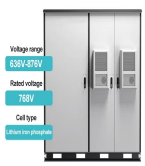
MICROGRID SELF-TRIGGERING CONTROL PATENT

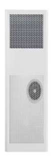
2.2. Secondary Control of AC Microgrids We consider the AC microgrid composed of i DG, i 2(1,2,. . .,n). The inverter-based secondary control framework composed of various electrical components and control circuits is shown in Figure2. Please refer to [36] for the speci???c structure of various electrical components.


Aiming at the problem that distributed secondary control is vulnerable to FDI attacks in DC microgrid, which affects the stability of the system, and the problems of communication redundancy and energy loss in traditional distributed secondary control, an event triggered fixed time distributed secondary control scheme based on high-order differentiator is ???


-16 Priority to US13/184,538 priority Critical patent/US20130015703A1/en the microgrid including a self-healing function using sectionalizing switches and breakers to isolate a faulted distribution section and to redirect power to non-faulted sections after a fault occurs. Microgrid control system, control method of microgrid

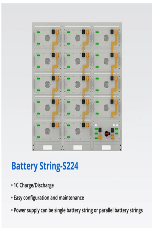


In this study, distributed event???and self???triggered (ST) control methods are proposed for accurate load sharing and voltage control in islanded AC microgrids with resistive line impedances. The proposed control framework is comprised of a two???level control structure. At the primary level, the V???I droop control method is adopted. In this



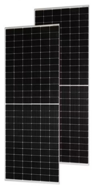

Distributed cooperative control methods are widely used in the islanded microgrid control system. To solve the deviation of frequency and voltage caused by the droop control, it is necessary to recovery the frequency and voltage to the rated value using a secondary control strategy. However, the traditional communication method relies on the continuous ???

MICROGRID SELF-TRIGGERING CONTROL PATENT



A self-triggering mechanism based active power distribution method and system for a hybrid micro-grid belong to the technical field of self-triggering and micro-grids, solve the problem of how to reasonably distribute active power among a plurality of alternating current and direct current micro-grids and greatly reduce the waste of resources, realize accurate active power ???


1 INTRODUCTION. Microgrids are small-scale power grids that consist of energy sources, loads, control system, communication system, energy storage and energy conversion elements [1, 2] recent years, microgrids ???

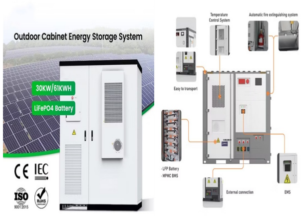



In this study, distributed event???and self???triggered (ST) control methods are proposed for accurate load sharing and voltage control in islanded AC microgrids with resistive line impedances.


A distributed fixed-time nonlinear control strategy, which integrates the event-triggered mechanism into voltage and frequency regulation and active power sharing in an autonomous microgrid, is proposed in this paper. Based on the developed event-triggered scheme, the controller is updated only when the event-triggered condition is satisfied, which ???


This paper investigates the frequency restoration problem of islanded microgrids when subjected to malicious data injection. A distributed event-triggered resilient control method based on hidden layer is proposed to mitigate the impact of false data injection (FDI) attacks on microgrids. Unlike traditional estimation-based or compensation-based approaches, the ???

MICROGRID SELF-TRIGGERING CONTROL PATENT



4. Why to shift towards Microgrids ? Enhances the capacity and efficiency of the existing power services. Facilitates integration of renewable power sources, storage devices and electric vehicles. Control over the power ???

Modern smart grids are replacing conventional power networks with interconnected microgrids with a high penetration rate of storage devices and renewable energy sources. One of the critical aspects of the operation of microgrid power systems is control strategy. Different control strategies have been researched but need further attention to control ???

At present, the distributed cooperative control scheme has been widely used in the secondary control of microgrids (MGs). However, instability factors in communication, as well as the low bandwidth and energy of the communication network, affect the safe and efficient operation of the scheme. [25], a self-triggering control algorithm is

the proposed control scheme. Index Terms???Microgrid, distributed control, secondary con-trol, self-triggered mechanism, Zeno-freeness I. INTRODUCTION Microgrid (MG) is a promising way to facilitate the utiliza-tion of the renewable energy due to its operation flexibility, which is important to reduce carbon emissions and improve

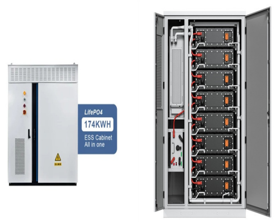
Distributed dynamic event-triggered control for resilience-oriented current sharing in microgrid Guoxiu Jing1 Junqi Liu1 Tianyang Zhao2 Bonan Huang1 Rui Wang1 MG are triggered only when certain triggering conditions are satis???ed, which reduced communication frequency. For exam-ple, reference [28] proposed an ETC method to reduce the

MICROGRID SELF-TRIGGERING CONTROL PATENT

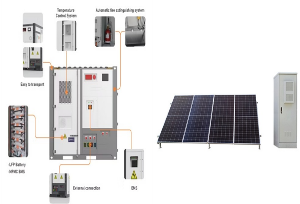
Development of microgrids and wide-spread deployment of renewable generation and energy storage systems has highlighted the need for distributed control schemes to achieve maximum utilisation and

Conventional control methods often employ droop control as the primary control, supplemented by a dual-loop control system managing voltage and current to stabilize MG operations [4]. However, these methods may falter due to mismatches in line impedance and load variations, leading to unequal power distribution across the MG and steady-state errors in ???

Abstract: Distributed event-triggered secondary control in microgrids has been widely investigated to improve system efficiency. But most of them are based on consecutive triggering condition ???



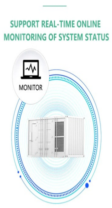
The trigger times for the voltage and frequency secondary control based on event-triggered and self-triggered methods are shown in Fig. 5 and Fig. 6, respectively.The communication burdens of the three control methods are compared at t = 8???11 s in Table 4.The sampling event of the system is chosen as T s = 0.0005 s in [19] pared with the traditional ???



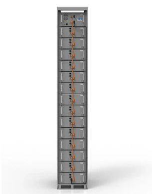
To overcome this issue, aperiodic schemes such as event triggering and self triggering can be employed. They considerably reduce the load on the communication channel by transmitting only when needed, thereby ensuring optimal performance of the NCS. Ref. [1] presents a comprehensive review of aperiodic triggering for networked control systems.

MICROGRID SELF-TRIGGERING CONTROL PATENT


Distributed collaborative control strategies for microgrids often use periodic time to trigger communication, which is likely to enhance the burden of communication and increase the frequency of



With the development of distribution generation (DG) technology, large amount of renewable energy connected to the microgrid, which has a significant impact on the consumption of renewable energy. The nonlinear load connected to the microgrid leads to the reduction of power quality, and the line impedance between the distribution generation and the ???

In this article, sliding mode control (SMC) strategy is reported for frequency stabilization in microgrid (MG) using event-triggering mechanism (ETM) subject to load disturbances and uncertainties.



The rest of this paper is organised as follows. In Section 2, the VI droop control method and associated sample-based distributed control scheme is addressed.The proposed control method is presented in Section 3.Real-time simulation results are provided in Section 4.Section 5 concludes the paper.. 2 BACKGROUND

MICROGRID SELF-TRIGGERING CONTROL PATENT

The hierarchical control proposed consists of three levels: 1) The primary control is based on the droop method, including an output-impedance virtual loop; 2) the secondary control allows the