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| **Title:** | Technical Comparison between Lead-acid and Lithium-ion Batteries Used in Microgrid UPS System | | |
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| **Abstract:** |  |
| An uninterruptible power supply (UPS) in microgrid application uses battery to protect important loads against utility-supplied power issues such as spikes, brownouts, fluctuations, and power outages. UPS system typically employs lead-acid batteries instead of lithium-ion (Li-ion), even though Li-ion battery possesses advantages over lead-acid. This paper aims to investigate the performance of the two batteries for UPS system so that a conclusion on which battery is appropriate for UPS application can be drawn. The comparison is conducted based on state of charge (SOC) for both charging and discharging, voltage and current values, and heating effect. Two software namely COMSOL and MATLAB/Simulink have been used to investigate the performance of the two batteries. From the simulation results it has been observed that for microgrid's UPS application, Li-ion batteries overall performance is much better than Lead-acid battery. | |