

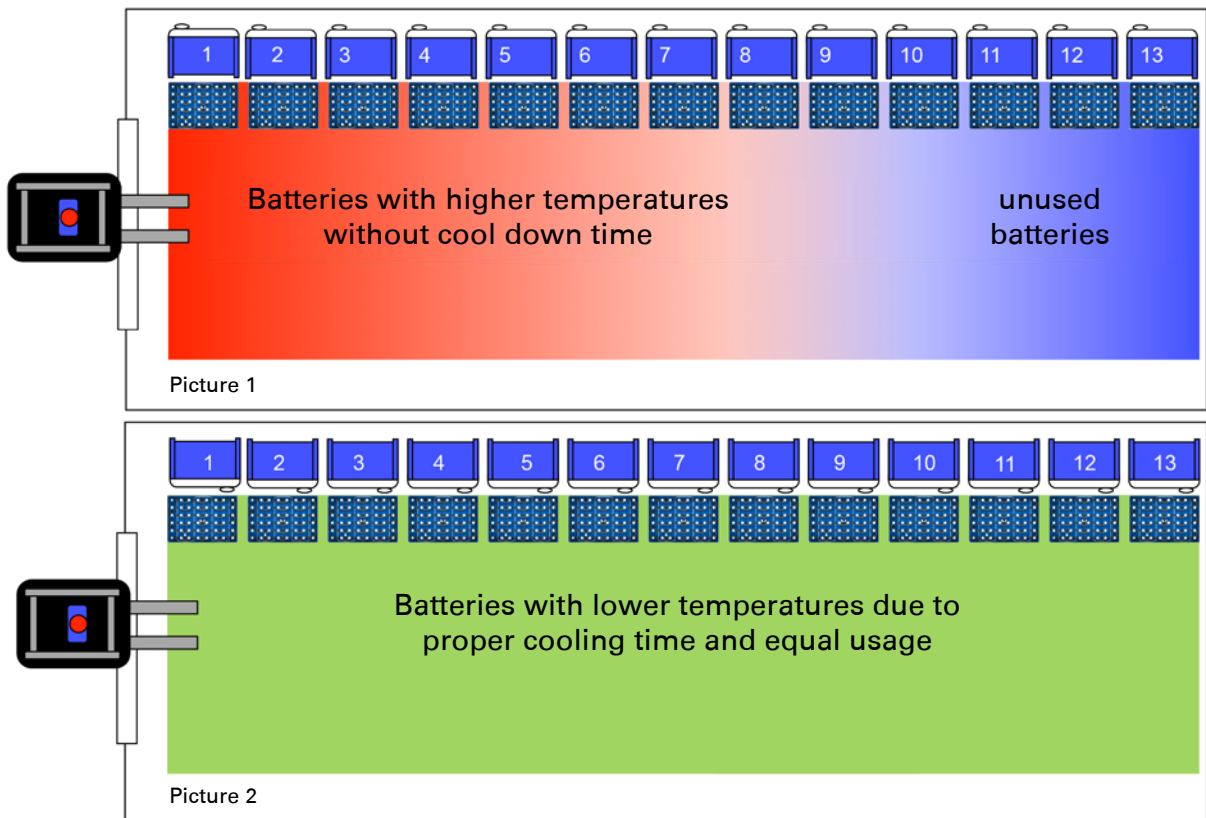
# next Battery Guard

## ▶ Battery Management



**Energy. Endurance. Performance.**

## ▶ Always the right battery



Proper industrial battery charging and rotation is critical in all electric industrial lift truck applications where changing out of batteries is required. Proper rotation is important for economic reasons that include worker productivity, equipment utilization and asset management.

However, experience has shown that the usage of individual industrial batteries is often very different due to improper battery rotation, especially in multi-shift operations.

This is due to the fact, among other things, that the batteries in the front area of the charging station are preferred over the batteries located in the center and rear area. Batteries which are harder to access, further away, are less frequently used.

Over time, the number of charge/discharge cycles increasingly varies from one individual battery to another. The result is that there is not equal usage of the batteries in the fleet. Similarly, the cool down time of the batteries in the charging station after full charge also differs greatly.

Picture 1:  
 **Charging station without pool management system**

### DISADVANTAGES

- ▶ Unequal usage of the battery fleet
- ▶ More battery changes required
- ▶ Higher operating costs

Picture 2:  
 **Charging station with pool management system**

### ADVANTAGES

- ▶ Optimum utilization of the battery fleet
- ▶ Optimized (fewer) number of change batteries
- ▶ Lower operating costs

## In the correct order



Battery temperatures increase during each charge and discharge as a result of the electrochemical reactions in the battery. Batteries that experience fast and consecutive charge/discharge cycles without allowing for proper cool-down periods in the course of an operating week are in danger of excessively high battery temperatures.

High battery temperatures must be avoided as they significantly reduce the service life, i.e. the achievable discharging cycles of the traction batteries. Equal use of all batteries in a fleet reduces the temperature increases by allowing proper and equal cool down times following a full charge.

The operators of the electric vehicles or battery room attendants often work in shifts. Only through an organized and systematic battery change out method, across all shifts and personnel, can proper rotation and extended battery life be achieved.

By using the electronic next Battery Guard, the proper rotation of all charged batteries in the charging station can be achieved.



## ► Clear Signals



The next Battery Guard consists of a programmed electronic signal system which records all batteries in chronological order of the charger switch-off time after the full charge.

A clearly visible LED signal installed near each charging place respectively signals the next available fully charged battery with the oldest switch-off time.

If the signaled battery is used during the next change and is disconnected from the charger, the LED system then signals the next available fully charged and cooled battery.

