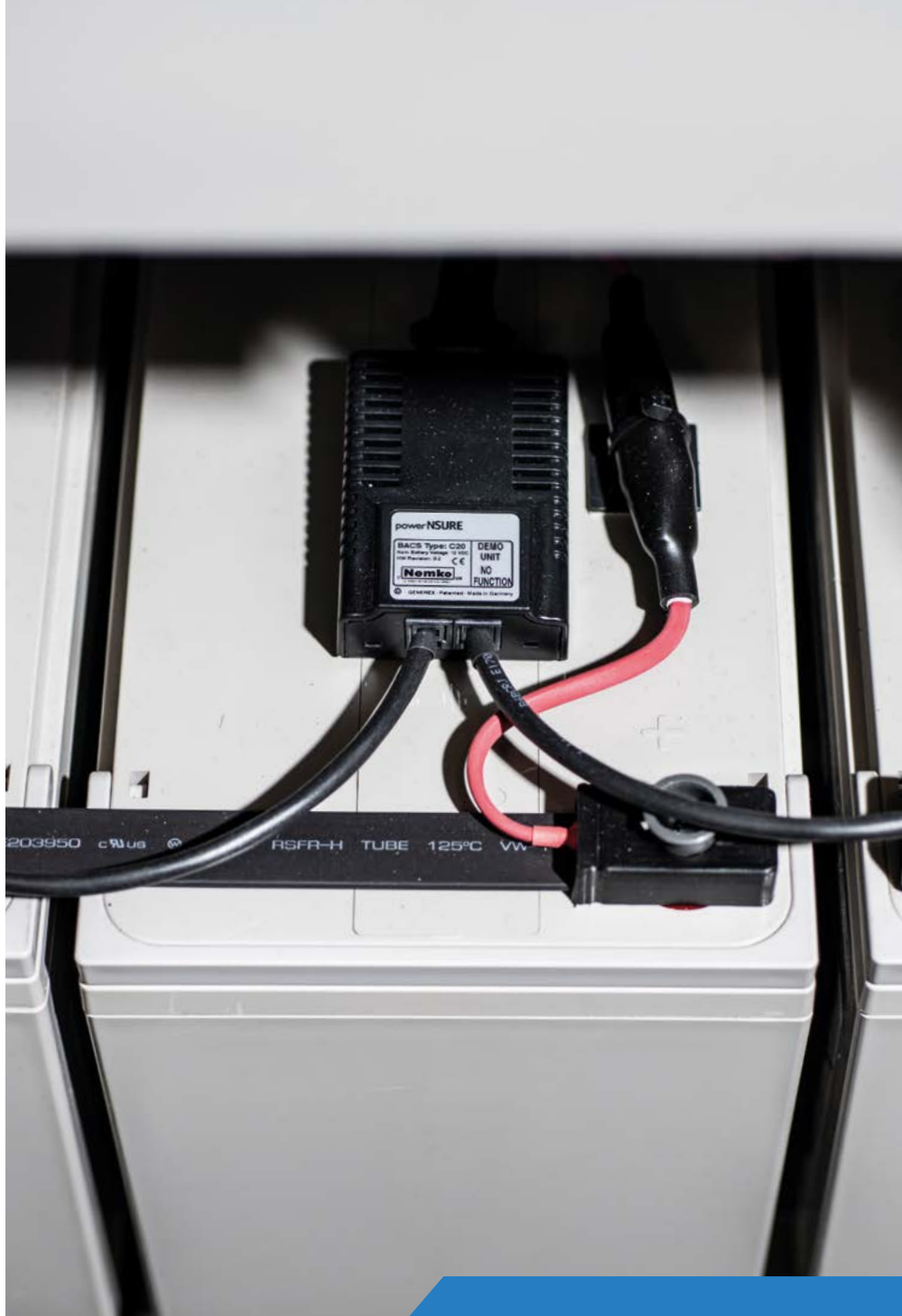


# KOHLER®

UNINTERRUPTIBLE  
POWER



## KOHLER PowerNSURE

Active battery management and monitoring

# Battery design, installation and *continuous care*.

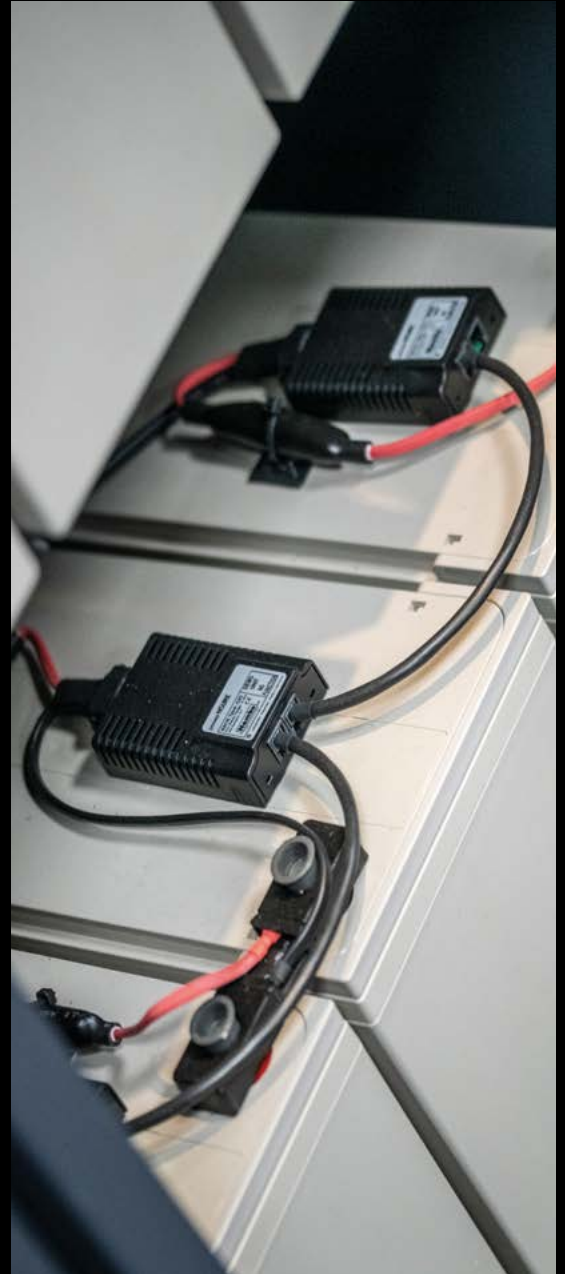
The battery plays a key role in the overall reliability and availability of a power protection system. It supplies the energy required by the critical load in the event of a mains utility failure or when the input mains voltage and frequency are outside the acceptable values. Moreover, the battery represents 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.



## Battery services overview

In addition to designing a battery system that meets your specific needs, KUP offers a range of products and services to maximise its performance and life.

- | Advice on battery system design
- | 'Made to measure' battery installation service
- | Battery impedance testing to track battery condition
- | Inspection, cleaning and maintenance options to ensure battery working life is optimised
- | Battery replacement programme for a wide range of battery supported products
