12v lead acid discharge rate

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I"m not so interested in how long the pump can run, as it only will need to run for about 5 - 10 minutes/day. So, I"m assuming the battery is plenty for that. The battery will be charged via solar cell panels.

However, I"m more concerned about the discharge rate. I"ve read that lead acid battery not should be discharged too quickly, as this might result in overheating the battery (and cause damage to it).

How do I figure out what a safe maximum discharge rate is for a 12V lead acid battery?

An easy rule-of-thumb for determining the slow/intermediate/fast rates for charging/discharging a rechargeable chemical battery, mostly independent of the actual manufacturing technology: lead acid, NiCd, NiMH, Li...

Disclaimer: this is a rule-of-thumb, useful as an starting point when the datasheet is not available or when dealing with a no-brand/unknown battery.

Ideally the manufacturer supplies the discharge rates on the battery datasheet.

A quick point: You mention you have a 12 V 2.4 A SLA (sealed lead acid) battery, but batteries are rated in amp-hours not amperes. Therefore I suspect you have a 12 V 2.4 Ah battery.

Now that we have that out of the way, a 12 V 2.5 Ah SLA battery from Power Sonic, as an example (a company that has datasheets for their batteries) shows several discharge rates that may be of interest:

This means you should expect, at a discharge rate of 2.2 A, that the battery would have a nominal capacity (down to 9 V) between 1.13 Ah and 1.5 Ah, giving you between 15 minutes and 1 hour runtime.

Jose"s answer states that the discharge rate isn"t related to chemistry. However, this is not correct. It can vary up to a factor of 1000 depending on chemistry.

Different batteries chemistries have different properties.

Beyond the chemistry, this is also related to the battery design itself. Size of the electrodes, the thickness of electrode coatings, electrolyte so it can also vastly vary upon this.

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