

While all that sounds terrible, the modern PPG sport incorporates details like a weight-shift harness, adjustable suspension arms, engine side thrust, and piloting techniques that reduce or control gyroscopic effects. Every PPG pilot flying today (except X4 pilots) is subject to those effects, and they appear to be having a lot of fun, so it's not a problem. The quad motor feature simply zeroes out those effects and adds to the fun.

#### THE SOUND FACTOR

The quad-powered PPG has a distinctive sound reminiscent of the earliest ultralights due to the short direct-drive props. It's a higher frequency than a normal PPG, and it attracts attention. The noise might be reduced with the use of ducting or with composite props optimized for low noise. The current props are \$22 wood props from China. In the meantime, quad PPG pilots should consider noise abatement as a part of routine operations (as should we all). John noticed the sound is much worse when

heard from behind than from the front. People on the ground barely hear him coming, but once he goes by it really attracts attention. A turn away from spectators during climb-out would be helpful.

#### BATTERIES AND CHARGING

Any pilot switching to electric power will notice a significant change immediately. You can't suddenly decide to grab your machine and a can of gas and go flying. Some planning is needed because the batteries must be charged in advance. It is a limitation, but no different than that imposed on RC and drone pilots. It's just part of the operating environment. The batteries do not last forever. However, the cost of periodic battery replacement compares very favorably with that of a 300-hour overhaul on a Rotax engine. The logistics of battery charging must be considered. You can fly the X4 with two or four or even six batteries, but you must have enough charging capacity. A dual-channel charger, which costs \$275, can

charge one pair. You would need a charger for each pair or a complex charging station.

The X4 concept works and will help bring in new ultralight enthusiasts who are attracted to the technology. It is very successful for short flights in a lightweight, very low-cost simple machine. The typical PPG flight may only be 20 minutes, but plenty of folks want more flight time and a more conventional flight experience. Test flying is underway for a single-motor, single-prop version, the SP140. Preliminary results indicate a flight time of 50-60 minutes in a 58-pound package that can be charged with a single connector. Thrust is slightly higher than the X4, and the projected cost is in the range of the average gasoline-powered PPG. Find information and links to videos on the [www.OpenPPG.com](http://www.OpenPPG.com) website and on YouTube. **EAA**

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