

# Battery Monitoring

Battery system care



# Battery design, installation and continuous care.

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## Battery monitoring services

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Advice on battery system design

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'Made to measure' battery installation service

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Battery impedance testing to track battery condition

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Inspection, cleaning and maintenance options to ensure battery working life is optimised

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Battery replacement programme for a wide range of battery supported products

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Safe battery disposal

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Monitoring and regulation of batteries to extend battery life and prevent unexpected failure using Battery Monitoring

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## Pioneering solutions for total power protection.

The battery plays a key role in the overall reliability and availability of a power protection system. It supplies the energy required by the critical load in the event of a mains utility failure or when the input mains voltage and frequency are outside the acceptable values. Moreover, the battery represents an important share of the total cost of the UPS, and therefore battery care and management are of paramount importance when a UPS is designed.

Kohler Uninterruptible Power provides a range of remote monitoring and diagnostics services to provide early fault detection and prevention. Battery Monitoring is the most advanced monitoring product on the market today.



## Battery Monitoring

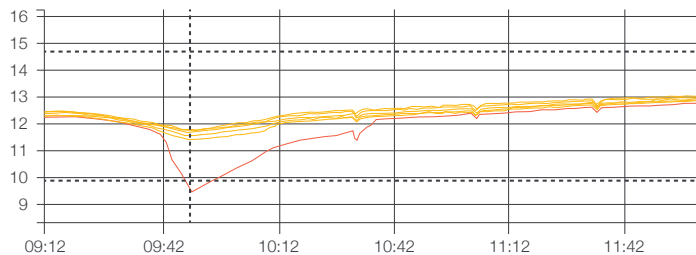
Extends battery life by equalisation

Monitors and regulates the battery charging process and avoids undercharging

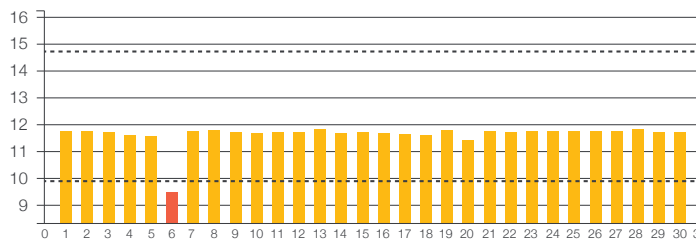
Indicates battery problems before failure

Monitors condition of every battery individually including temperature

The Battery Monitoring system from Kohler Uninterruptible Power is the most advanced product on the market today, providing an ethernet-network integrated battery monitoring and management system. Using web-management technology, it checks the internal resistance, temperature and voltage of every single battery sequentially. Through the equalisation process, the system corrects the charging voltage operating range. This prevents gassing, dry-out and thermal runaway. The constant monitoring and controlling of the individual charging voltages for each battery guarantees the availability of the battery at all times.



Block voltage



Battery block numbers

## Battery Monitoring reporting

The reporting system displays the status of all lead-acid batteries. Any change in impedance, temperature and voltage is displayed and stored. Reports can be run regularly On-site, enabling constant monitoring of the system using the Battery Monitoring viewer. Through regular monitoring of key parameters, the system will provide a warning when attention is required.

The graph above demonstrates that battery 6 is weak after 30 minutes of discharge into a 45-minute run. This early warning system enables the user to replace the weak performing battery and thus increase the lifetime of the complete battery system.

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## Inspection, cleaning and maintenance

Regular maintenance optimises the working life of a battery installation and ensures early detection of weak or faulty battery blocks. If not replaced, a compromised battery would threaten the integrity of the whole power protection system. Routine battery maintenance provided by our skilled team of specialist engineers includes:

- Checking the open circuit battery and UPS float voltages
- Inspecting the physical condition of batteries, terminals and connections
- Environmental checks – ambient temperature of battery room
- Checking the cleanliness of equipment
- Assessing the condition of battery cabinets
- Performing a detailed examination of individual cells for post and interconnector corrosion
- Taking voltage readings – block and string voltages

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## Impedance testing

Our impedance testing provides a means of assessing the internal condition of batteries. Almost any battery problem will lead to an increase in internal impedance. Recorded at regular intervals, impedance testing will track battery condition and enable end-of-working-life prediction. This service is included as part of the Battery Monitoring system or can be purchased separately.

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## Replacement and upgrade

We supply and fit batteries of all types into all models of UPS and secure power systems. Additionally, Kohler Uninterruptible Power offers a battery replacement programme for a wide range of battery supported products. These include AC UPS, DC equipment, emergency lighting units and generator starting batteries.

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## Disposal

Batteries are classed as hazardous waste and, in Singapore, must be disposed of in line with the Environmental Public Health (Toxic Industrial Waste) Regulations 1988, Kohler Uninterruptible Power ensures that all the legal requirements associated with the removal, transportation and disposal of waste batteries are fully complied with.



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