The Seminole Flyer

SEMINOLE RADIO CONTROL CLUB TALLAHASSEE, FL

Charter member of the Academy of Model Aeronautics since 1969

AMA Charter Club 216

AMA SINCE 1936

50 Years of Responsible Model Aviation and Community Support

Merry Christmas 2019 Happy New Year 2020 Issue

Party!!

Members enjoying our Christmas celebration

Club Meeting News

Jeff Owens, Secretary

Our annual Christmas Party was held at Chuy's Restaurant on December 19, 2019. Thirty members and guests were in attendance. A short business meeting was called to order by President Jay Wiggins at 7:20 PM.

Secretary's Report – Jeff Owens – The minutes of the November meeting were posted on the web and in the Newsletter. The minutes were approved as posted. The slate of officers was presented – all current officers have agreed to continue. A motion to approve was made and passed unanimously. Jay Wiggins announced that the current appointed officers (Safety, Field, and Training) had also agreed to continue.

Treasurer's Report – Bill Ashbaker – The report was presented and approved by the membership. Bill announced that Marcy Driscoll will be taking over as the Newsletter Editor.

Field Update – Jay Wiggins – The status of the field was described and a tour for members was announced for 11:00 AM on Saturday December 21. It is anticipated that we will be moving in late February 2020.

The meeting was adjourned at 7:35 PM.

Time to Renew Club Membership

It is the time of year to renew annual club membership. Our **2020 club membership dues should have been paid before the end of the year.**

All things that keep our field a nice place to fly are paid from membership dues. Dues are our only source of income and provide gas and maintenance for the mower, field repairs and improvements, insurance, electric bills, state and national fees and the list goes on.

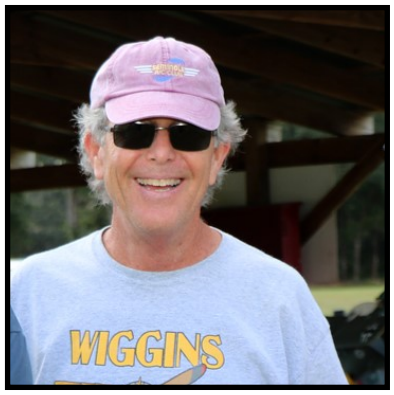
Annual dues are: $60.00 for general membership, $75.00 for family membership and $20.00 for junior membership. You may pay the treasurer at the field or at one of our club meetings. Or, you may mail a check to the Seminole RC Club at 2509 Napoleon Bonaparte Drive, Tallahassee, FL 32308.

Or, you may pay with PayPal. From PayPal home page:

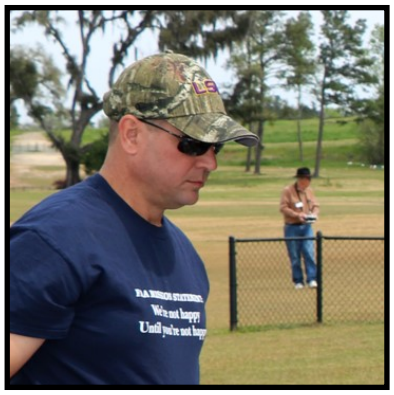
1. Click the Send & Request tab at the top of the page.
2. Enter seminoleradiocontrolclub@gmail.com on next page.
3. Enter dues amount and click Change on next page.
4. Click Sending to a friend on next page.
5. Click Send Payment Now on next page. (A small PayPal usage fee is added to your total.)

We hope you will continue your club membership. We have a great hobby filled with fun and brief moments of sheer terror thrown in for excitement.

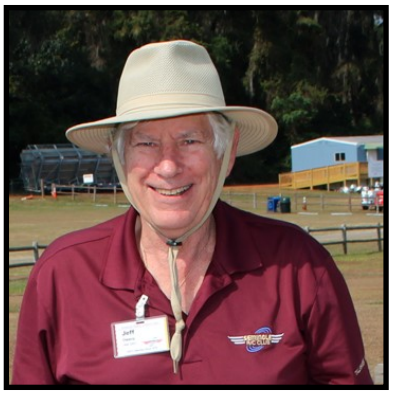
Your (Almost) New Club Officers for 2020



