Honda poweroad lithium battery review

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As good as lead-acid batteries are, they have some significant flaws. First, they are heavy. Second, they contain a large amount of lead, which is bad for the environment if not recycled, and the acid that interacts with the lead is corrosive, should it leak from the battery case. Third, they have a limited number of discharge/recharge cycles compared to lithium batteries. Finally, in storage, their self-discharge rate can be as great as 1% per day in hot conditions. Lithium batteries address all of these issues.

To learn more about lithium batteries, how they relate to lead-acid batteries, and what the future holds for them, we talked with Representatives from two of the major lithium battery manufacturers in the U.S. At Shorai, we spoke to Phuc Lam, TK, for information about how Shorai has approached lithium batteries over its 11 years of manufacturing them. We also spoke to Jason Levitt, President and Founder at Full Spectrum Power, whose company has also been a manufacturer of lithium batteries for more than ten years.

Levitt gave us a wealth of background information on lithium batteries, but his primary point was to say that the weight issue has been overplayed. Yes, they are lighter. He believes we should be more excited about the voltage they deliver: “Higher resting voltage, means the bike will start more quickly. Your resting voltage will be higher. So, that means a more consistent spark and hotter spark, running a lithium battery than lead-acid.”

Lam also stressed that the primary advantage of lithium batteries is not the weight, stating that “the cycle life is the primary benefit of lithium batteries.” In layman’s terms, this is how many times you can discharge and recharge a battery. Lam stated that the duty life of lithium batteries is as much as 5,000 cycles vs a lead-acid battery’s 1,000 before performance goes down. This is a significant difference.

We’ve all heard stories about lithium batteries that have caught fire. While we certainly don’t want that to happen to our bikes, the fear is mostly misplaced. The fires we typically read about are with lithium-ion batteries, the types of batteries that power small electronics, like smartphones and laptop computers. In motorcycle applications, the batteries are constructed from a lithium-iron-phosphate blend that gives up a little in its power density for significantly more chemical stability than traditional lithium-ion batteries.

Additionally, in the case of powersports lithium battery failures, most of these occurred in batteries without Battery Management Systems (BMS). The electronics necessary to balance the discharge/recharge loads on a lithium battery have advanced to the level that the BMS shuts the battery down when an overcharge situation that could potentially lead to overheating and/or fire is encountered.

Another myth about lithium batteries is that they are less resistant to parasitic drains, such as an alarm system. Again, this comes from the era before lithium BMS were common. Typically, the alarm or another accessory

would completely drain the battery, and the owner would not notice this for a while. With a lithium battery, this extended flatline will turn it into a paperweight. High-quality lead-acid batteries may bounce back from this kind of abuse a couple of times. However, not all lead-acid batteries will survive this mistreatment even once, either.

Finally, when it comes to longevity, lithium batteries have a conservative discharge/recharge cycle capacity two-to-four times that of lead-acid batteries. So, if a lead-acid battery can last around 500 deep discharge cycles (or 80% depth of discharge cycles), a lithium battery can perform the same task upwards of 2,000 times, negating much of the upfront premium price paid for lithium batteries.

Lithium batteries are also accused of being unsuitable for use in below-freezing temperatures. The truth is that both lead-acid batteries and lithium batteries are affected by the cold. Lam says Shorai batteries, like all lithium batteries, perform in the inverse of lead acid ones. With traditional batteries, you have to get the bike started right away before the voltage drops. With lithium batteries, the internal resistance is higher when the battery is extremely cold. So, you need to build up to the battery’s full cranking power.

Perhaps the most important factor in favor of lithium motorcycle batteries is that they have a much higher power density than lead-acid batteries. Translated into plain English, that means that they put out more cranking amps per unit of weight. So, if you buy a high-quality drop-in replacement for your OEM battery, you’re likely to get more cranking amps with a similar amp hour rating to the original one – all with the weight savings mentioned above.

Also, lithium batteries operate a higher voltage than their lead-acid counterparts. Lithium batteries produce 13.2 volts, delivering better performance to all the voltage-dependent systems on a motorcycle, from the starter motor windings to the coils to the injectors. With the better voltage-stability and slightly higher voltage delivered by lithium batteries, you get a bike that is easier to tune and makes more horsepower.

While the lightness of lithium batteries has been overly stressed, that still resides in the plus column when you need to replace your OEM battery. Instead, consider that lithium batteries themselves are inherently better. Those with a BMS are just about impossible to kill, the BMS circuitry is there to prevent it. So, park your bike for a month or more (shame on you, BTW), and it’ll fire right up when you push the starter.

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