Ultra-Lightweight, Long Runtime, Batteries

hile Lithium Iron Phosphate (LiFePO4) battery technology for motor starting applications has been around for a few years, a Southern California company called Bioenno Power now uses it to manufacture portable lightweight battery packs specifically for amateur radio

applications (Photo A).

Kevin Zanjani, KI6DHQ, with Bioenno Power, has been making the ham radio club rounds, as well as conventions, demonstrating the advantages of Lithium Iron Phosphate battery systems, specifically for ham radio ham portable and/or emergency portable or emergency backup battery operations.

"Our Lithium Iron Phosphate batteries are inherently safer than Lithium Ion. Lithium Iron Phosphate batteries will not explode, will not give off gas, and offer 2,000 charge cycles versus 300 charge cycles for the sealed lead acid batteries," states Zanjani.

The Bioenno Power deep cycle LiFePO4 batteries are rated at true capacity, allowing the user to extract more than 90% of the actual rating listed on battery.

*CQ Contributing Editor, 2414 College Dr., Costa Mesa, CA 92626 e-mail: <wb6noa@cq-amaeur-radio.com> Other manufacturers may rate their battery capacity as "lead-acid equivalent," intended solely for short bursts of current to start a motorcycle engine. The deep cycle Bioenno Power batteries provide a much larger number of cells to achieve the capacity required to power ham radio equipment and other electronics.

We tested this extraordinary lightweight battery, rated at 12 volts at 15 amp hours. It easily ran a 100-watt HF transceiver for many hours. For the Elecraft KX3, either a 6 amp-hour or 9 amp-hour Bioenno Power battery will work very well.

"Idid some testing using my 100-wait Elecraft and the 12 volt/12 amp-hour battery, and did a fair amount of transmitting for over four hours," comments Tracy Lenocker, WA6ERA.

"The voltage held up fine on transmit. I also tested the deep-cycle Bioenno batteries with an MFJ voltage conditioner but the conditioner was not needed. I plan to purchase some of Bioenno's superultra capacitors to build something like the MFJ unit. Ultra-lightweight, these batteries weigh only a quarter as much as the lead-acid type of battery. Best of all, this new technology is perfect for hiking and operating portable in the national parks and everywhere else," comments Tracy.



Photo A. Bioenno batteries include Lithium Iron Phosphate (LiFePO4) models that provide high current and high reliability with low weight.

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The Lithium Iron Phosphate technology can also take a fast recharge of up to half the battery capacity ampere rating. This technology is also TSA approved, allowing you to place two batteries in carry-on luggage, totaling up to 160 watt-hours.

Each 12-volt Lithium Iron Phosphate unit from Bioenno Power also includes the company's proprietary protection circuit module (PCM), encapsulated within the battery pack (Photo B). This module guards against short circuits, over-voltage, and over-current charge or discharge. This module works so well that, with my experimenting with the Bioenno Power portable solar panel, the panel intentionally tripped the circuit. An unconnected solar panel normally puts out between 18 and 20 volts, until loaded down by a connected battery. The PCM instantly took the batteries out of circuit, sensing too high voltage on the input. As soon as I switched over to the optional solar controller, all was well.

For 100-watt high frequency ham radio applications, the 12-volt/12 Ah or 12-volt/15 Ah works great, and Bioenno bundles an AC to DC charger with these packages. If you want to stay on the mountaintop all day with 100 watts, bring along the Bioenno folding flexible solar panel, and go with the 12-volt/20 Ah battery and the regulator.

The nominal individual cell voltage is 3.2 volts DC, but it is charged at 3.65 volts DC per cell, or 14.6 volts DC for the entire pack. The pack will rest around 13.2 volts DC. We yakked on HF for several hours before we needed a recharge. For those exploring freezing weather, this technology operates at temperatures down to 14° F, great for ice-fishing applications in winter.

Finally, we are assured these batteries won't catch fire, like what we saw in the news from overseas products with the reported fake UL listing sticker!

To see all of the other neat products from this ham radio friendly company, go to <www.BioennoPower.com>.

Promote and Program

At a recent ham radio state convention, members of the local radio club were positioned just outside the VE test room (Photo C). They were able to congratulate the brand new and upgrading hams as they exited, and were getting club signups right on the spot! Also this club was promoting multiple repeaters in the area, and providing free programming for the Chinese handhelds!

With dual-band Chinese HTs, selling for as little as \$29.95 on Amazon, in







www.cq-amateur-radio.com

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