



# HAPPY BATTERIES LIVE LONGER: FOUR WAYS TO IMPROVE BATTERY LIFE

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An industrial lead-acid battery for a lift truck can cost about \$10,000. Although this price may seem minimal compared with other material handling expenses, the cost to power an entire lift truck fleet can quickly add up for facility managers. This is more than enough reason to ensure managers are getting the most from their lift truck batteries.

The biggest factor in battery life is the energy (measured in ampere hours) that flows in and out of the battery. It takes more energy to lift heavier loads, lift loads higher, travel faster and to stop and start more often. Generally, these are necessary job functions that you cannot change to make life easier on a battery. However, here are four ways to keep your batteries working longer:

**1. Water regularly, preferably after charging.** Charging a battery causes the water level to rise and could lead to an overflow. However, if the electrolyte level is below the top of the plates, add just enough water to cover the plates before charging.

A single-point watering system can make watering batteries more convenient. But be aware that if there is any issue with water flow, an individual cell's water level may be low. Check periodically to ensure all cells are properly supplied.

**2. Equalize on schedule.** An equalized charge for a battery is a bit like an oil change for your car: If you miss one, you will not notice right away — but over the long term, the inside of your equipment

might “gum up” (known as sulfation for lead-acid batteries). Prolonged neglect will shorten battery life.

In addition, equalizing keeps all cells working at the same level. Cells that are out of alignment make life harder on other cells. In a sense, your battery wears itself out. That is a real waste of battery life, so set a schedule for equalization and check to make sure it is followed.

**3. Pay attention to temperature.** A battery heats as it charges and discharges. Think of holding onto a rope as someone else pulls it through your hands; the faster the rope moves, the hotter your hands will get. In the case of a battery, the rope is energy flowing into or out of the battery. A hot battery needs a break; a happy battery is at room temperature.

Because a battery heats up during charge and discharge, monitoring your battery temperature during use is the easiest way to ensure you do not overwork the battery. This also will help to confirm the battery will achieve its maximum life expectancy.

**4. Size it right.** You do not want your battery to be overworked, but you do want it to be exercised. Your battery manufacturer will recommend an optimum discharge range for your type of battery.

Be aware that most lift trucks are designed to estimate a battery's state of charge primarily based on the battery voltage. This can work well when

a battery is fully discharged to the manufacturer's recommended level before being fully recharged. But, if you are one of the growing number of users who charge batteries based on convenient timing (known as opportunity charging), the battery voltage might fluctuate in ways the lift truck did not anticipate. This could lead to a situation where batteries are discharged below the recommended level because the lift truck is not able to correctly interpret the battery's state of charge.

To prevent this, it is best to use a battery-monitoring device that can report a more accurate state of charge to the lift truck. Some monitors only will report through the charger. This can report problems, but it will not help the operator take preventive action. Keeping a history of issues is helpful, but preventing them is even better.

Sharing this knowledge can combat common misperceptions about how to maximize battery life. For instance, some operators seek the warmest battery to install, believing that a hotter battery would have a higher charge and provide a longer run-time. All other things being equal, a less-healthy battery will heat up more than a healthy battery, and, as you now know, a hot battery needs a break. A battery has a tough job to do, but if you eliminate unnecessary stress, you can keep your batteries happier and living longer.