

# Pricing Electric Power for a 30-foot Sailboat

To get an idea of how the price of an electric drive might stack up, we sought prices for repowering a sample boat: 30 feet long overall, 25 feet at the waterline, and displacement of about 10,000 pounds. This boat would normally be fitted with an 18-horsepower diesel or gas engine. A Yanmar diesel engine, with reduction gearbox, would cost from \$6,500 to \$7,500, depending on the horsepower chosen. *PS* has not tested most of these systems. Note that none should be considered mature or backed by a proven record of long-term reliability.

- **ASMO Marine** ([www.asmomarine.com](http://www.asmomarine.com)) is a Danish company that produces a line of DC motors under the Thoosa brand. We priced the 48-volt, 6-kW Thoosa 6000, which should be adequate for those content with only in-and-out-of-harbor capability, at NGC Marine ([www.ngcmarine.com](http://www.ngcmarine.com)). The complete Thoosa 6000 package, including motor, controller (throttle), charger, battery monitor, and AGM batteries, costs \$8,558. Another \$1,400 buys the Thoosa 9000 with more power and a bigger battery bank.

- **Above the Waterline** (805/455-8444, [www.abovethewaterline.net](http://www.abovethewaterline.net)) in Santa Barbara, Calif., sells a 48-volt system comprising a Mars permanent magnet brushless 4.7-kW electric motor; reduction gear with 11 gear ratios; four Odyssey pure lead, thin-plate 126-Ah batteries; coupling; Sevcon controller; control circuit wiring harness; contactor; battery gauge with hour meter; and fuse holder. The estimated price for the 4.7-kW system is \$6,789. A Polar Power DC genset (see below) for extended cruising (\$12,000) is optional.

- **Vetus Marine** (877/783-8873, [www.vetusmarine.com](http://www.vetusmarine.com)) is currently withholding from the market its 24-volt, 2.2-kW electric drive. The motor, with controller and keel cooler, was priced at about \$6,850. A version with regeneration capability was listed at \$7,700. *PS* has heard reports of high temperatures robbing efficiency under heavy loads. Vetus is looking at improving the cooling system.

- **Electric Marine Propulsion** (239/462-1824, [www.electricmarinepropulsion.org](http://www.electricmarinepropulsion.org)) offers brushless, electronically controlled electric drives to operate on 144 volts DC. Company principal David Tether is a pioneer in electric hybrid drives and is now a consultant for Lagoon Catamarans. Tether, formerly a principal with Solomon Technologies, is convinced that high-voltage DC has significant benefits over low voltage. An E motion hybrid system, including a 4.5-kW motor, electronic throttle, battery charger, monitor, a dozen Discovery AGM batteries, a DC-DC cross charger, Drive Saver flex shaft, motor mounts, interconnect box, and main distribution panel is \$16,706. An optional 10-kW, 144 volts DC (overkill for our sample retrofit) is \$13,110.

- **Glacier Bay Inc.** (510/437-9100, [www.glacierbay.com](http://www.glacierbay.com)) is concentrating on diesel-electric drives, which are part of a high-voltage DC system that includes a range of DC-powered appliances.

*Electric Marine Propulsion's David Tether (pictured next to a Polar Power DC genset) believes higher-voltage DC offers a notable advantage over a lower-voltage approach.*



For kilowatt ratings up to 100 kW, it uses 240 volts. The system is aimed at boats 40 feet and longer. (See related story, page 13.) Individual installations involve the greater part of the boat's electrical system, so it's difficult to price them compared to a conventional diesel installation.

- **Re-e-power**, (574/807-0057, [www.re-e-power.com](http://www.re-e-power.com)) based in Michigan City, Ind., sells an electric motor in a pod that bolts to the bottom of a boat. Originally intended as a repower option for small, trailerable boats, the concept has grown rapidly, and the company now offers a system for boats up to 50 feet. The Re-e-power motors operate on 24, 36, or 48 volts and are available with regeneration capability. Our 30-foot sailboat could probably use the E-pod System 3000, which retails at \$4,500, without batteries.

- **Polar Power Inc.** (310/830-9153, [www.polarpowerinc.com](http://www.polarpowerinc.com)) manufactures a range of DC generators in 12, 24, 48, and 120 volts and can supply custom voltages. It makes generators for Electric Marine Propulsion's 144-volt systems.

- **Fischer Panda Germany**, (49/5254-92020, 954/462-2800, [www.fischerpanda.com](http://www.fischerpanda.com)) manufactures generators up to 48 volts DC for sale in the USA. Recommended retail prices are \$10,595 for a 4-kW, 24-volt DC generator and \$15,595 for a 6-kW, 24-volt DC model. Fischer Panda also carries a full line of AC generators starting at 4 kW.

- **Solomon Technologies** (727/859-4447, [www.solomontechnologies.com](http://www.solomontechnologies.com)) offers electric drives employing the patented Electric Wheel (*PS*, December 2001) in three sizes to power boats up to 16 tons displacement. Using an online price quote form, we came up with a quote of \$15,168 for a ST37 (6-hp) engine without regenerative capabilities and the required components. The company is currently involved in a patent infringement suit with Toyota.