



Photo: Vlad Blanch

designed and built a soaring ultralight years ago called the Cloud Dancer. He has lots of flight-specific formulas at his fingertips. We went over how much thrust would be needed to maintain altitude for different wings with the all-up weight of the trike and pilot. Then we calculated how much additional thrust would be needed for takeoff and climb. It looked like my plans could work out well.

The lithium-ion cells I used in the scooter (laptop cells) had the power but they were not designed for fast discharge

and so got hot in use. I bought a selection of lithium-ion polymer cells to test. Some of them were so good, they could be used at the full discharge rate needed for takeoff and climb without even getting warm! I wanted to make the system very practical with a good climb rate and at least one hour of duration between charges so the trike could be used on any nice day, with or without lift. For hang glider self launch, low save, and glide extension, a smaller battery pack could be used. The lighter weight will increase soaring performance and the more compact size is more aerodynamic and less expensive.

I went to work ordering parts and designing some of the specialty parts required for the project. I was able to get a low-RPM, high-torque motor built and found a folding carbon prop. Battery pack design for the cells was figured out.

As the components came in, the specialty parts were made: a welded motor mount to fit the new motor and be integrated into the trike, a machined propeller hub to fit the motor shaft and the new prop, battery boxes to contain the built-up battery packs and allow airflow and mounting to the frame. More materials were ordered: high-power connectors, motor controller, power cables and lugs, gauges, copper



Photo: Mike Theeke

sheet, aluminum plate and bar stock, all the equipment and raw materials needed.

The static balance of the trike was checked with weights to equal the battery packs, motor, equipment and pilot. The mounting locations were finalized.

It took about a year to build the system. I showed the trike at Sun-N-Fun 2007 in Florida last April. Hundreds of people came to look the trike over.

At the show many people expressed interest in using electric power for all kinds of ultralights and light planes. John Moody ("father of the modern ultralight") and Larry Mauro (designer of the Easy Riser) were right next to me with their machines and were very supportive and friendly. John asked about electric-powered thrust for his Easy Riser. Any kind of ultralight can be powered this way. The more efficient the machine, the



Photo: Barbara Greenberg