North Star's AGM Batteries Get Five-Star Rating

Our battery test bank was a big winner for an easy-to-measure reason: It out-performed the less expensive option and provided a 200-plus-percent advantage in total charge cycles. So despite the hefty price tag, we evoke the "you get what you pay for" rule and give a thumbs up to North Star's Energy 1 AGM batteries.

An efficient battery is like an ampere hotel accepting and housing an electrical charge. And just as there are five-star ratings for vacation resorts, the same exists for battery technology. The five-star nickel-metal-hydride option remains too high in price, and for the moment, lead retains a dominant role in the marine realm.

With three mainstream technologies vying for market share (wet cell, gel, and AGM), we chose the latter for our Traveler testing. The battery bank we set up to test the Solid Nav outboard was comprised of four North Star Energy 1 Group 24 AGM batteries. Each of these compact energy reservoirs weighed 59 pounds and delivered a whopping 920 cold-cranking energy rating.

But for our interest, a more meaningful number was the "reserve capacity" rating of 140 (minutes). It meant that the battery could deliver 25 amps of current for two hours and 20 minutes before the charge reached its endpoint marked by a 10.5 voltage reading. Naturally, all this is at 12 volts DC, but by wiring four batteries in series, we raised the voltage to 48 volts and kept the ampere-hour and reserve capacity stats the same.

Prior to deploying the battery bank, we compared the North Star AGMs with an inexpensive Sea Volt lead-acid Group 24 battery. Each battery was cycled from full charge to 10.5 volts using a resistive load comprised of two 48-watt, 12-volt incandescent bulbs. The AGM batteries delivered current nearly 35 percent longer before reaching the 10.5 critical voltage.

Terminal design and inter-connectability make these batteries a good choice when it comes to linking four in series to create a 48-volt bank. Dealer-provided, short link, highly conductive lug connectors helped to eliminate unwanted resistance—a problem often introduced via inefficient cabling. The higher the current draw, the more impact inefficient connections become. Heat is generated at the point where resistance increases, and such wastes of energy drain the battery bank without producing any additional thrust.

The more efficient the battery bank, the less disparity there is between energy input and output. However, there are several caveats regarding battery technology that need to be noted. When it comes to delivering amperes for consumption, the total wattage, or power available, varies according to the current consumption at any given moment. So, the higher the demand for amps, the less efficient the battery becomes. For example, if you discharge a battery at 3 amps, and at 20 hours, it reaches 10.5 volts, you can say that it provided 60 amp-hours of energy. However, fully recharge the same battery and change the discharge rate to 30 amps, and you may assume that you'll have two full hours of usable energy, but that would prove to be incorrect. The non-linear relationship between discharge rate and amp-hour availability results in the witching hour of 10.5 volts being reached in just 1.5 hours—leaving you with only 45 usable amp-hours, instead of 60.

So instead of using a low-voltage amp-hour rating to determine approximate charge life, we looked at the reserve capacity rating (140 minutes), which is based on a 25-amp discharge rate. It hinted that the North Star AGMs would give us over two hours of runtime at 4 knots. They delivered all of that and a tad bit more.

Testers used four North Star Energy 1 Group 24 AGM batteries (right) to power the Traveler during testing.