Battery Charging Best Practices

Correctly charging forklift batteries helps to ensure longer forklift running times and battery service lives. Common best practices exist that facilitate the process and should be used whenever they are compatible with the requirements of the battery's original equipment manufacture. MTC offers the world's most advanced system for managing lift truck battery rooms—the Charge Cycle Analytics (CCA) system including hardware and software.

PERSONNEL SAFETY DURING CHARGING

The charging of forklift batteries can expose personnel to potential hazards including electricity from batteries and chargers, an electrolyte containing sulfuric acid, and highly explosive hydrogen gas. Therefore, persons performing charging procedures should be appropriately trained and follow all of the requirements and recommendations of the forklift's, battery's, and charger's original equipment manufacturer (OEM).

WARNING: Persons are required to wear personal protective equipment (PPE) whenever workplace hazards exist including those related to forklifts and their batteries. Consult OSHA and other applicable regulations to determine and conform to PPE requirements before performing forklift battery charging.

Best practices for personnel safety during battery charging include but are not limited to the following:

- Charge batteries in designated areas only to ensure access to the equipment needed to appropriately support the process and ensure the safety of personnel.
- Use the correct charger equipment, device settings, and charging program whenever charging forklift batteries.
- Avoid breathing the fumes that charging batteries emit as by-products since these can contain harmful, toxic, or hazardous gases and air-borne chemicals.
- Remove all metallic items including jewelry before approaching or handling batteries and chargers and use purpose-built tools when working with batteries.
- Use appropriately rated lifting beams, battery changers, or equivalent equipment when removing or inserting batteries into forklifts.
- Prevent open flames, electrical arcs, sparks, and other potential ignition sources in the battery charging area to minimize the risk of fires or explosions.
- Position forklift correctly and engage brakes and other safety systems before attempting to change or charge batteries.
- Discontinue charging and turn off power to the charger if electrolyte begins to vent or spill or the battery becomes warmer than normal.

FORKLIFT BATTERY CHARGING TIPS

The best results will be obtained when closely adhering to a standard operating procedure (SOP) during forklift battery charging. In the event a documented SOP is not available, consult with the original equipment manufacturers of the forklift, battery, and charger for instructions. Consistently following a protocol can help to maximize the number of charging cycles supported before batteries require maintenance, service, and replacement.

Best practices for forklift battery charging include but are not limited to the following:

- Do not overcharge batteries. Doing this increases the production of explosive hydrogen gas, often results in the spillage of electrolyte, and risk overheating batteries.
- Do not over-discharge batteries to prevent irreparable damage that worsens battery performance, shortens the service life, and causes premature battery failure.
- Minimize the temperature of the charging rooms if possible and monitor battery temperatures during charging. The optimal temperature is 25 degrees Celsius (77 degrees Fahrenheit) to support the chemical process that occurs during charging. Significantly higher or lower temperatures can affect battery charging time or service life.
- Once started, let the charging cycle complete without interruptions to avoid potential harm to battery longevity. Lead-acid batteries support a fixed number of charge cycles so performing partial charges will reduce the total service life duration of the battery.
- Minimize the amount of time that batteries remain discharged to help avoid issues that impact performance. These issues include sulfation which is the internal buildup of lead sulfate crystals on battery plates, that can cause longer charging times, shorter running times, excessive heat during operation, fewer battery charge cycles, and complete battery failure.
- When storing batteries for an extended period of time, ensure they remain fully charged at all times, using a maintenance charge as needed, and are stored in a cool and dry place to prevent battery damage.