DR Congo lvdc microgrid

Fault detection technique using time-varying filter-EMD and differential-CUSUM for LVDC microgrid system. S Sarangi, C Biswal, BK Sahu, IS Samanta, PK Rout. Electric Power Systems Research 219, 109254, 2023. 18: 2023: ... SS Biswal, DR Swain, C Biswal, S Panda, PK Rout.

Due to increase in use of DERs, a need for LVDC microgrids is emerging. There is a need to reconsider employing DC distribution instead of AC distribution as many of the homes and office equipment like laptops, computers, mobile battery chargers, electronic lights etc., are DC powered. In this case

An improved decentralized control strategy for a PV hybrid energy storage system in an LVDC microgrid Jianbiao Li1,2, Yong Chen1,2, Yue Wu3*, Xu Cheng1,2 and Ruixiong Yang1,2 1DC Power Distribution and Consumption Technology Research Center of Guangdong Power Grid Co., Ltd., Zhuhai, China, 2Zhuhai Power Supply Bureau of Guangdong Power Grid Co., Ltd., ...

The essence of line protection in LVDC microgrids includes: (1) using additional thyristors in the modified DCSST to avoid the high current flowing through the freewheeling diodes; (2) lowering the critical requirements for fast fault identification and isolation by coordinating the converter control and line protection; (3) tripping the ...

LVDC microgrid is considered as the desired solution against the continuous increase of load demand which is powered by renewable energy sources (RESs) which upholds stability between energy needs ...

The low-voltage dc (LVDC) microgrid possesses numerous benefits and their penetration in the power system has increased rapidly in recent years. However, the detection of faults in the LVDC microgrid is a challenging issue due to the large magnitude of fault currents and fault-level variation in the microgrid. The performance of the recent current and its ...

The LVDC microgrid was modeled and simulated using power systems computer-aided design (PSCAD). In addition, the proposed hybrid method was implemented using MATLAB"s wave menu, a script m-file ...

The primary concerns in designing and control of LVDC microgrid involve: (a) choice of suitable converter, (b) extraction of maximum power from RES, (c) voltage regulation and (d) power sharing among various sources and loads [7, 8]. The output power of PV is intermittent in nature and is affected due to change in climatic conditions.

The utilization of LVDC-MGs plays a pivotal role in significantly mitigating losses linked to power electronics converters. As cited in [3], these microgrids offer many advantages, including increased power transmission capability, economic efficiency, enhanced robustness, and higher electrical power quality.The

implementation of LVDC-MGs in residential and ...

(DOI: 10.1049/icp.2022.1419) Short-circuit fault has a great impact on the safety of LVDC microgrids. In order to avoid damage to the DC equipment within microgrid, DC reactors need to be deployed to limit the fault current. This paper proposes an optimal configuration scheme of reactors based on the analytical solution of fault current. Firstly, the equivalent models of the ...

This paper proposes a combined adaptive droop-based load sharing, maximum power point tracking (MPPT), and energy management of photovoltaic (PV)-based dc microgrid system. A proportional droop index (PDI) algorithm is introduced, which is a function of normalized current sharing difference and voltage deviation at the output side of the converter. The proposed ...

The scheme of this architecture is depicted in Fig.1 2) Low Voltage DC (LVDC) microgrid: in this case, the renewable energy source output converter is a Buck-Boost dc/dc and the bus connecting ...

Low-voltage dc (LVdc) microgrids facilitate the integration of renewable energy systems and modern loads. However, they suffer from the lack of a sensitive, selective, reliable, and fast protection strategy. The low fault current of high-resistance faults makes fault detection and faulty zone identification challenging tasks for protection engineers. This article proposes ...

4 Faults in LVDC microgrids with front-end converters Introduction Figure I.3 - DC positive pole ground fault current path in an active LVDC microgrid with the neutral point of the MV/LV transformer grounded Figure I.2 - DC short circuit current components in an active LVDC microgrid If, on the other hand, the fault is on the DC side, fault

3 LVAC AND LVDC MICROGRIDS 15 3.1 LVAC MG advantages and disadvantages 15 3.2 LVDC MG advantages and disadvantages 16 3.3 Energy efficiency and savings of LVDC technology compared to LVAC technology in microgrids according to literature 18 3.3.1 Power electronics and power conversion 19

The LVDC distribution has piqued academic interest due to expansion in power electronics technologies. The use of converters, however, has created many technical problems for their protection and control in the case of a failure under improper circumstances. In converter-fed systems, after-the-fault conduct LVDC distribution protection is much different and more ...

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