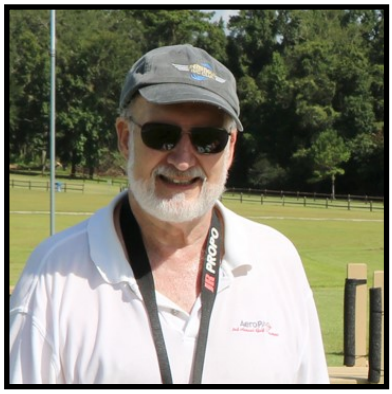
Jay Wiggins
President



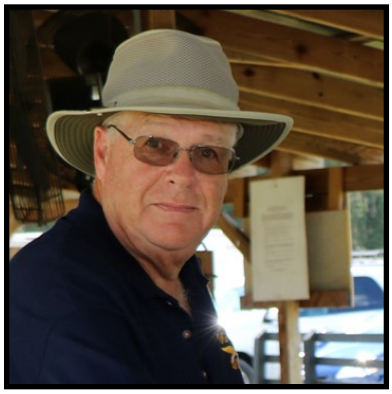
Rhett Boudreaux
Vice President



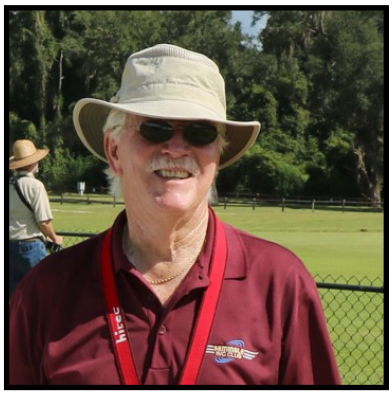
Jeff Owens
Secretary
Club Web Master



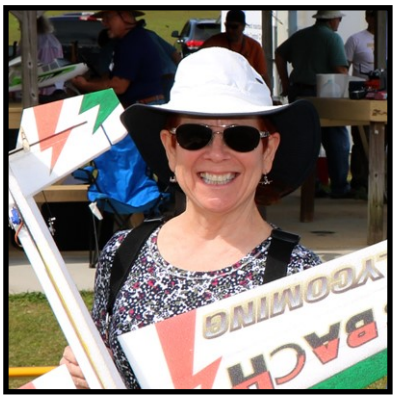
Bill Ashbaker
Treasurer



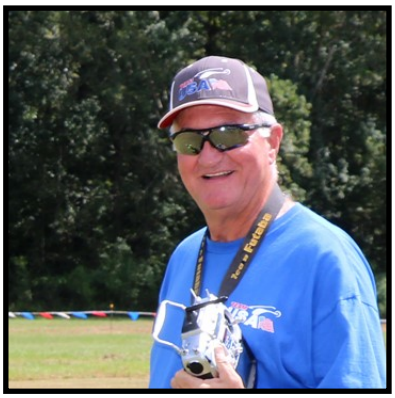
Jim Ogorek
Safety Officer



Geoff Lawrence
Training Coordinator

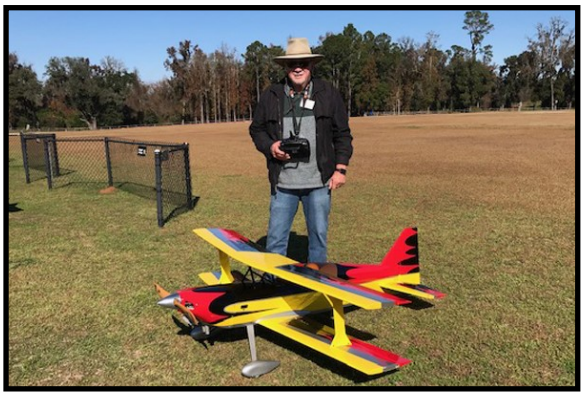


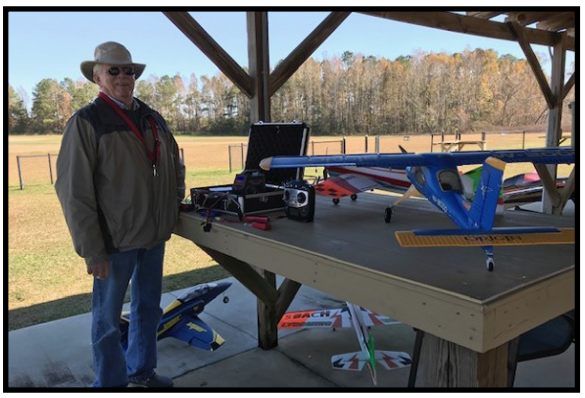
Marcy Driscoll
Newsletter Editor

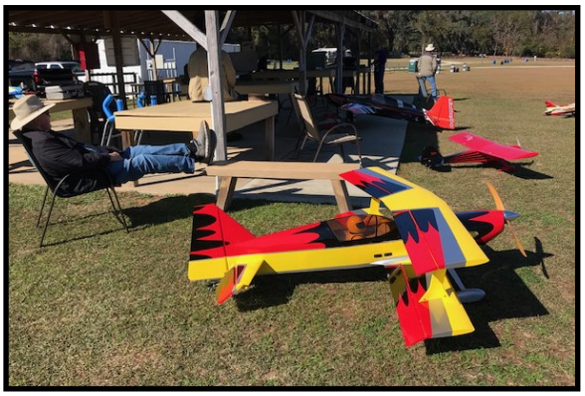


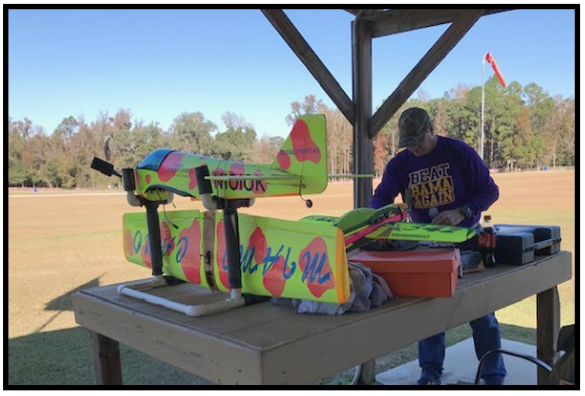
Gordie Meade
Field Marshall

Around the Field









3D Printing Basics

By Dan Ouellet 3D.DanoSoft.Com

Last time in part 2, we took a brief look at 3D Printing Extruders, Hot-Ends and common filament materials normally used in the hobby.

To summarize, PLA, PETG and ABS will most likely be the main types of filament used by the modeler. For this reason, only 3D printers with a heated-bed *(build platform)* should be considered.

Although it is possible to print some types of ABS and PETG filaments specifically designed for low temperatures, (230 to 240 C), both ABS and PETG normally provide better results and yield stronger parts when they are printed at 250 to 270 C.

Therefore, an "All-Metal" Hot-End is usually preferable to an "Improved" model.

In this installment (part 3), we will examine the advantages and disadvantages of both open source and closed source machines, as well as the benefits and shortcoming of Kit vs Ready-To-Run 3D Printers.

3D Printing Basics

Part 3

The RepRap project's goal was to create self-replicating open source machines that cost just a few hundred dollars and are available to everyone.

The project's open source nature implies that all the technology associated with the project is freely shared to everyone for their use. This includes, all inventions, drawings, code, software, designs, etc.

