

E-BAT

Going Green With an Electric Wombat



story & photos by Dan Burrill

Over the past 13 years The Wombat Car Co., Vancouver, WA, has produced and delivered over 200 kits and turnkey cars. About 30 of them have been shipped to Japan, Russia, Saudi Arabia, and one to Equador. In the last few years, several of the kits have been built as electric cars rather than the traditional gas power.

This “E-Bat,” as it’s called by Wombat founder, Karl Kanthak, is his latest creation, and it was built as a turnkey for a customer in Puerto Rico.

The Wombat kit is a custom designed, steel-framed fiberglass body kit that fits on a classic VW Beetle chassis, giving it the off-road ability to match its tough looks. It takes its styling cues of course from military utility vehicles. Designed to fit on a standard VW Bug pan, it is technically a rebody, meaning that the core mechanicals of the donor car are not modified, and the new body is designed to fit a stock chassis.

A key feature of the Wombat is its mandrel bent, jig-welded tube subframe that is fixture bonded into the body. This subframe provides support for the body and steel-to-steel mounting to the chassis as well as doors and tire rack to the frame, reducing body stress.

For this E-Bat a 1971 VW chassis was sourced, stripped and rebuilt with front disc brakes. Mike Locicero at Import Transmission Exchange completed the transmission rebuild. This particular subframe was modified for the unique needs of the electric conversion prior to its bonding into the body. Special racks were fabricated in the rear engine area for six batteries, the controller, and other electrical components. Four batteries were mounted in the rear floorboard area, and three more in the front trunk area.

“We decided to go with AutoZone batteries because they have an eight-year unlimited warranty and operate in the Continental U.S. and Puerto Rico,” said Kanthak.

Also, the E-Bat is fitted with a custom wiring harness that incorporates four-way flat towing plugs at the front and rear to function as either a “towee” or “tower” vehicle.

Wilderness Electric Vehicles is the company that provided the electric conversion kit. It is a 144-volt DC system, (12 batteries x 12 volts), plus a battery to power the lights, radio, horn and the main breaker, drawing its charge from a DC-to-DC converter connected to the main battery pack. The conversion kit #4 (\$5,620 + shipping) is made specifically for a VW Beetle and is a high-performance system containing everything but the batteries. Each battery weighs about 35 lbs, so a significant portion of the weight of the batteries and motor is offset by the missing gas engine.

“The car is kind of spooky to drive,” said Kanthak. “There are only three gauges on the dash, a conventional speedometer, a volt meter and an amp meter.” Turn the “ignition” key to “on,” and there’s only a click in the motor area. Power is controlled by the gas pedal that operates a potentiometer to control engine speed by varying the voltage. There is a slight, high pitched whine for a second or two as the motor begins to spin, with all of the torque available immediately, and then you are rolling along silently with only tire, suspension, and wind noise.

These electric vehicles use a clutchless system even though you can still shift gears. The flywheel, throw out bearing, clutch, pressure plate are not even installed. Lifting off on the throttle pedal is all that is needed to shift gears. You can upshift to go to higher speeds if want to or you can keep it in second or third gear and drive it like an automatic since more amps are used in the higher gears. The goal is to use the least amount of amps possible to achieve more range on a charge. With this kit top speed will be 65 to 75+ mph with a range of somewhere between 20 to 60 miles depending on usage.

With a Quickcharger, you are looking at eight to 12 hours to charge the car if you run it down during the day. The Quickcharger is a smart charger, so it shuts off once the batteries are topped up which will help the batteries last much longer.

To get a little idea of what it might cost to run this electric vehicle we did a little figuring based on the cost of electricity in the Pacific Northwest. The cost of a charge, of course depends on how much you pay per kilowatt hour where you live. We pay about nine cents/KWH, so running the E-Bat every day for 30 miles (a typical commute), we figured it would be around \$20 a month, or less than two cents a mile. Compare that with what you pay for gas.

The only real maintenance requirements are keeping the terminals clean and occasionally adding water to the batteries. Battery life is estimated at approximately five years. There is a lot of development on lithium batteries right now, that promise to greatly improve EV range, but they are expensive.

We don’t need to build a case for electric kit cars, but isn’t it an interesting alternative consideration for short-trip vehicles. Think about the grins every time the car goes by a gas station.

We don’t normally like laundry lists of equipment, but for the sake of understanding



The charger included with this kit is the Quickcharger rated at 144 volts. It is a smart charger and runs through multiple charge cycles before turning off when batteries are full. (It is the small black box with the digital readout next to the batteries.) The CarQuest Smart Battery Charger is for the 12 vdc accessory battery, which powers a separate 12-volt system which runs the lights, turn signals, horn, and radio.



The motor for this kit (Model # FB1-4001) is also made by Advanced DC Motors, the best known name in the industry. The motor dimensions are 9.1 inch diameter 15.5 inches long, and is rated at 144 Volts DC. Rain and water won't hurt the motor unless it is totally submersed. Though it isn't a bad idea to protect it against rocks and dust with some type of cover underneath, it's important to make sure there is some air flow to the motor to keep it from overheating.

this technology here’s a list of the components for the electric system that was installed in this car: Advanced DC motor #FB1-4001, 9.1 “single shaft”; Curtis Controller 1231C (144 volts DC at 400 amps); Adapter plate for vehicle to fit the electric motor to the VW transmission; Shaft coupler - (requires flywheel, pressure plate & clutch), 0-5k (pb5) Throttle box; 40 ft of #2/0 ga. wire cable; Contactor- Allbright SW200 (2000 amp rupture 200 amp continuous); 50-150 VDC volt meter, 0-500 amp meter; 50mv - 500 amp shunt; Gauge holder bracket; 12 - high current copper ring terminals; 48 - battery cable terminals; Fuse - 400 amp slow blow; Smart Charger 144 VDC; 12 VDC smart battery

charger (for accessory battery); and a set of general plans & wiring schematics. **KCB**

Wombat Car Company

Dept. KCB
PMB 374
16505 “A” SE First St.
Vancouver, WA 98684
360/335-8215
www.wombatcar.com

Wilderness Electric Vehicles

Dept. KCB
P.O. Box 1612
Spanish Fork, Utah 84660
801/628-6509
www.e-volks.com