolytes to transport the lithium ions between the anode (the negative side of the battery) and the cathode (the positive side of the battery). If a battery cell is charged too quickly, it can cause dendrites or “metal whiskers” to form and cross through the liquid electrolytes, causing a short circuit that can lead to explosions and fires. Instead of liquid electrolytes, the researchers rely on glass electrolytes that enable the use of an alkali-metal anode without the formation of dendrites.”

“...the solid-glass electrolytes can operate at -20 degrees Celsius. This is the first all-solid-state battery cell that can operate under 60 degree Celsius.”

“The engineers’ glass electrolytes allow them to plate and strip alkali metals on both the cathode and the anode side without dendrites, which simplifies battery cell fabrication.”

““The glass electrolytes allow for the substitution of low-cost sodium for lithium. Sodium is extracted from seawater that is widely available,” Braga said.”
* Maria Helena Braga is a Cockrell School senior research fellow working with Goodenough on this project.

Ken concluded by showing a video from PBS from February 2017. The video is entitled “Search for the Super Battery”.

https://www.youtube.com/watch?v=pCDuM_apIg8&t=68s

The most significant section for us, in RC modeling, is a battery that uses a ‘plastic’ electrolyte. It was created by Michael Zimmerman of Tufts University.

<https://www.youtube.com/watch?v=m9-cNNYb1Ik>

Ken noted that none of these ‘new’ batteries appear to be ‘just around the corner’. He reminded us to safely use and store our present LiPo batteries, and all batteries.

The April Business Meeting

Midwest RC Society president, **Arthur Deane**, thanked Ken for his battery technology presentation.

Lynn Morgan, club secretary noted that at the time of meeting, we have 44 members, 41 of those are paid members.

Dave Stacer, club treasurer, reminded everyone that Friends of the Field donations can be sent directly to his address, noted in the newsletter header.

Rich Sievert, field safety officer, said that their have been no reported safety issues at the flying field. For the time being, flying is at the Northville and Novi parks.

Ken Myers, vice-president reminded folks about the 33rd Annual Mid-America Electric Flies being held at our flying field on July 8 and 9.

Arthur Deane noted that the Friends of the Field donations have become a significant part of our operations. He noted that this is the best means we have to cover our expenses without changing the

dues, which creates a whole other problem of lost memberships. He noted that checks should be made out to the Midwest RC Society and sent directly to Dave Stacer.

With all of the rain and snow in the first part of April, the flying field and entries to the field are in bad shape. Entrance through the farm is still acceptable, as needed. We want to make sure that no ruts are created in either entrance or the parking area of the field. Don't go in to use field until an email notice is sent out stating that the field is ready to use.

Ken Myers reminded everyone that the club Web site, noting field and entrance conditions, is constantly updated and should be checked for the latest information.

Three guests were introduced.

Jim Hazlett was a modeler taught to fly by Keith Shaw. He moved out of state and was out of modeling for quite awhile. He's now coming back.

Dave Lewis, originally from Wales, is just getting into RC flying. He's been flying indoors for a bit now and is looking forward to moving to outdoor flying.

Jim Burke hasn't flown in many years. He is very interested in getting back into control line flying. This is really good for us, as more folks will now be using the control line circle.

Welcome gentleman. Hopefully we will be seeing you at the flying field soon.

Breaking News: Monthly Club Fun Fly Planned

This year we will be running a monthly fun fly at the flying field. It will take place on the Saturday morning after the regular Wednesday evening flying club meeting. The format will be to set simple challenges for members to complete. The event will be 25% skill, 75% good luck. A typical event could be to see who can take off, complete a simple manoeuver and land closed to a preset 30/45 second time limit. Only problem is that pilot must whistle or sing when in the air. (Hearing some members sing could be a deterrent). Whistling /singing requirement is designed to prevent unscrupulous members from counting time. Electronic timers, are of course

banned.

It is designed to be a fun event to bring members together. It will be run by Pete Waters.

Upcoming Keith Shaw Birthday Party Electric Fly-in 2017

From CD Dave Grife via Email

The Balsa Butchers are hosting the "Keith Shaw Birthday Party Electric Fly-In", for the 16th year, at their field near Coldwater, MI. The event takes place on Saturday, June 3, 2017. It is a one day event again this year.

The event consists of Open Electric Flying with a "Special Guest of Honor Theme".

Enjoy a day with the "Pioneering Master of Electric R/C Flight". 8 am - 5 pm Saturday, \$15 landing fee.

For additional information contact;

Dave Watson 517-250-6190 or

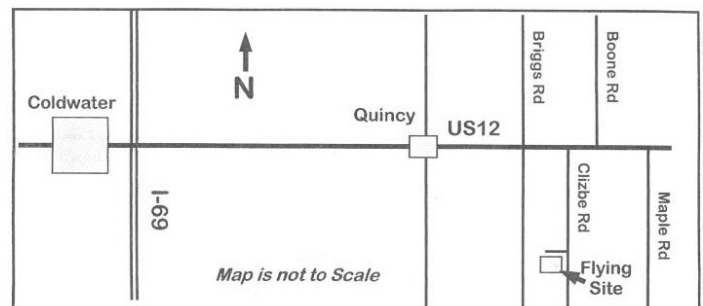
flybuddy619@yahoo.com

Contest Director: Dave Grife - E-mail:

grifesd@yahoo.com or Phone: 517-279-8445

Please e-mail or call with any questions.

The field will be open for guests to fly on Sunday as well.



Directions: Quincy is approximately 4.5 miles east of I-69. Clizbe Road is approximately 1.6 miles east of Quincy. The Flying site is approximately 1.5 miles south of US-12 on the west side of Clizbe Road.

