

Pro Charging Systems has developed a battery optimization system which aims to eliminate premature failure due to an unbalanced pack where batteries are used in series.

Using algorithms to extend a battery's life

Pro Charging Systems' battery optimization system (BOS) is a technology that uses active balancing technology to manage batteries wired in series. The use of this system will provide maximum run times and exponentially extend battery life.

The available run time for electronics and other powered accessories is dictated by the weakest battery in a series configured battery pack.

Other systems that utilize passive balancing techniques drain the strong batteries to match the level of the weakest battery, which only balances batteries and does not increase run time.

"The BOS is unique in that it shuttles energy between batteries to ensure equal state of charge before, during, and after charging," says Alan Tuttle, vice president for prod-

uct development at Tennessee-based Pro Charging Systems.

"This innovation enables maximum performance and run time from the battery system. Depending on battery health and overall condition, the BOS can increase runtimes by 300%-400% compared to a system running without the BOS. The BOS can be bought as a stand-alone unit or incorporated directly into an on-board battery charging system."

The firm says the BOS will actively balance a system of batteries in series, no matter how far out of balance they are to begin with, to a point at which all individual battery voltages are within ≤ 0.0017 VPC of each other (.010 VDC on 12V scale). Amperage displacements of up to 7.5 amps between batteries are possible.

Using a proprietary battery selection and prediction (BSAP-24) algorithm,

the BOS is compatible with all lead-acid batteries, as well as lithium batteries.

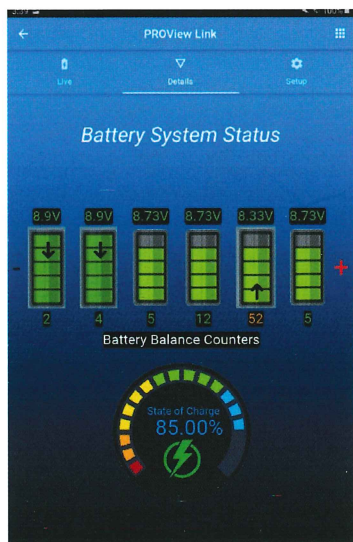
There are more than 40 different algorithms that the system can pick from to provide optimum active balancing.

The active balancing process may be observed in real time and monitored by the end user by use of the ProView Link app on either Android or iOS platforms. State of charge (SOC), pack voltage and individual battery voltages are displayed as well as the relative position of each battery in the series configuration.

In addition, battery balance counters below the image of each battery provide a direct indication of the level of attention each battery demands. This provides the user with a clear understanding of the state of each battery in the pack. ■

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BATTERY OPTIMIZATION SYSTEM (B.O.S.)

Input voltage range (system voltage)	24V to 48V
Input voltage range per battery	6V, 8V or 12V
Available batteries	6 (up to 48V pack)
Output power of system	45W
Max output current	7.5A
Protection (mechanical)	IP68
Protection (electrical)	OVP, OCP, OTP, SCP, BOP
Operating Temperature	-40°C to 85°C
Dimensions (L x W x H)	207mm x 83mm x 34mm
Balanced voltage difference	<25mV (Rev B)
Accuracy	<0.5%
Wireless Enabled	up to 300 feet