

## Battery monitoring system 560 kWh

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Burgio, A.; Cimmino, D.; Nappo, A.; Smarrazzo, L.; Donatiello, G. An IoT-Based Solution for Monitoring and Controlling Battery Energy Storage Systems at Residential and Commercial Levels. *Energies* 2023, 16, 3140. <https://doi/10.3390/en16073140>

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The PowerNSURE active battery management system from KUP brings advanced, life-extending technology to lead acid VRLA batteries. The system not only monitors performance but, by intelligently delivering the ideal charging voltage to each individual battery block, it also dramatically improves both service life and reliability.

These are some of the most common reasons batteries fail and are unable to deliver the performance required



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when called upon. In contrast the constant monitoring and controlling of the individual charging voltages for each block help assure its availability when needed.

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 PowerNSURE viewer. Through regular monitoring of key parameters, the system will provide a warning when attention is required.

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

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