

SolarTech Power Solutions

Lithium battery cabinet conversion to lead-acid



Overview

This paper describes method of design and control of a hybrid battery built with lead-acid and lithium-ion batteries. In the proposed hybrid, bidirectional interleaved DC/DC converter is integrated with lit.

How to convert from lead acid batteries to lithium ion batteries?

To convert a lead acid battery system to a lithium ion battery system*, there are some configurations you should do: The Battery Management System (BMS) must be connected to the Battery Protection Unit (BPU) via an RS232 connection. The BPU configuration is done using the PC toolbox PRO, as engineered by Lithium Balance application.

Can a lithium-ion battery be combined with a lead-acid battery?

The combination of these two types of batteries into a hybrid storage leads to a significant reduction of phenomena unfavorable for lead-acid battery and lower the cost of the storage compared to lithium-ion batteries.

How to upgrade a 12 volt lead acid battery to lithium?

The first step in upgrading a 12-volt lead acid battery to lithium is to choose the cell chemistry and configuration. This is a necessary step because regardless of the chemistry you use, lithium-ion batteries have a voltage that is much lower than 12. This makes it so you will have to put some amount of them in series to achieve 12 volts.

Can you replace a lead acid battery with lithium?

If you are upgrading a home battery bank to lithium and you already have a modern charge controller, the process could be as simple as installing the new batteries and flipping a switch. If, however, you are replacing a lead acid/AGM battery with lithium in a vehicle or RV, then you must consider the capabilities of the alternator.

Can a lithium-ion battery be connected with a converter?

Although hybrid connection of a different types of batteries is known in the

literature, integration of the lithium-ion battery with converter into one device, with terminal to direct LA connection is novel approach.

Can a plug-in module reduce current stress of a lead-acid battery?

In authors proposed plug-in module, consisting of lithium-ion battery and supercapacitor, that is connected to the lead-acid battery energy storage via bidirectional DC/DC converters. The aim of the module is to reduce current stress of lead-acid battery, and as a result to enhance its lifetime.

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