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Battery Monitoring Cheat Sheet

Simple tips on how you can use remote monitoring to prevent early battery failures

Battery Temperature:

Batteries do not like high temperatures. In fact, as a rule of thumb, every 10°C increase of temperature reduces the battery lifetime by a factor of 2. It is best practice to make sure your battery temperature does not exceed 30°C.

State-of-Charge [SoC]:

Lithium-ion: Lithium-ion batteries do not like to be at 100% SoC. A fully charged battery ages much faster than a battery at 50% SoC. Furthermore, Lithium-ion batteries like to be cycled closely around 50% SoC (e.g. between 40% and 60%). In line with this, high depth-of-discharges shorten the battery lifetime.

Lead-acid: Unlike Lithium-ion, Lead-acid batteries like to be at 100% SoC. Ideally, you want to recharge them every day. Also, they age faster with decreasing SoC. Try to always keep them above 40% State-of-Charge.

Battery Bank Voltage:

Make sure that your battery management system (or BMS) is doing the right thing. Different battery types have different optimal *absorption* and *float voltages* while charging and resting. To reduce aging, make sure the right settings are applied and executed by the BMS.
Additionally, a battery failure can often be seen in the monitoring by a rapid drop of the voltage while discharging.

State-of-Health [SoH]:

The State-of-Health is a measure of how much capacity is still left in the battery. Without very advanced power electronics and analytics, this is very difficult to accurately calculate while the battery is in operation. If not provided by highly specialized vendors, take these readings with a grain of salt.

Do you want to learn more about battery operations and remote monitoring? Anything we are missing? Please reach out -> contact@ammp.io or hendrik.broering@ammp.io