It also means that anyone is free to improve on, or derive new concepts and idea based on the original designs, as long as the improvements, ideas, and/or inventions are shared back under the same terms and conditions as the original, and the credit is given to the original author(s) of the design(s) for their part in the new design.

The use of such liberal licenses leads to very rapid improvements of the original RepRap machines from the hard work of many individuals and corporations around the world. This is the main reason there are so many affordable 3D printers available on the market today.

Some individuals and companies take the Open Source implications seriously and will readily publish their designs, including all drawings, code, software, etc., on a timely basis. Others do not.

One major advantage is that with an open source machine, should the manufacturer cease to exist or no longer support the unit, it should be possible to get access to the original design and source code, thereby allowing the fabrication of parts needed to keep it going and/or improve it.

Not only is it possible to upgrade such a unit to your heart's content, it is sometime desirable to do so. A good example is Prusa Research. They constantly improve their designs and publish the improvements to encourage their users to make new parts to upgrade their existing printers. They take this to such an extreme that it is very easy, and com-

pletely legal, to freely downloads the files necessary to print all the parts to build a new up-to-date printer yourself.

Closed Source (Proprietary) Machines

Close source machines are sold at a premium with a standard warranty from their vendor. Their design is closely protected by the manufacturer with patents, trade secrets and/or copyrights. It is not possible to have access to the original drawings and/or source code of the unit. In many instances, it is not even legal to modify such a 3D printer after purchasing it, without the consent of the manufacturer.

