Microgrid bus voltage remains unchanged

How to control a dc microgrid?

The ambient temperature changes slowly. Hence to estimate lines resistance, there is no need to inject AC continuously. Consequently, in normal conditions, the DC bus voltage will be ripple-free. Proportional current-sharing, ESUs SOC balancing, and DC bus voltage regulation are the most important challenges in controlling a DC microgrid.

How to improve the stability of DC microgrids?

The inertia of the system can be increased by reducing the degree of bus voltage oscillations and solving the problem of large voltage deviations. Current methods for improving the stability of DC microgrids are positive and passive damping strategies.

What happens if DC bus voltage increases?

These units are connected to the DC bus having different impedances. In normal conditions, RESs extract maximum accessible power and inject it to the DC bus. Load power is also provided from it. If the load power is more than generation power, DC bus voltage drops. In reverse the DC bus voltage increases.

How can a dc microgrid reduce voltage fluctuations?

Improving the inertiaof a DC microgrid is an effective way to reduce DC voltage fluctuations. Initially,the problem of the low inertia of DC microgrids is mainly solved by adding hardware devices,such as supercapacitors [6,7]. However,their high cost is not conducive to practical engineering applications.

How much power can a dc microgrid produce?

In this case,the total load of the DC microgrid is composed of resistive and constant power load to test the maximum power output of 10 kWat the off-connected mode. Fig. 12 (a) shows the DC bus voltage variation with output fluctuations of new energy generations.

How does a microgrid work?

The proposed microgrid consists of RESs,ESUs with various capacities and loads (constant power load (CPL) or resistive load). These units are connected to the DC bus having different impedances. In normal conditions,RESs extract maximum accessible power and inject it to the DC bus. Load power is also provided from it.

State-of-charge (SoC) consistency and bus voltage regulation are two major control objectives of shipboard DC microgrids. To achieve these objectives, this paper presents a novel distributed model predictive control ...

Direct-current (DC) microgrids have gained worldwide attention in recent decades due to their high system efficiency and simple control. In a self-sufficient energy system, voltage control is an important key to dealing

with ...

DC microgrids are highly compatible with photovoltaic (PV) generation because of their direct-current properties. However, with the increasing integration of PV sources into DC ...

By assessing the range of bus voltage and the power balance between photovoltaic output and load absorption within the system, a coordinated operational approach for the photovoltaic ...

In a low-voltage microgrid, the droop law (Q-?, P-V) is widely used to regulate power flow [2], as the feeders feature in resistor property [3]. Although the frequency is a global variable and ...

The DC component of the bus voltage remains unchanged during the process, and the DC component of the converter current is balanced, indicating that the proposed method is compatible with voltage regulation and ...

Therefore, the bus voltage of the DC microgrid needs to operate within the allowable deviation range, which is usually set to the range of ± 10% U N or ± 5% U N of the ...

This article employs a fuzzy logic controller (FLC) to investigate voltage stability in a PV-based DC microgrid. Several photovoltaic (PV) modules, a DC-DC converter, and loads make up the microgrid.

Therefore, this section focuses on adjusting the DC bus voltage. For the DC sub-microgrid, it is necessary to maintain the power balance together with the photovoltaic power generation unit ...

This study proposes a novel control strategy for DC microgrids, which not only balances ESUs SOC and shares current between ESUs proportional to their capacity but also, reduces DC bus voltage deviation ...

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