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R/C Report

Gauai 540H Hexa Flyer

Aerial photography for the hobbyist.

I've stated this before, and it is something all hobby dealers should be aware of, but there are four major pastimes in this country, and they are: collecting, painting, photography and the traditional hobbies that are sold in the local hobby store.

Many of our customers enjoy pastimes beyond what we call traditional hobbies also. As an example, Al's Hobby Shop sells entry level coin collecting supplies, and has a number of paint sets on-hand as well. These aren't products for the more advanced collector or artist, but they are available for sale to the consumer.

It is not uncommon for consumers to enjoy multiple pastimes I've had an interest in photography for many years. You won't often find me traipsing through the woods looking at wildlife through a viewfinder, but hand me a couple of tickets to a car race and I'll walk in the gate with my neck straining under the weight of all the gear.

I'm not alone either. We have a number of avid amateur photographers who are on staff with this magazine. Not only do Dennis Andreas and Keith Pruitt take their own photographs, but Gary Coughlin and Alan Peglar who work in layout also have a deep interest in photography.

Technology has been advancing faster than the average person can begin to keep up. sUAS (small Unmanned Aerial Systems) have been a hot topic for several months and not only is the AMA (Academy of Model Aeronautics) working at the national level to define what is legally a model and introduce these devices as a hobby,



The Gauai 540H Hexa Flyer was combined with a lightweight Sony Action Cam and a JR 9503 for control, and it is opening a whole new world of aerial possibilities for me as an amateur photographer.

but individual states are passing laws regarding sUAS on a near daily basis.

That said, the laws have been instituted defining what constitutes a model sUAS, and this breaks down into basically line of sight flight. No remote video or flying beyond the line of site is allowed. That is simple enough that every radio control aviation enthusiast should be able to

understand what the law-makers are dictating.

It's only natural that an individual who has an interest both in photography and model aviation would want to combine the two. There are a number of sources popping up for sUAS vehicles. Looking online, several of these remind me of the days when we first saw a flood of miniature helicopters hit the market. Many of these helis were questionable in design, and the same goes for the number of multi-rotor products now available.

The solution was easy. Contact was made with Jack Burnside of Empire Hobbies. Empire Hobbies has a reputation for standing behind the products it sells, and Jack is well known in the industry for his support of hobby dealers. For those who don't know Jack, he's can be a

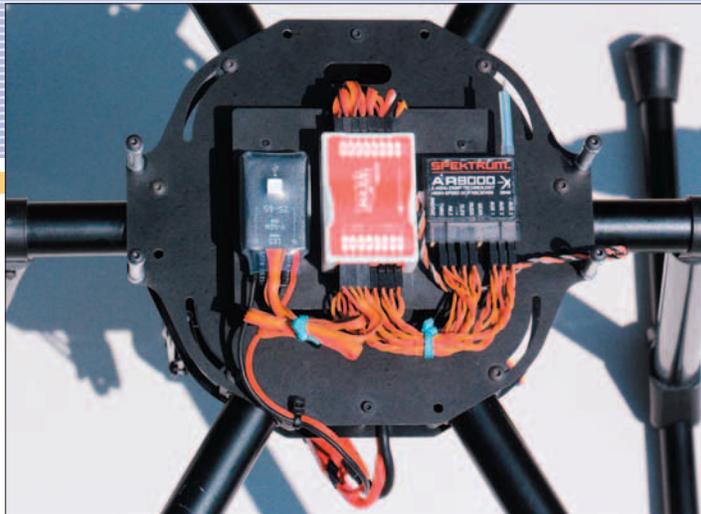
pretty entertaining individual — thank goodness for his partner Dave Sobel who keeps a rein on Jack — but he knows his products and he can answer any questions a dealer can have without having to constantly refer to his books.

After listening to my goals, Jack made his recommendations. The Gaiu 540H Hexa Flyer is the main lifting body. Added to the 540H is a Gaiu Crane II fully articulated camera mount and a Sony Action Cam is the camera of choice. Lastly, what is most likely the most important part of the package is a DJI-Innovations NAZA M Autopilot. Don't misinterpret the words autopilot. A better term would be control unit. What this little gem does is lock onto six GPS transmitters during flight and electronically gyro stabilizes the entire platform, to include the camera mount.

The package was not inexpensive, but for the goals I have in mind it is completely affordable, and well within the price range of a hobby. A person can spend less and a person could spend a whole lot more, to include a \$50,000 Sony camera, so when you go over the list of products with your customers make certain you understand what they are looking for.

After what seemed like an eternity, the packages finally arrived. I was a little taken aback when I opened the 540H Hexa Flyer box. It didn't contain what we normally see today. I actually had to build the thing, like in the old days when model helicopters first hit dealers' shelves, but the bags of screws and bolts were marked A through Z plus the contents were listed on the bags also.

A quick inventory was made of all the components, and everything was there except I couldn't find any instructions for the DJI-Innovations Autopilot anywhere. Finally giving in, the DJI website was checked, and this is



The heart of the Hexa Flyer is the DJI-Innovations NAZA M Autopilot which stabilizes the unit and controls each of the six ESCs.



Opening the box was somewhat of a surprise as unlike many of today's buy-it and fly-it products the Gaiu 540H must be assembled.

where the manual and other downloads are made available to the consumer.

It didn't take long to realize why there's no manual in the box. The "quick start" guide alone is 43 pages long. This doesn't include the specific instructions

for the type of radio control system used (all of the major brands have their own set of instructions) or the information needed to program the autopilot. This is in addition to the quick start guide. The programming also requires a patch between the device and a computer so the latest software and firmware updates can be installed and will require codes from the unit to activate, but this is all part of the package.