The manufacturer is usually the only provider of spare/replacement parts. Therefore, should the manufacturer no longer support the unit, because it is obsolete or no longer made, or because of any other reason, it is likely that a defective unit would have to be scrapped.

On the other hand, high-quality 3D printers are available from reputable manufacturers, and the successful ones support their equipment and their users very well.

Typically, "Closed Source" 3D printers are used in large engineering firms and manufacturing environments where time is very valuable. Often, they are purchased along with a service contract.

In many instances, the 3D printer is part of a closed loop vertical system were not only the 3D printer, but the software used to prepare the files for printing and the actual printing materials are all provided by the manufacturer.

A reputable firm allows the manufacturer to control the quality of the printing process from the beginning to the end, to ensure the best possible results for the user.

Think of the machines from quality vendors as very sophisticated tools that either just work or have a reliable support organization that can come in and fix the problems quickly. Something akin to a large photocopier.

On the other hand, some other manufacturers take advantage of this closed loop system to force their users to only purchase their own branded consumables, at a high premium. Many do so with "chipped" spools of filament where the printer will not print any material unless it has the proper "chip" identifying it.

Others do so by providing slicing software that is tuned for their specific brand of materials, without any provision for the user to change the material specific parameters for using material from other vendors. In these instances, their own material will work very well. Anything else will not work as well or may fail altogether.

For these reasons, you must evaluate all the negative and positive impacts when making a purchase decision.

Kits vs Ready to Run Units

Most "Closed-Source" 3D printers can only be purchased ready to run. They usually arrive boxed as a unit which is already tuned, and factory calibrated. The user only needs to unpack it and follow an established final calibration procedure to get the 3D printer ready to print. Some larger or specialized units may even include on-site setup and calibration of the 3D printer by a factory authorized team as part of the purchase price of the unit.

On the other hand, many "Open-Source" 3D Printers can be purchased either as a kit, or as a ready-to run unit, or as something in between; i.e.: a mostly build machine that requires some assembly of the pre-built major sub-components, which should take just a few minutes to make the 3D printer ready to initialize.

Kit machines are basically that. They normally consist of a bunch of individual parts and sub-components. Usually everything that is required to assemble and build a functional 3D printer. They should also come with instructions, although not all kit providers offer the same level and quality of instructions. Some providers include very detailed assembly manuals with step-by-step instructions and corresponding pictures, while others may only include the barest of instruc-

tions listing the basic parts and wiring diagrams.

In many instances assembly and build videos are available online either from the manufacturer or 3rd parties interested in the product.

Depending on the vendor, and the level of sub-components integration, a kit may even require that the user cut and terminate individual wires, solder components on the controller board, program, compile and flash the firmware, etc.

Some more sophisticated kits arrive with the parts pre-sorted by individual assembly steps, pre-programmed main boards, cut to length pre-terminated wires and some if not all wire harness pre-assembled.

Assembly of the 3D printer is followed by a tuning phase were the 3D printer will be checked to make sure that all the electronics, heating elements, temperature sensors, limit switches, stepper motors, and cooling fan parts operate normally, and the parts that are supposed to move, do so smoothly without interference with other parts and/or the frame.

Following the tuning, the 3D printer should only need to be calibrated, so it is ready to print.

Personal Experience

So far, I have owned and used six different 3D printers. One was a ready to run machine, three were mostly built kits and two were full kits:

- Monoprice MP Select Mini V1 ready to run
- Monoprice Maker Select 3D V2 mostly assembled kit
- Prusa i3 MK2s kit
- Creality CR10-S mostly assembled kit
- He3D K280 Mega Kossel Delta kit
- FLSun QQ Delta mostly assembled kit

All four mostly assembled kits consisted of just a few major sub-assemblies that I was able to bolt together, and wire in under an hour following the included quick assembly guide.

The only issue that I had was with the FLSun QQ. There were a couple of problems with the electronics that took a while to figure out.

However, FLSun had excellent support via Skype texting, considering the 12 hours' time difference. Their support person's written English was good, and he made sure to follow through with the diagnostics and advice until the problems could be identified. Once the issues were confirmed, they sent replacement parts from the factory.

