

BENEFITS

Lithium-ion Batteries (LIB) are gaining attention as a viable replacement for the standard valve-regulated lead-acid (VRLA) batteries, most common as a short term power source with UPS systems.

Below are some of the most common set of questions.

READY FOR



Lithium-ion Batteries

Q. What is a lithium-ion battery?

A. Lithium is an alkali metal element; symbol Li on the periodic table. Utilizing Li in the design of a battery provides significant advantages over lead acid.

Q. Lithium-ion batteries are not new, right?

A. Correct. Millions are used every day in our small electronics, laptops, electric cars and more.

Q. Wasn't Lithium-ion part of the issue with those hover-board fires?

A. True, but those batteries are different chemistries than the ones used in UPS applications which have far more stringent packaging designs. UPS battery solutions have a fail-safe shutdown mechanism which is activated in the event of a problem.

Q. Are there different types of LIBs?

A. Yes. From lithium cobalt oxide (LCO common in small electronics), lithium iron phosphate (LFP), lithium-ion manganese oxide (LMO) and lithium nickel manganese cobalt oxide (NMC) to name a few. Our designers favor LMO and NMC, given their performance and safety parameters. These are the same technologies used by major automotive manufacturers in their electric cars.

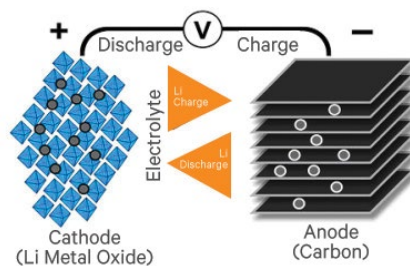


Illustration: Courtesy of Battery University

Q. Does Vertiv recommend one over the other?

A. Each has differing properties that behave slightly different and may be appropriately used depending on the application.

Q. What are the primary benefits of LIB over lead-acid?

A. LIBs provide impressive power density levels. This means you need less space to deliver the same power. They tend to last longer, weigh less, recharge faster and can operate at higher temperatures.

Q. With such impressive benefits, what are the disadvantages?

A. Predominately initial cost, currently on the order of 1.75x that of VRLA. But a more complete TCO (total cost of ownership) evaluation would include initial cost, installation cost, delayed replacement savings, nuisance value of the replacement, value of space saved, disposal expense and maintenance costs.

Q. Have they been tested in the data center?

A. Though the accumulated runtime in the United States is currently low compared with VRLA, we can answer yes to this question given our experiences in several US installs and in Asia particularly.



Shown: Lithium Ion Battery Cabinets for Data Center use

Q. Does Vertiv have specific experience with LIBs?

A. Yes. Our engineers and product teams have been on the leading edge of integrating them with UPSs and have fully studied and tested LIBs since 2011. In fact, we have operational customer sites across several continents.

Q. Which of your UPS systems are compatible with LIBs?

A. Much of our midsize and large UPS product lines have been tested and certified for use with lithium-ion battery solutions and are UL approved. See our webpage for more information.

Q. How important is battery monitoring?

A. Very. Fortunately, lithium-ion batteries utilized with UPSs use integrated battery management systems which are part of the UL listing to enhance operation and safety. Additionally, the battery cabinets can be monitored via MODBUS output using traditional monitoring systems.

Q. What is the impact on service and maintenance?

A. LIBs generally require much less maintenance. This saves on operating costs.

Q. What about recycling and disposal issues?

A. Lithium-ion batteries are disposable, but not readily recyclable at this time. As the demand increases, new options are likely to develop. This is not that different than when VRLA's came onto the scene years ago.

Q. Can an installation utilize a hybrid approach, whereby we mix battery technologies?

A. No, if you mean within a unique UPS system. But if more than one UPS system exists, there is no reason you couldn't operate different type of battery solutions on each.

We are ready to help

We hope this brief looked at some of the questions we often receive helped you. As a leading UPS/power systems provider who maintains a comprehensive portfolio along with many related solutions and services needed for critical protection, we feel uniquely qualified to help you evaluate your needs.

If you have more questions or need more information, please do not hesitate to contact our experts.

VertivCo.com



Lithium-ion Battery Cabinet



Lithium-ion Battery Cabinet for Data Centers



Liebert® EXL™ S1 UPS and Lithium-ion Battery Racks

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