



Energy Storage System Technologies for Advanced Electrical Power Applications

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Abstract: While energy storage technologies do not represent energy sources, they provide valuable added benefits to improve stability, power quality, and reliability of supply. Battery technologies have improved significantly in order to meet the challenges of practical electric vehicles and utility applications. Flywheel technologies are now used in advanced nonpolluting uninterruptible power supplies. Advanced capacitors are being considered as energy storage for power quality applications. Superconducting energy storage systems are still in their prototype stages but receiving attention for utility applications. The latest technology developments, some performance analysis, and cost considerations are addressed. This paper concentrates on the performance benefits of adding energy storage to power electronic compensators for utility applications.

Keywords: flexible ac transmission systems (FACTS), flywheel energy storage, high voltage dc transmission (HVDC), hyper capacitor, ultra capacitor.