The Prusa i3 MK2s arrived well packaged with a very detailed step-by-step assembly manual and a second detailed tuning and calibration manual. The components needed for each assembly step were packaged in separate bags for each step. Plus, there was another bag that contained additional spare parts, such as bolts and nuts of each size, just in case it was needed. The wires were all pre-terminated and the electronic board was pre-programmed.

Prusa Research claims that the kit can be put together in 4 to 6 hours. However, it took me a couple days just to read the extensive documentation.

3D.DanoSoft.Com

Prusa Research has detailed online videos covering each individual assembly steps in the manual.

All in all, I really enjoyed the build and learned so much in the process. I would recommend any of Prusa Research's kits without reservation to anyone that has any experience building aircraft or helicopter kits.

On the other hand, the He3D K280 arrived well packaged with separate boxes for the electronic components. Unfortunately, the rest of the kit consisted of just a few large bags of loose parts, including the bolts, nuts, carriage wheels, frame triangles and such.

The instructions were minimal. Just a single sheet listing the components on one side and a wiring diagram of the electronics to the main board on the other. I had to research how to assemble the 3D printer and eventually settled on following the video instructions of another "Kossel" kit manufacturer to figure out how to assemble the unit. As of this writing, it looks like He3D now has a short series of build videos which should help.

All together it took me close to one month to get the 3D printer ready for its first print.

My recommendation is that even if this unit is very good for the price, it is not suitable for a novice.

In the end, you will have to decide what is most important to you and your particular requirements when making a purchase decision.

Part 4

In the next installment, we will take a closer look at some general guidelines for bed leveling, basic 3D printer calibration procedures, printer maintenance and other tips and tricks.

Useful links to sites with additional information

Monoprice imports and rebrand many inexpensive 3D printers.
URL: https://www.monoprice.com/pages/3d_printers
Prusa Research – High Quality 3D Printers kits and fully assembled machines
URL: https://shop.prusa3d.com/en/
Creality 3D – Good Quality Chinese manufacturer of mostly assembled 3D printers
URL: https://www.creality3d.shop/
He3D – Chinese RepRap compliant 3D printer kit integrator
URL: URL: http://www.reprap.cn/
FLSun 3D – Good quality Chinese 3D printer kits and mostly assembled machines
On Amazon URL: URL: https://www.amazon.com/stores/node/20050450011?_encoding=UTF8&field-lbr_brands_browse-bin=FLSUN&ref_=bl_dp_s_web_20050450011

Other links

The online store for the objects that I design
URL: https://www.myminifactory.com/users/DanoSoft

Seminole Radio Control Club
Tallahassee, Florida

Officers

President	Jay Wiggins	moonangelb@gmail.com
Vice President	Rhett Boudreaux	geobatch@aol.com
Secretary	Jeff Owens	jfolso@comcast.net
Treasurer	Bill Ashbaker	bill.ashbaker@comcast.net
Field Safety Officer	Jim Ogorek	jim.ogorek@yahoo.com
Field Marshal	Gordie Meade	lmeade@fsu.edu
Training Coordinator	Geoff Lawrence	k4nkc@comcast.net

Media Managers

Web Master	Jeff Owens	jfolso@comcast.net
Newsletter Editor & Publisher	Marcy Driscoll	robin.marcy@gmail.com

Flight Training

Primary flight training is available by appointment on Saturdays from 10:00 am until 2:00 pm when the weather is nice and not too breezy. Contact the Training Coordinator or one of the instructors to make an appointment:

Geoff Lawrence 850-591-6879
Jeff Owens 850-545-7482
Bill Ashbaker 850-656-5932

Jim Ogorek 850-766-2477
Mike Atkinson (Tuesday Only) 850-251-2694
Troy Emmett (Large Aircraft) 770-546-6199

Field Hours

Electrics/Sailplanes	30 minutes before sunrise until 30 minutes after sunset 7 days/week
Gassers/Nitros	10:00 AM until 30 minutes after sunset except Sunday. Sunday gasser/nitro flying begins at 12:00 PM. All gassers and nitros must have a suitable muffler.

The Seminole Flyer is a publication of the Seminole Radio Control Club of Tallahassee, Florida.
We welcome and encourage items for publishing in *The Seminole Flyer*. Please submit your suggestions to SeminoleRadioControlClub@gmail.com in Word format. Thank You.

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