

# AGM VERSUS LITHIUM, THE BATTERY POWER STRUGGLE



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Over the past few months I've received several calls and emails asking for an opinion on the new Lithium battery technology versus the traditional AGM battery, which is part of the valve-regulated lead-acid battery family typically used in a motorhome

application. Batteries are the real workhorse of any auxiliary electrical system and there's no room for lightweights.

AGM batteries were developed in 1985 for use in Military aircraft and then introduced to the civilian aviation, marine and RV industry around 1992. Replacing the common flooded lead acid and gel cell batteries, they were specifically designed to combine the best power, weight and safety standards available at that time. They have continued to develop over the years with advancements in their efficiency and safety ratings and continue to become lighter and sleeker. AGM batteries offer a low internal resistance and rapid migration of the acid into the glass matt plate. Simply stated, AGM batteries deliver and absorb higher rates of amperage. This is important in the RV industry because of the

constantly changing environmental conditions as well as the unique power demands of each user. From Maine to Arizona, 0 to 120 degrees they perform well in a variety of temperatures. With unregulated charge and discharge rates, we're not limited to how much power we can pull or how quickly we re-charge. This comes in handy when you're making a quick pit stop for lunch on a 105 degree day. We can pull enough power to run four A/C units and the coach without having to kick on the generator and then when we hit the road again, initiate a rapid charge cycle to power them back up.

In contrast, the Lithium-ion battery starts degrading as soon as it leaves the factory and only lasting two or three years from the date of manufacture, whether you use them or not. When exposed to heat, lithium-ion battery packs begin to degrade much faster than they normally would. If you've ever held a cell phone to your ear for too long or held a computer on your lap, you know that heat is a natural byproduct of most batteries, but especially lithium batteries. Highly sensitive to charge and discharge rate, it's necessary to have an onboard computer to manage the charging cycles and limit amount of power output as well as how quickly they regenerate to full capacity. You'd be limited to an A/C or two on that same pit stop and would need an extended period to recharge. If a

Lithium-ion battery becomes completely discharged, it's ruined. There is also the concept of Thermal Runaway which is a condition in which a Lithium-ion battery pack fails and has the potential to burst into flames. With the sensitivity to temperature and charging rates and higher potential for safety issues, they're just not a good match for the RV market.

Green Car Advisor notes that the FAA has recorded six fires onboard passenger and cargo jets linked to lithium-based batteries since March of last year and it's apparent that legislation will be drafted in the near future regulating the use or shipment of Lithium-ion batteries on airplanes. The FAA has denied the request from some airplane manufactures requesting to use Lithium-ion batteries citing, "The battery does not contain the additional safety standards that the administration considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards."

The strength and durability of your electrical charging system lies in your choice of batteries. An AGM battery is like a workhorse while a Lithium-Ion battery is like a Unicorn. If you want to power your cell phone your best bet is to use a Lithium-ion battery, if you want to power your motor home there is no better battery technology than the AGM. Unless you believe in Unicorns!