- | Safe battery disposal
- | Monitoring and regulation of batteries to extend battery life and prevent unexpected failure using PowerNSURE



## PowerNSURE Active Management

The PowerNSURE system from KUP 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.

- | 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

## Extending service life through equalisation

In a traditional VRLA battery system of multiple battery blocks in series, every battery block is charged with an average voltage.

However, as the chemistry of each block varies differently from manufacturing and ageing this results in the internal impedance being slightly different causing some blocks to be overcharged, causing dryout, and some blocks to be undercharged, causing sulphation. Both of these cause premature ageing and the weakest block defines the reliability of the system.

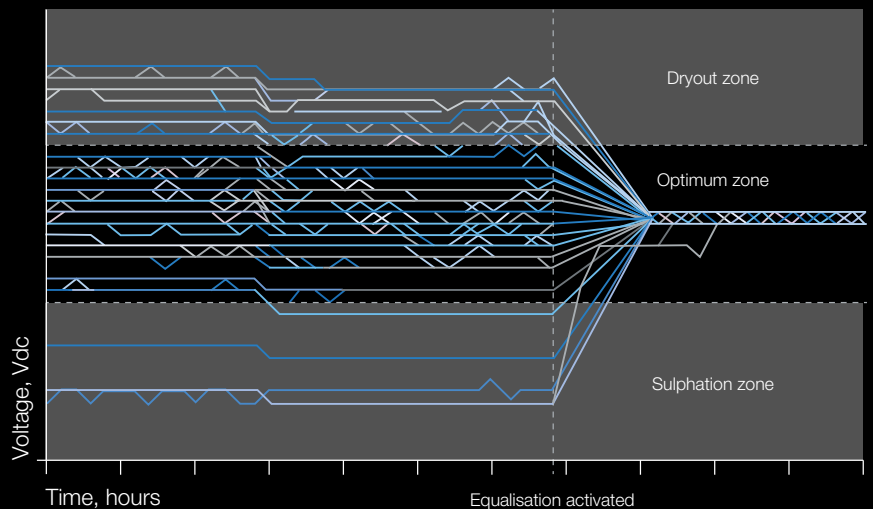
Using a sensing and management module per block, PowerNSURE delivers a balanced voltage to each, dramatically extending service life and reliability.

