



Photo: Vlad Blanch

better electric propulsion will work.

After the show I did a little more work on the trike to make it ready for flight-testing. Static balance was rechecked. I stopped at Mike Theeke's Fly Hard Trikes near Chattanooga on the way from Florida to New York. He was very helpful and loaned me a North Wing Stratus for flight-testing.

I arrived at Fly Hard late Friday afternoon, not expecting to fly until Saturday but since conditions were good we hooked up the trike to the wing and started testing. The first few flights were low passes down the long runway at about 10 feet of altitude; the next day I flew some circuits around the airport. The trike flew just like a regular ultralight, no surprises.

Sunday afternoon I was feeling pretty confident so I attached my hang gliding variometer, altimeter and airspeed instruments to the control bar and went for a flight. There was a little lift north of the airport and I was able to climb up with the electric thrust to the areas of lift, then shut down or cut the power way back and core a few thermals. There were also large areas of strong sink. When I found myself sinking out I just turned my power control knob up and powered out of the area.

After an hour of this I came back to the airport and landed. I couldn't get the smile off my face. It is one thing to figure something is going to work well and quite another to experience it.

The voltmeter on the trike was now

showing that I had used about 40% of the available charge. In these same conditions another one-hour flight was still possible without recharging. Some of the duration was due to thermal lift, so I estimate a no-lift run time of about 1½ hours with this trike/wing combination.

Since then I have put about 40 hours on the trike. A 1½-hour flight at the Ellenville, N.Y., hang gliding site was the longest with the folding prop. I took off from Wurtsboro airport, flew down the ridge about nine miles past the hang glider takeoff to the town of Ellenville, and was able to soar there for a while. The thermals coming off the town were great! At times the vario was pegged at 1000fpm up with the power unit off. After playing in the lift there and buzzing the hang glider takeoff I flew back to Wurtsboro to land. Again, I still had some battery capacity left in the packs. I usually fly about an hour when there is no lift and land with substantial power left in the battery packs. This partial discharge use increases the cycle life of the batteries greatly.

One thing people noticed about the trike was that it was not completely quiet. Although no earplugs were needed, the direct-drive, 53-inch prop was spinning at 3000 RPM at full power and about 2300 RPM at cruise. Though low-pitched and not offensive, the prop-tip noise was a little more than I wanted.

A reduction drive was made. I needed an odd ratio, 1.75 to 1, so the pulleys

TECHNICAL DETAILS

Motor: DC- 19HP initial at full charge

Maximum Thrust:

155 pounds with reduction drive and 63-inch propeller, 140 pounds with direct drive and 53-inch folding propeller. System designed so that when battery power approaches minimum, the trike can still climb

Motor controller: 300 amp max. – pulse width modulation

Battery System:

Max capacity: 5600 watt-hours, total weight of cells 75 pounds

Medium capacity: 3350 watt-hours, total weight of cells 41 pounds

Trike weight: 85 pounds with motor, controller, etc. (not including battery system)

North Wing Stratus wing: 84 pounds

Totals:

Trike	85 pounds
Batteries with boxes, connectors and cables	80 pounds
Wing	84 pounds

Total	249 pounds
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This is a legal, Part 103 ultralight!

Charge time: These batteries can be recharged in about an hour. However, the common 110V socket cannot deliver enough power to do this. The standard 110V charger takes about six hours to charge the maximum-size battery system. An optional 220V charger can charge the big pack in two hours. The charge times for the medium-capacity battery system and for the smaller ("self-launch") pack will be about 3½ and 3 hours respectively with the 110V charger.

had to be custom-made and the mounting plate designed for the electric motor. Calculations were done and a larger prop was ordered to spin at the reduced speed of 1800 RPM at full power. The new prop is 63 inches and very, very quiet. The maximum thrust has increased from 140 to 155 pounds.

In July I took the ElectraFlyer to the