

(54) Title of the invention : A System for Voltage Stabilization Control with Hybrid Renewable Power Sources in DC Microgrid

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(57) Abstract :
The present invention relates to a system for voltage stabilization control with hybrid renewable power sources in DC microgrid (DCMG) (100). A single AC-DC converter connected to the utility can source the DC bus, supporting multiple DC generation to feed both AC and DC loads. This reduces the grid's burden and makes the generation system environment friendly. The present invention provides the detailed control strategy of one such DCMG (100) with a hardware setup working at 600V DC. The sources considered are Solar Photovoltaic System (SPVS) (1), Permanent Magnet Synchronous Generator (PMSG) (3)-based wind energy conversion system, Battery (B), and utility grid (G). The proposed DCMG (100) can maintain stable DC bus (2) voltage under various dynamic conditions by balancing the power on either side of the DC bus (2). The presence of a grid (G) is considered to maintain stable AC voltage and frequency for AC loads (8). [figure 2]

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