

How are AC/DC hybrid microgrid groups formed?

In the element of intergroup control, AC/DC hybrid microgrid groups are formed by connecting each microgrid with ILC.

What is the optimal control strategy for AC/DC hybrid microgrid groups?

A distributed optimal control strategy based on finite time consistency is proposed in this paper, to improve the optimal regulation ability of AC/DC hybrid microgrid groups. The control strategy is divided into two steps: one is within a microgrid and the other is among microgrid groups.

How do Hybrid microgrids work?

Microgrids are connected together using ILC devices, through which any two DGs in a hybrid multi-microgrid system can communicate with each other and react according to the current generation and load of each microgrid. It provides the communication network foundation for the distributed control between and within AC/DC hybrid microgrid.

What is a dc microgrid set?

The DC microgrid set
The voltage measurement value of the common connection bus of the n th DC microgrid
The reference value of the common connection bus of the n th DC microgrid
The mean value of the power mapping factor of the m th AC microgrid
The mean value of the power mapping factor of the n th DC microgrid

Do bidirectional AC/DC converters work in microgrids?

There is no doubt that bidirectional AC/DC converters have many applications in the microgrid field. Therefore, the power interaction between the DC bus and the AC bus (see Fig. 7), was proposed in this study using two bidirectional converters of several switching states for the inversion or rectifier modes.

How to calculate the average power mapping factor of a microgrid?

The calculation method of the average power mapping factor of each microgrid is as follows. The DG communicating with ILC in each microgrid transmits the power mapping factor at the current sampling time to the converter station and calculates the average value.

Abstract The hybrid AC/DC distribution network has become a research hotspot because of the wide access to multiple sources and loads. ... (ESS) for a hybrid AC/DC microgrid in a remote area through a multi-objective genetic algorithm ... the traditional calculation method based on a probability risk has a large error, and it is not easy to ...

In this paper, the issues related to short-circuit calculations in hybrid AC/DC microgrids are discussed. The reference standard for short-current calculations in DC systems ...

Figure 8 shows the calculation time curve of the proposed three-phase four-wire sensitivity calculation method in hybrid AC/DC LVDNs with different nodes. The sensitivity calculation time of a 27-node hybrid AC/DC LVDN used in this paper is 1.8386 s.

The first component is a power flow calculation method for hybrid AC/DC microgrids based on optimization. The power flow can be performed ... AC/DC microgrid have been compared with the values obtained in the power flow simulation for validation, demonstrating the accuracy and validity of the developed procedure.

Taking AC-side reactance and DC-side short-circuit impedance into consideration, a steady-state short-circuit current calculation method based on solving the ...

Such hybrid AC/DC microgrid has the advantages of both AC and DC with increased efficiency and less cost since the conversion between AC and DC is reduced. ... Some methods to solve this problem are ... The calculation of time constants and gains for each converter is performed as an optimisation problem with stability as the objective function ...

Therefore, this research paper proposes an appropriate loss calculation method (i) to validate AC-DC coupled hybrid micro-grid system has minimum power conversion losses than the AC coupled hybrid micro-grid system, (ii) appropriate power sharing between AC and DC bus and (iii) grid current harmonics mitigation.

This AC/DC HMG benchmark includes a one-line diagram as well as essential data for the 13,8-kV primary system and 0,22-kV secondary system. The proposed study is ...

2.1 Three-stage distributed state estimation method for AC-DC hybrid microgrid The AC/DC microgrid state estimation model in [12] is $\min J_{DC} \times DC + J_{AC} \times AC$ s.t. $P_{AC} + iP_{DC} = 0$ (1) In the equations, x_{AC} and x_{DC} are the state variables of the AC microgrid and the DC microgrid, J_{AC} and J_{DC} are the AC state

The hybrid AC/DC microgrid includes DGs and loads with AC and DC bus, ... However, the proposed energy method requires a higher calculation burden of the circulating current references and more complicated PIR controllers for the circulating current control. Table 1. Advantages and disadvantages of the proposed energy control method.

or a hybrid AC/DC microgrid. This paper proposes a generalized approach that can be used independently of the characteristics of the hybrid system. The proposed approach is applied to four test microgrids with different distributed sources and number of nodes and the results are ...

METHOD IN AC-DC MICROGRID V. ANIL KUMAR, M. SEKHAR, V. SURYA PRAKASH, M. RAVI KUMAR-----***----- ABSTRACT - Due to the fast proliferation of distributed generators (DGs) in power systems, managing the power of different DGs and the grid has become crucial, and microgrid provides a promising solution. Therefore, focus on ac and dc

The main contribution of this article is the development of a procedure to study and evaluate the correct operation and the technical and economic feasibility of hybrid microgrid installations. The developed procedure consists of two components. The first component is a power flow calculation method for hybrid AC/DC microgrids based on ...

The peer-to-peer control strategy of islanded AC-DC hybrid microgrid power flow calculation model is established, which is based on interlinking converter scaling method of autonomous operation ...

Guopeng Zhao et al [5] combined subjective and objective evaluation methods, and proposed a comprehensive evaluation method for AC/DC hybrid microgrid planning based on analytic hierarchy process ...

To maximize the benefits of microgrid clusters, a general model and analysis method for studying the optimized operation of AC/DC microgrid clusters using non-cooperative games is proposed. This paper first establishes the optimized objective function of an AC/DC microgrid for economic operations. Based on the supply and demand theory, the dynamic ...

This paper combines the subjective evaluation method with the objective evaluation method, and proposes a comprehensive evaluation method of AC/DC hybrid microgrid planning based on analytic ...

For hybrid AC/DC microgrid (HMG) under master-slave control strategy, DGs usually adopt constant power control (P control) in grid-connected mode and at least one DG adopts constant voltage control (V control) in islanding mode. However, when unplanned islanding happens, the voltage and current of the HMG will experience remarkable fluctuations, which ...

This paper combines the subjective evaluation method with the objective evaluation method, and proposes a comprehensive evaluation method of AC/DC hybrid microgrid planning based on ...

The reactive power compensation method is used to improve the power quality in a hybrid AC-DC microgrid. The applied RPC method verifies using the MOGWO algorithm ...

Heliyon 5 (2019) e02862 Contents lists available at ScienceDirect Heliyon journal homepage: Research article Hybrid AC/DC microgrid test system simulation: grid-connected mode a, *** Leony Ortiz a, *, Rogelio ...

In this paper, a Microgrid (MG) test model based on the 14-busbar IEEE distribution system is proposed. This model can constitute an important research tool for the analysis of electrical grids in ...

A distributed optimal control strategy based on finite time consistency is proposed in this paper, to improve the optimal regulation ability of AC/DC hybrid microgrid ...

The project proposes a hybrid system which combines AC and DC system interconnected with inverters so as

to form a hybrid micro grid. On AC side, Photovoltaic (PV), Wind and Fuel cell are ...

In order to solve the problem that the seasonal DC load causing the energy's idle in other seasons and the inability of the power exchanging from DC to AC side during the abnormal operation of AC/DC Hybrid microgrid (MG), this paper first proposes a mobile energy storage (MES)'s transfer strategy and then establishes a two-layer optimal configuration model ...

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