Upcoming Watts Over Wetzel

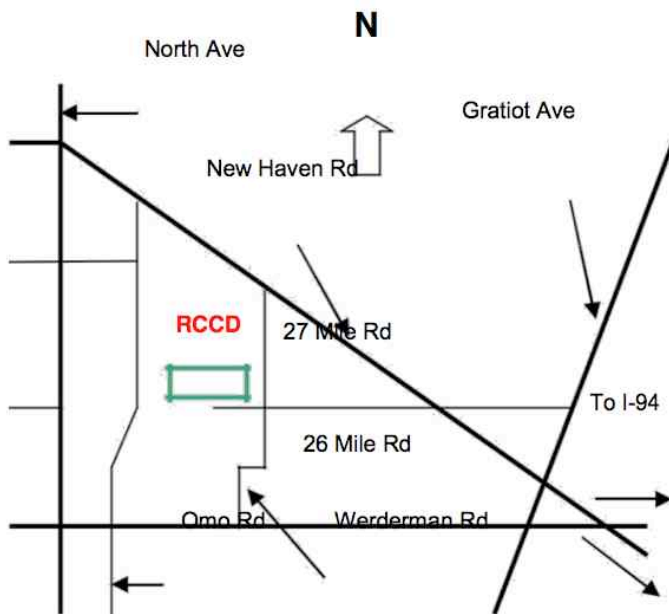
Radio Control Club of Detroit (12th Annual RCCD Electric Fly-In)

Date: May 20th. & 21st. 2017

Times: Pilots' Meeting at 8:45 am

Flying Starts at 9:00 am

Location: RCCD Flying Field in Wetzel State Park
(see map below)



Format: Fly-In: Electrics only, any size (110V power available for charging)

Landing Fee: \$10.00 Daily or \$15.00 for both

Event Updates at: www.rccd.org/WOW.htm

Ample parking, Food & Refreshments, Raffles, Limited bleacher seating available. Sun Shades Suggested, Vendors on site.

Pilots Prizes #1: All registered pilots will receive one ticket, good for a chance at one prize each. You do not have to be present to win, but must make arrangements to pickup your prize.

Michigan Recreation Pass required for Park access
CO-CD'S

Phil Laperriere -586-228-9583

John McCormick - 586-596-8403

Follow and Like us on Facebook:

www.facebook.com/WattsOverWetzel

Upcoming 33rd Annual Mid-America Electric Flies
2017

AMA Sanctioned Event

Saturday, July 8 & Sunday, July 9

Hosted by the:

Ann Arbor Falcons and Electric Flyers Only

The 7 Mile Rd. Flying Site, Salem Twp., MI, is Provided
by the:

Midwest R/C Society

Contest Directors are:

Ken Myers phone (248) 669-8124 or

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 4 P.M. Sat. & 10 A.M. to 3 P.M.
Sunday

Pilot Entry Fee: 18 and over, \$15 Sat. - \$10, Sunday, (ask about the family rate), Under 18, FREE

Parking Donation Requested from Spectators

Saturday's Awards - Best Scale, Most Beautiful, Best Ducted Fan, Best Sport Plane, New Foam Flurry for NCM Aircraft, CD's Choice

Sunday's Awards - Best Scale, Most Beautiful, Best Mini-Electric, Best Multi-motor, **New** Most Unique NCM Aircraft, 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 and join us for two days of fun and relaxed electric flying.

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

Merchandise drawing for ALL entrants

New Events for this year for NCM (Not Conventional Materials) aircraft.

Traditionally, model aircraft airframes have been mostly constructed from balsa wood, plywood, spruce, and fiberglass. For the purposes of this meet, NCM airframes are mostly constructed from not conventional materials i.e.; sheet foam, foam board, cardboard, block foam, foam insulation material, etc.

Foam Flurry for NCM aircraft: This is a true event. It is based upon the all up/last down event of early electric meets. Any NCM aircraft may be used (no ARF types). Power systems are limited to a maximum of 3S (no paralleling) LiPo batteries or 4S maximum, no paralleling, for A123 packs. All planes qualifying for this event will launch at the same time, and the last one to land will be declared the winner.

Most Unique NCM Aircraft Award: A new award will be given on Sunday to an aircraft in the NCM category that is judged as 'most unique' by the Mid-Am panel of judges.

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

**The 2017 membership application is available at the club Web site,
<http://www.midwestrcsociety.org>,
for downloading with the link on the homepage.**

Upcoming Events:

Tuesdays, Indoor Flying at the Ultimate Soccer Arenas in Pontiac, 10 a.m. to 1 p.m.

NOTE: even though the winter indoor sessions ended April 11, they will continue fly this spring at Ultimate through the end of April, and maybe longer, if interest remains high enough for a cost of \$8 per session for all pilots.

May 3, Wednesday, MRCS 1st flying meeting of the year, 6 p.m. or earlier for best parking. See ya there!

May 6, Saturday morning, Fun fly events hosted by Peter Waters

May 20 & 21 Radio Control Club of Detroit's 12th Annual All Electric Fly-In, Watts over Wetzel (Wetzel State Park), large number of pilots, awesome flying site, Great food, Raffles and prizes, email the contest director, John McCormick, for more details or visit theRCCD Web site. (details in this issue)

May 28 "John's Jets", at Pontiac Miniature Aircraft Club (No further info available)

June 3, Saturday, Keith Shaw Birthday Electric Fly in (details in this issue)

July 8 & 9, Sat. & Sun., 33rd Mid-America Electric Flies (details in this issue)

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

The Next Meeting:

Date: Wednesday, May 3, 2017

Time: 6 p.m. 1st flying meeting of the year

Place: @ the flying field, early birds get best parking