

# Power Management of Solar Based DCMG Supported by Hybrid Energy Storage System : A Review

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**Abstract:** *The rapid integration of renewable energy into distributed generation systems has intensified the focus on efficient power management strategies. Solar-based Direct Current Microgrids (DCMGs) offer a promising solution for sustainable energy distribution. However, the intermittent nature of solar energy necessitates the use of Hybrid Energy Storage Systems (HESS) to ensure stable and reliable operation. This review explores various power management strategies designed for solar-based DCMGs supported by HESS, consisting of batteries and supercapacitors. Key aspects such as energy storage sizing, power flow control, energy dispatch optimization, and the use of predictive algorithms are discussed. The paper also highlights advancements in power management schemes, system stability enhancement, and energy efficiency improvement in HESS-supported solar DCMGs. Challenges, future research directions, and potential areas for improvement are identified to foster the development of more resilient and efficient microgrid systems.*

**Keywords:** BEV (Battery Electric Vehicle), ESS(Energy Storage Scheme), SOC(State Of Charge), PMSM (Permanent Magnet Synchronous Motor) etc