Lithium VRLA Combo Solution: An Efficient Energy System

Over the years, the standard telecom battery has been refined and developed primarily as a standby source of power – a common-format, standard VRLA battery with low cyclic life, low maintenance and low cost. While standby batteries provide excellent return on initial investment (CAPEX), the batteries' operational life will be exhausted quickly in most off-grid situations that require high-cycle performance. Since most off-grid hybrid applications require a larger reserve than traditional installations, more batteries are required. With that in mind, including operating expense (OPEX) when evaluating batteries is necessary. The primary TCO (Total Cost of Ownership) drivers become battery life, autonomy, performance and efficiency.

Battery life is a function of many variables, including the actual discharge rate (steady or variable), whether the battery needs to service the load before full recharge (partial state of charge, or PSOC), and how deep the battery discharges before recharging begins (depth of discharge, or DOD). The deeper the discharge, the greater the loss of battery life. The shallower the discharge, the more energy needed to operate, thus requiring an expansion of both batteries and real estate to maintain the same autonomy.

Autonomy, defined by the number of hours/days that a site can operate on battery power alone, drives both OPEX and CAPEX. As autonomy increases, we need to expand the battery plant and the equipment needed to recharge this reserve. Adding an active generator to share autonomy responsibility will minimize this compound effect, but minimum fuel capacity reserves and procedures for refueling must be included as part of the design.

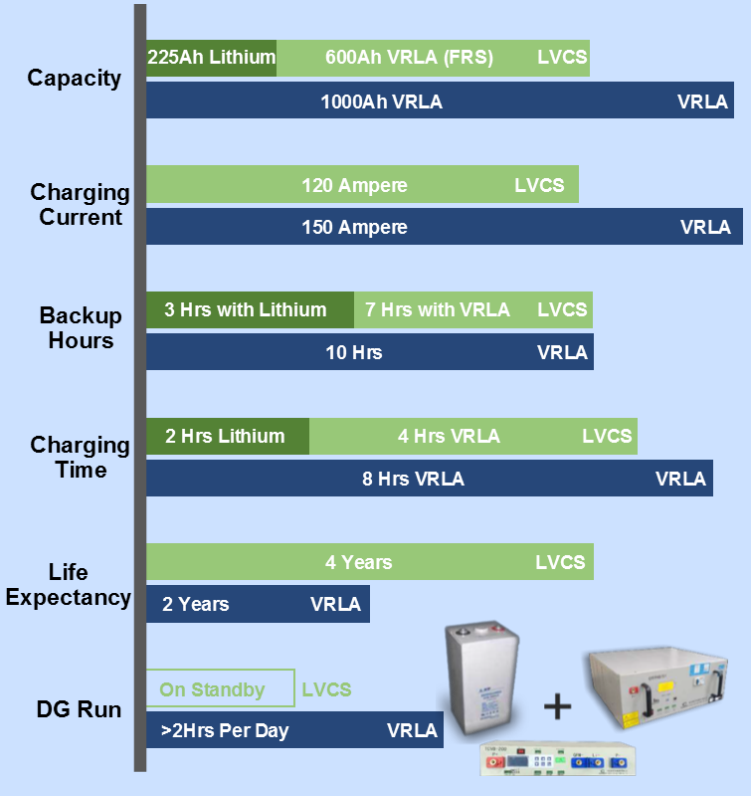
Hybrid Systems may be one solution to balance this OPEX and CAPEX battle. A combination of several energy storage systems can provide a balance between the two. VRLA being the dominated backup technology has its own disadvantages mainly due to its slow charging rate. On the other hand Lithium Technology offers a much faster charging as well as higher number of cycle life. By combining these two a tower site is fully capable to tackle intermittent power cuts as well as long outage. Coslight's unique Lithium VRLA Combo Solution (LVCS™) with built in monitoring system works in similar pattern. It uses power from lithium for short backup and shifts to VRLA for an extended backup when required.

Performance and efficiency of the battery and supporting equipment are used to determine how long a generator must be used, the number of solar panels required to recharge batteries, et cetera. Beyond a datasheet and quote, any quality proposal needs to include:

- A definition of the operational use of the reserve and relationship to other energy sources, articulating limits tied to DOD, state of charge (SOC) and PSOC, plus a representative
- operational simulation
- The algorithm for recharge (explaining efficiency) and related operating cost
- Controls and limits for temperature control
- An explanation of how battery life is determined and managed

The ultimate battery solution should include battery monitoring, which extends the OPEX investment without sacrificing loss of service or large fuel consumption increases.

Coslight innovatively combines Advance VRLA (Fast Recharge Series) Technology in parallel with Ultra Long Life Lithium Batteries to a Load of 2kW to 3kW on a site with a daily outage of 10 to 12 hrs. The system is fully capable to replace your existing VRLA setup, moreover removing DG from your existing site.



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