

Title: DC microgrid based on virtual capacitor

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To mitigate voltage transients caused by power fluctuations in microgrid systems, this study investigates model predictive control and virtual inertia control for the voltage regulation...

Based on a small-signal model, the influence of changes in rotational inertia and virtual capacitor on the system during sudden changes in load power are investigated, and an adaptive adjustment method ...

Virtual capacitance mimics the dynamic behaviour of a physical capacitor using sophisticated control algorithms and DC-DC power converters, significantly enhancing DC-bus ...

Therefore, this study presents a composite controller incorporating a global integral terminal sliding mode controller with a backstepping controller. A virtual capacitor is employed to mitigate the lower ...

By analyzing the effect of the DC-side capacitor on the inertia time constant of the system, a virtual capacitor is added to the voltage loop of the traditional VDCM control strategy, which further ...

In order to effectively improve the system inertia and enhance the dynamic stability of the power grid, a new virtual DC motor control based on virtual capacitance is proposed for the energy storage port ...

Abstract: Virtual inertia (VI) control of dc microgrids (dc MG) is a potential solution to the voltage stability issue caused by the intermittency of loads and renewable sources.

The virtual inertia can effectively enhance the voltage stability of dc microgrids (dc MG) against disturbances. However, the existing approaches are generally criticized for delayed inertia provision ...

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