



Chief operation officers are now demanding a greater accounting of battery usage, and meeting this demand are a new crop of battery asset management systems that gather and distill vast amounts of information into concise reports that can be routed through existing in-house networks onto the desktops of C-level accounting staff.

Analyze this! Motive-Power Batteries in Warehouses

How monitoring a lift truck battery's history can improve battery life, equipment performance and operator efficiency

If batteries could talk, what stories they could tell. While talking batteries are not currently available, powerful battery-analysis systems have emerged that reveal important usage data that is proving to be more valuable than the anecdotal and often incomplete information received from the operators of forklifts, tuggers and pallet jacks.

Acting as impartial truth detectors, the analytical systems supply facts so that warehouse and logistics managers can use this data to improve operations through decreased battery expenditures, better-targeted equipment maintenance and more efficient operator practices. On a larger scale, comparisons can be made between facilities, opening the door to improving operations on an organization-wide basis.

“Our battery management software has single-handedly reduced the amount of batteries that we have to keep,” says Jay Johnson, a facilities service manager for Americold Logistics—the largest provider of temperature-controlled food distribution services in the country, handling over 60 billion pounds of product annually. “Now we get the same amount of work in a day with just two batteries, where we used to require three.”

A costly lack of information

The challenges faced by Johnson at his half-million square-foot facility in Fort Worth, Texas, mirror those of other warehouse managers and executives: how to best manage motive-power assets. This is a significant concern, as a large grocery distribution center or major chain store warehouse may have as much as \$10 million tied up in trucks, batteries and chargers.

With batteries costing as much as five figures apiece, even a smaller material-handling or warehouse operation can waste noteworthy chunks of change through poor battery room management practices. For example, while a forklift battery is designed to give a steady performance of good run times for about five years, without proper tracking and maintenance this rarely occurs.

Relying on inaccurate manual monitoring of battery usage, some logistics managers throw money at the problem. They buy more batteries than they need and use poor performing ones longer than they should, wasting electricity, and therefore money, in the charging process.



The added bonus that accurate management of battery usage and recharging can reduce warehouse energy costs by up to 25% provides even more impetus for operations managers to investigate recent technological advances in the world of motive power management.

Even more detrimental, though, is the fact that underperforming batteries can slow the entire site’s operation.

“Our facility is so big that the long distances the forklifts have to travel can run down the batteries quickly; if they’re unloading a trailer at the far end they could require a battery change before they finish removing the pallets,” explains Johnson. “Unless you know the health of the battery, this will happen, especially after the batteries get old. It could slow down the whole logistics train if a truck is held up because of a dead battery on a forklift.”

Software that can read the mind of a battery

Four aspects of motive power have an impact on performance: the battery, the battery charger, the lift-truck, and the operator. Determining where the fault lies has traditionally proven difficult when relying on manual records that are subject to error and often incomplete.

In recognizing these shortcomings, many logistics executives are opting for one of the latest crop of battery analysis tools that employ powerful software to precisely monitor battery performance. Interrogative in nature, these new systems provide valuable information to management that allows them to improve the efficiency of their motive power assets.

“We get several different reports via the EBatt system that we use,” continues Johnson. “It provides the information I need so that we can rotate the batteries quicker and extract more work from them.”

Developed by Temple, Texas-based MTC, the EBatt industrial battery management system tracks seven points of data, each of which is equally important to thoroughly evaluate battery-powered operations:

1. An asset ID for the lift vehicle
2. An asset ID for each incoming battery
3. An asset ID for each outgoing battery
4. An asset ID for each individual operator
5. A time stamp for the moment each battery transaction begins and ends
6. The duration for how long each truck ran on each battery obtained from the hour meter
7. The charging location for the outgoing battery

Start time reflects when the exchange transaction begins, with the scanning of the operator’s ID, before the depleted battery is pulled from the vehicle. Stop time records when the charged battery is placed in the vehicle, thereby completing the battery exchange.

The hour-meter is located on the lift-truck itself, and reflects the duration of time that the electric motor(s) actually performed work, such as lifting product or moving across the warehouse floor.

It takes no less than this quantity—seven data streams—of information to fully evaluate lift truck operations. This data is collected in a relational database. Given these variables, more than four dozen reports can be compiled. Examples include: battery inventory, vehicle inventory, charger inventory, transactions by charged battery, transactions by charger, transactions by date, transactions by operator, transactions by vehicle, individual run times by battery, and comparative monthly statistics. Advanced systems add in battery room reports that detail charger status, battery watering, battery washing, battery equalizing, and a “ready” battery listing of all batteries in the racks that are fully charged and cooled.

The EBatt system includes report wizards that permit immediate access to this information in executive-summary fashion. Reports can be viewed on-screen, printed out, exported to Excel or stored in PDF format.

“Since this information resides on our servers, I can dial into the system and check out the data from my desktop PC from anywhere in the plant,” says Johnson. “This is far more efficient and easier to deal with than Web-based systems I’ve used in other buildings. The data would expire after a certain time and I couldn’t get to it.”

Information that pays

Placing all of this information in the hands of management gives them the power to pinpoint problems and improve operations.

“If you can envision a pyramid of data, the top would represent an average performance of what’s going on in the facility,” explains Jim Lane, vice president of sales for EBatt. “As you start drilling down you can break everything into its component parts to isolate the performance of a specific battery, truck, or charger. Say that you become aware that a particular battery is not performing on par with the rest. You can then check if it’s capable of performing adequately at any time, or if it is just when it sits on a particular charger. No sense in replacing the battery if the charger is defective.”

“Or the battery may perform well in most trucks but not a particular truck, so then you know you’ve got a truck problem,” continues Lane. “You can also isolate specific operators in the system to see whether all of them are extracting equally utility out of each battery. If someone doesn’t have a handle on what’s going on, you can offer a training tool to that particular operator as you point out, ‘Your change times are not up to snuff, so let’s see if we can improve that.’”

“When I compare the EBatt report with the employee work tracking order, I can see if the comparison matches up, as to how much time they spent changing batteries,” says Johnson.

Conversely, upper management can view data on a very high level to evaluate how their different warehouses are performing, allowing them to monitor best practices throughout the entire organization.

Whether viewed from the executive level or the battery room floor, the results of this information can be measured on the profit and loss statement.

“This system saves our client a lot of money because we can now rotate the batteries through the system quicker, reducing the battery fleet by a third,” says Johnson. “Additionally, since all lift trucks operate with fully charged batteries, we aren’t jeopardizing the speed of operations.”

More productive time, reduced operations costs and better asset and personnel management and the added bonus that focused management of battery assets can reduce battery room energy costs by up to 25%. This savings provides even more impetus for operations managers to investigate the recent technological advances in the world of motive power management.

For more information, contact EBatt Systems at P.O. Box 1358; Temple, Texas 76503; 1 (254) 298-2900; toll free at (866) 953-2288 or visit <http://www.ebattsystems.com>.

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