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## GREAT BATTERIES NEED GREAT MANAGEMENT

There are many obvious ways a modern battery is better than one that would have been common just a few years ago and is light years ahead of what was available a generation ago. In everything from form factor to battery life to charge time, things have vastly improved. Consider cycle ratings, an indication of how many times a pack has or can be used. Some battery packs for professional video production and broadcast are now promising up to 2,000 full discharge/recharge cycles, double what was state-of-the-art just a year ago. That's a significantly better return on investment.

One trend that is gaining increasing acceptance in our professional video realm – and evolving rapidly is better ‘fleet management’ of an enterprise’s batteries. Just as with cycle ratings, or weight or charge times, we are miles ahead of where we had been just a few years ago, when a tiny LED array was often the only insight an engineer or other production person had on the health or status of a particular battery.

Better battery management has become essential for today’s increased power demands. A requirement emerged, and the need is now being met. Better management means improved safety and better ROI. It also means you’re a lot less likely to run out of power... unexpectedly, of course.

### Safety First

A high-tech battery management system (BMS) helps to reduce the risk of potential Lithium-Ion (Li-Ion) battery related issues by allowing the user to quickly determine and address any battery packs that may be of concern. Li-Ion battery packs are wildly efficient compared to what we had before. But, there are some inherent risks with the chemistry. We’ve all seen the headlines from the consumer world, where even some of the biggest companies in the world have had issues with laptops, tablets, hoverboards and more.

Regarding safety, the faster one learns of a potential issue, the better the chances of restoring battery capacity through a BMS’ cell balancing algorithm. This also helps maximize the ROI and service life of the pack, along with preventing a potential future battery related concern. >>



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» A corollary to safety concerns is the fact that stricter laws and regulations have been implemented for shipping and maintenance of Li-Ion batteries. This can make location shoots a bit more difficult for travelling production teams. A modern BMS makes your life easier through features such as the ability to quickly and remotely discharge multiple packs to under 30 percent charge capacity, which is the current Li-Ion threshold for safe transport according to the FAA and IATA.

### Core Concept

Central to battery management are cycle ratings, which track the number of times a battery has been recharged. In many instances, battery packs are not fully discharged before being recharged. This can lead to an imbalance in the cells in its core, meaning the unit does not have the same charge level as the others. In some cases, that cell might subsequently not charge as completely as the others, which could lead the cell to fail – rendering the battery “uncharged.” It is important to be aware of this as cycles are rated through a complete discharge and recharge of the battery. Therefore, interval maintenance of the batteries is essential for guaranteeing safety and performance.

Though most Li-Ion chargers merely recharge the units, there are some that offer an added test/calibration function, which provides the cell a full discharge cycle function necessary to keep the cells balanced within the battery. This assures that the cells are always at an optimal state to withstand continuous operation for extended periods of time. It also further maintains service life and increases a battery’s cycle rating.

### Knowledge Really is...Power

Knowledge about your power really is important, and is exactly what a modern BMS provides, often in amounts and forms that allow an operator to increase efficiencies and long-term cost savings.

Like all technology, battery management systems are evolving. In the past, chargers offered only a small LCD screen to monitor battery vitals. While functional, it limited the data displayed – due to character constraints. However, there is a bevy of information that can be transmitted from most battery packs. As a result, companies have started to roll out mobile device apps that connect to the chargers via Bluetooth® to provide a full transparency of vitals. By eliminating the restrictions

of the small LCDs, users have access to more data and are given a better platform – often a tablet for battery management.

This also provides essential time savings, as the mobile applications generally also allow users to monitor as many as 50 battery packs through one device, without being connected to a charger. With older model battery management systems, the user would have to first connect each battery to a charger and use the on-charger LCD to acquire the (limited) data.

With some brands, mobile functionality also incorporates algorithms that can identify battery pack imbalance, with the overall hope of diagnosing problems at an earlier stage. Some of these apps will even initiate a calibration through the charger, in order to balance the pack. This streamlines the process of determining which battery packs are viable and which should be inspected more closely.

In some instances, data can be exported to a spreadsheet, which allows for in-depth analysis of the battery fleet. In this format, the user can sort, highlight and select hundreds of connected battery packs based on a variety of smart data that allows a user to quickly identify imbalances and provides an opportunity to test and evaluate the packs through the system. Analysis, early detection and rectification of an imbalance will significantly decrease the chance of unsafe operations, while also providing an enhanced user experience.

### A Better Battery World

Li-Ion batteries have been a Godsend for both the massive consumer electronics industry and our video production and broadcast community, although safety concerns and travel regulation hassles remain.

Having a battery management system that can communicate and read data is an essential tool for broadcasters and videographers the world over. Whether it is a traditional/basic system, which is great for small-scale teams, a mobile solution, and for large broadcast and film houses, battery management should be a top-priority for all professional video production. These innovative platforms allow a single user to oversee dozens of professional camera battery chargers and hundreds of battery packs, all controlled and monitored by a mobile device via its dedicated app. Thoroughly modern, thoroughly powerful. ■



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