Due to the fact that only one signal LED is activated by the next Battery Guard at a time, selection mistakes made by the responsible personnel regarding the next battery to be used are virtually eliminated.

In particular, with regard to battery changing systems with multiple charging stations, the clarity within the charging station is significantly improved by the next Battery Guard.

Even in applications with a large number of charging places, the clear signal LED avoids mistakes in selecting the correct battery.

# Innovative technology

## YOUR ADVANTAGES

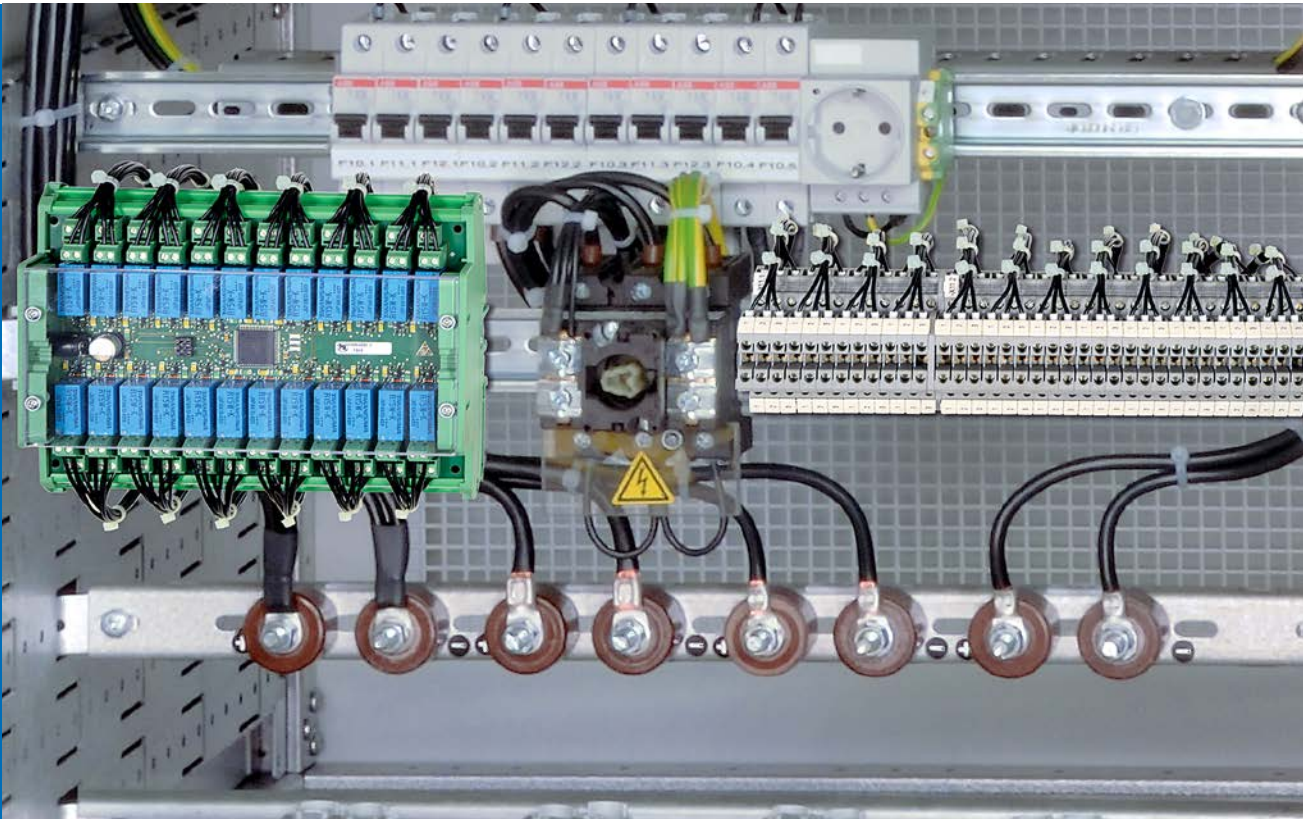
- ▶ **Use** - optimizes the utilization of batteries.
- ▶ **Order** - ensures the proper usage order of each batteries after a full charge and cool down.
- ▶ **Process reliability** - clear identification of the battery to be used next.
- ▶ **Service life** - extends and ensures the service life of your batteries.
- ▶ **Cost saving** - reduces the investment costs for batteries and chargers.
- ▶ **User-friendly** - clearly visible and intelligent LED signal prevents selection mistakes made by operators.



for traction batteries



## ▶ Electronic signal system



The electronic signal system of the next Battery Guard can manage up to 256 chargers and is installed in either the housing of the charger or in a separate housing.

In operations with batteries of different voltages and capacity, there is the possibility to create multiple battery pools, which are respectively managed by one electronic signal system.

Electronic signal systems for master-slave operation are available for large charging installations.

Depending on the design of the charging station, the required signal LEDs will be mounted at a clearly visible position near the charging area or charger.

For the visualization of the Battery Guard signals, both built-in LEDs and LEDs with built-on housings can be used.

## SYSTEM FEATURES

- ▶ Built-on signal LEDs can be fitted to different TriCOM housings.
- ▶ Possibility of installing in the docking station of the charging plugs together with the signal LED.
- ▶ Up to 256 chargers per battery pool.
- ▶ Management of different battery pools possible.
- ▶ Switch for LED light test.
- ▶ **Option:** Wireless networking via radio modem.
- ▶ **Option:** Warning signal or horn in case of incorrect operation.

Example:  
LED at the stand-alone housing



Example:  
LED installed, integrated into the docking station





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