Microgrid power balance and circulating current

Does a bus-sectionalized hybrid microgrid improve power flow?
The authors of demonstrated the power flow of a hybrid AC/DC MG utilizing a bus-sectionalized hybrid microgrid (BSHMG). The bus-sectionalized structure improves the reliability and flexibility of the hybrid MG without changing the design of the controller.

How to solve power flow analysis of unbalanced microgrid system?
Some of the methods are used to solve the power flow analysis of the unbalanced microgrid system. Methods that are used to solve the power flow of the islanded microgrid are based on modifications of the existing Jacobean matrix-based methods and based on modifications of the BFS methods due to the absence of the slack bus.

Is a grid-connected hybrid alternating/direct current (ac/dc) microgrid based on a wind turbine?
In this paper,we study the modeling,the control,and the power management strategy of a grid-connected hybrid alternating/direct current (AC/DC) microgrid based on a wind turbine generation systemusing a doubly fed induction generator,a photovoltaic generation system,and storage elements including hydrogen storage system and batteries.

Is there a generic power flow algorithm for unbalanced Islanded hybrid AC/DC microgrids?
A generic power flow algorithm for unbalanced islanded hybrid AC/DC microgrids. IEEE Trans. Power Syst. 2020, 36, 1107-1120. [Google Scholar] [CrossRef] Surendra, K.; Das, B.; Pant, V. Static state estimation of islanded AC/DC Hybrid microgrids. Int. J. Electr. Power Energy Syst. 2024, 155, 109612. [Google Scholar] [CrossRef]

The main difficulties facing the operation of parallel converters in DC microgrids (DCMGs) are load sharing, circulation current, and bus voltage regulation.

In our study, we are focusing on a hybrid AC/DC MG connected to a main AC grid, and using WTs based on a doubly fed induction generator (DFIG), PV panels, AC and DC loads as well ...

A control paradigm is proposed in this paper for decentralized power balance in hybrid AC/DC Microgrids (MGs). In this technique, the AC and DC sub-grids can transact energy from or ...

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In this paper, an innovative control strategy to address circulating currents for different structure of DC microgrids is proposed. The strategy suggests a circulating current suppression ...

Simulation and experimental results show that the control method accurately shares the power between the two parallel-connected BICs in the AC/DC hybrid microgrid, limits the circulating ...

By incorporating fuzzy logic, the proposed strategy enhances the adaptability of droop control to varying system conditions, improving the management of circulating currents and ensuring more accurate ...

To elucidate the intrinsic mechanism of the circulating currents in such scenarios, the model of a MPCC system is established. Based on that, a circulating current suppression strategy ...

A general methodology of the power flow analysis of AC and DC microgrids is explained in the flowchart of a hybrid AC/DC microgrid. The fundamental steps of power flow analysis of AC/DC ...

The findings of this study validate that direct modulation can maintain the optimal performance of a multiterminal hybrid microgrid based on MMC under unbalanced power conditions ...

In microgrids, power sharing represents an important research topic since it prevents inverters from overloading. In fact, several power sharing methods have been proposed in literature.

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