## PowerNSURE reporting

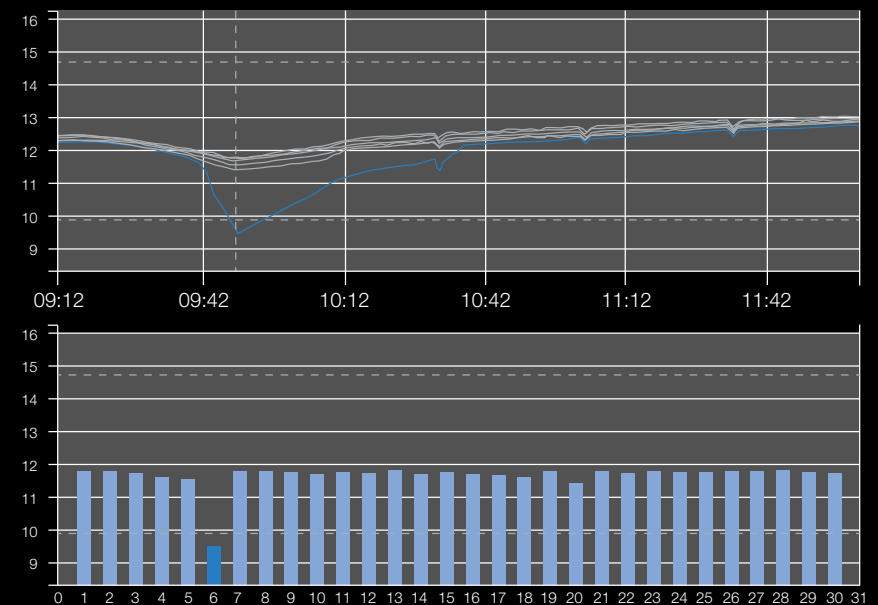
In addition to battery management, PowerNSURE reports on the status of all batteries, enabling issues to be resolved before they can put the system at risk.

Change in temperature, voltage and impedance is displayed and stored. Reports can be run and viewed on-site, providing an early warning when attention is required. For example, in the chart to the right, battery 6 is identified as weak after 30 minutes of discharge into a 45 minute run, enabling it to be flagged for replacement.

Individual voltages of a battery string



Power vs Power Factor



## Battery Services

PowerNSURE is backed by the resources of the KUP field service team. Regular maintenance visits will include a review of PowerNSURE data and proactive supplementary measures such as cable and cabinet condition checks, visual inspection (for symptoms such as swelling or corrosion) and, upon agreement, replacement of weak cells.

KUP can also offer safe, quality-assured upgrade and disposal of existing battery systems for most major UPS brands.





## 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

## 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 PowerNSURE system or can be purchased separately.

## Replacement and upgrade

We supply and fit batteries of all types into all models of UPS and secure power systems. Additionally, KUP 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.

## Disposal

Batteries are classed as hazardous waste and, in the UK and Ireland, must be disposed of in line with the Hazardous Waste Regulations 2005. As a registered carrier of such waste (registration number TWE/675610), KUP ensures that all the legal requirements associated with the removal, transportation and disposal of waste batteries are fully complied with.

## Quality guaranteed

Our quality assurance, health and safety and environmental procedures are NQA EN ISO 9001, OHSAS 18001 and ISO 14001 certified. We are also certified under the SafeContractor scheme ([www.safecontractor.com](http://www.safecontractor.com)). These certificates ensure that all of your obligations under health and safety legislation are fully met. All battery maintenance visits and activities are fully documented.



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