SPAR POWER TECHNOLOGIES INC.

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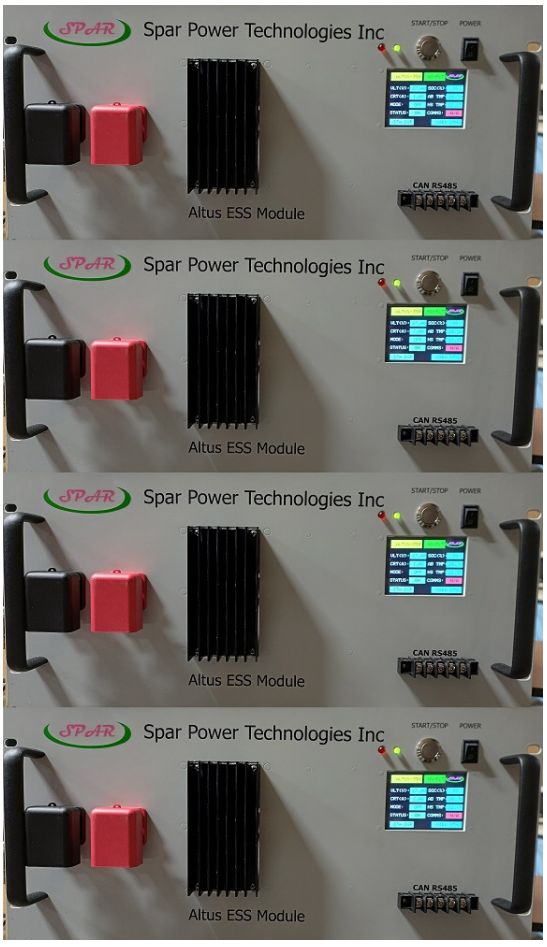
Altus®-350
Energy Storage system

Lithium Iron-phosphate Technology
Up to 7,500 cycle life



Altus®-350 Energy Storage System utilises next generation of Latium Iron-Phosphate cells with multiple micro controller module management system to monitor the cell state and voltage balancing among the cells. High efficiency of the module is achieved by operating the cells within their operating range of voltage, temperature and state of charging and discharging currents.

micro controller states the art cell technology to provide you with up-to 10,000 cycles of energy storage. It is user friendly with following benefits it offers over the Lithium-Ion energy storage system ($LiFePo_4$ ESS).

A. Cost effective and user-friendly Lithium Iron Phosphate based energy storage system ($Li\text{-}Po_4$ ESS) benefits from Lithium Iron Phosphate's inheritance property of strong energy density than any other battery, which will provide smaller foot print.

B. Electrodes of Lithium Iron Phosphate cells does not heat up and have no risk of thermal runaway "Safe and worry-free operation"

C. The following table shows the comparative benefits of Super capacitor-based energy storage system (SCESS), Lithium Iron Phosphate ($LiFePo_4$) and Lithium Ion based Energy Storage Systems.

Comparison of Super-Capacitor, Lithium Iron Phosphate and Lithium Ion Batteries			
Function	**Supercapacitor**	**Lithium Iron Phospahte (LiFePo4)**	**Lithium-ion (General)**
Charge time	1–12 Minutes	30–60 minutes	60–120 minutes
Cycle life	100,000	4000 and higher	500- 1,000
Cell voltage	2.5V Nom. 2.75V Max.	3.2V nominal, 3.65V Max	3.2V nominal 3.6V max.
Service life (industrial)	>20 years	5 to 10 years	5 to 10 years
Charge temperature	–40 to 65°C (–40 to 149°F)	0 to 45°C (32°to 113°F)	0 to 45°C (32°to 113°F)
Discharge temperature	–40 to 65°C (–40 to 149°F)	–20 to 60°C (–4 to 140°F)	–20 to 60°C (–4 to 140°F)
Ambient	0 deg. C	15-20 Deg C	15-20 Deg C
Danger of thermal runaway	None	Nove	Very High
Depth of Discharge	100%	100%	80%
Environmental Impact	None	Moderate	High
Disposal Cost	None	Modearte	High
Installation	Can be installed in the elctrical room adjasent to power converter	Can be installed in the elctrical room adjasent to power converter	Needs a searate battery room, due to thermal run away problem and need fire supression system
NOTES:			
	1. Charging and dischrging Lithium Ion batteries other than 0.5C, tend to heat up the elctrode and cuses thermal runaway. By design it can be reduced to mitigate but the event can not be eliminated, which is inheriant to the design.		
	2. Lithium ion batteries are not safe, due to thermal runaway problem. For more information please click on the link below.		
https://www.google.com/search?source=univ&tbm=isch&q=Images+of+lithium+ion+battery+fires&client=firefox-b-			