Assembly was begun, and I'll admit it was fun, but became a little tedious. As we are all aware, the translation from Asian to English is sometimes confusing. Plus there are six booms to be assembled, and the assemblies are each different. Some require the mounting holes to be located on the right, and some the left. Plus, the motors alternate between clockwise and counter clockwise rotation.

Assembly proceeded quickly and is not difficult, but some basic knowledge of how a model helicopter is assembled is a huge help. And thank goodness Charlee Smith of BSI (Bob Smith Industries) handed me a bottle of blue thread locker during the NRHSA Show. This proved to be extremely valuable during the assembly process.

Once the Hexa Flyer was assembled, mounting the camera platform seemed anti-climactic. The unit is pre-assembled and only requires attaching a mount to the main chassis, and the platform then plugs into place.

Mounting the receiver and autopilot is not at all difficult and is explained in the quick start guide, and then again in the detailed guide for the particular system cho-

sen. Battery selection is not really part of the system. There is a chart which is only a guide when it comes to selecting a battery, but there's nothing etched in stone.

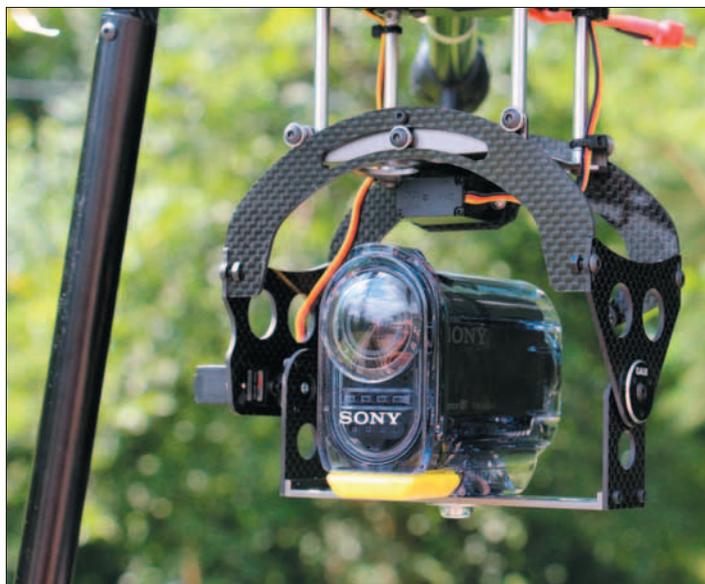
The ESCs (there are six) will accept anything from a 2S to a 6S pack, with 3S packs of varying mAh the most recommended, but in this case the weight of a camera needs to be taken into account. Like most modelers, I have a wide selection of batteries to choose from, so a lot of experimentation will take place before deciding which pack fits my requirements.

The radio control system chosen for the 540H was a trustworthy workhorse of a radio, the JR 9503. There were a few reasons why I chose this system, and the first is going to sound worse than it is, but I don't use the transmitter that often. I have no problems with JR, and I've never experienced so much as a glitch with the system, but other than a couple of helicopters, it's rarely used, so there is no conflict with other models. The second reason I chose the JR is Model-Match. Most dealers are aware of this feature, but basically what it means is if you've accidentally left the transmitter memory on a different model, nothing is going to work until the transmitter is properly set. The last reason the 9503 was chosen, and this is going to sound silly, but I have a pair of oversized knobs for the control sticks. Not only do they look cool, but they allow for easy control of the Hexa Flyer.

Programming the autopilot appears daunting, and at first even a little overwhelming, but it's not hard. It just takes time. I don't see any possible way for an individual to complete the programming of the autopilot without following the instructions step-by-step and to the letter. After every few steps the manual will instruct the user to run a test to see if everything is working up to that point, and how to diagnose and repair the problem if it's not. I'm not a technology whiz, and if I can do it, anyone can.

The first few flights of the Hexa Flyer were nothing less than a heart-stopper. There wasn't a thing wrong with

the machine, quite the contrary, it worked perfectly, but there is a certain investment involved, and I didn't want to ball everything up into a wad of broken parts before having the opportunity to explore the envelope.



The camera mount is fully articulated and is completely stabilized, which allows for clear photos regardless of the 540H's attitude.

Regardless, once all of the motors were checked (over and over again) for proper rotation the autopilot was sequenced and according to the LEDs everything was working exactly as it was supposed to. The initial liftoffs were really nothing more than short hops with the Hexa Flyer remaining in ground wash until the systems were all determined to be properly functioning and confidence grew, then a real flight was initiated.

The 540H was put into a hover when the stabilization system kicked in. This thing wasn't going anywhere unless it was told to move. I could have set the transmitter down and had a cup of coffee, and it would have been where I left it, but that wasn't the purpose of the flight. After a few minutes of moving the sUAS around the sky in a small pattern and aiming the camera at different locations, the 540H was brought in for a landing.

Like any hobby product, the ins-and-outs of the Gauji 540H Hexa Flyer are not going to be learned in one day. Add to this a camera that has not yet been explored to its



The 540H is proving to be a whole new learning experience and it's the challenge that makes any hobby, including aerial photography, fun.

fullest potential, and there is a lot of room for growth and this is the sort of thing that makes the hobby of aerial photography, or any hobby, fun.

There are a number of options available for the 540H such as LEDs which help with orientation in the sky. Plus there's a wireless video setup, for out of sight operation, but this takes the unit out of the hobby circle and puts it in the realm of the professional, and you may have customers who are, so become familiar with what Empire has to offer.

Regardless of any personal feelings dealers may harbor about drones, they aren't going anywhere. The technology exists and it is in demand, so dealers need to educate themselves and cash in on what is quickly becoming the most popular radio control product to hit the market since the release of the first electric model helicopters. **HM**