

Recent years small object detection has seen remarkable advancement. However, small objects are difficult to accurately detect in complex scenes due to their low resolution. The downsampling operation inevitably leads to the loss of information for small objects. In order to solve these issues, this article proposes a novel Multi-branch Attention ...

Remote sensing (RS) images play an indispensable role in many key fields such as environmental monitoring, precision agriculture, and urban resource management. Traditional deep convolutional neural networks have the problem of limited receptive fields. To address this problem, this paper introduces a hybrid network model that combines the advantages of CNN ...

With the rapid development of flexible interconnection technology in active distribution networks (ADNs), many power electronic devices have been employed to improve system operational performance. As a novel fully-controlled power electronic device, energy storage integrated soft open point (ESOP) is gradually replacing traditional switches. This can ...

Faced with the inadequacy of single-objective optimal allocation models, various multi-objective optimization models for hybrid energy storage systems have been established [22, [27], [28], [29], [30]].Yongji Cao [22, 27] established a multi-level optimization framework for the HESS siting and sizing to arrest frequency excursion and mitigate line overloading under ...

Lithium-ion battery (LIB) is an energy storage element with high energy density. A supercapacitor (SC) has the characteristics of high power density and can withstand frequent charging and discharging [5]. Fig. 1 shows a typical topology of an electric propulsion ship equipped with LIB-SC hybrid energy storage system (HESS), which can meet normal and ...

Uncrewed Aerial Vehicles (UAVs) are instrumental in advancing the field of remote sensing. Nevertheless, the complexity of the background and the dense distribution of objects both present considerable challenges for object detection in UAV remote sensing images. This paper proposes a Multi-Branch Parallel Network (MBPN) based on the ViTDet (Visual ...

The structure of the two-tier planning model for active distribution networks with three-terminal SOPs including energy storage, as shown in Fig. 4-1, is described as follows: In this model, the upper tier is the capacity planning model for three-terminal SOPs with energy storage s objective is to minimize the annual comprehensive cost, which includes the ...

Electricity consumption is growing all around the world as technology and science progress. The survival of machinery activity and technical infrastructures primarily depends on the cheap cost and continuous electrical

energy supply [1]. The drawbacks of fossil fuels and their environmental impact illustrate the importance of encouraging communities to ...

Presently, research on multi-energy complementary systems mainly focus on the modelling and optimal regulation. In the static model of multi energy complementary system, its modeling method is relatively mature. For example, from the earlier energy hub model [5] and the joint power flow model based on network topology [6, 7], to the electric, gas and heat multi ...

Energy storage technologies can reduce grid fluctuations through peak shaving and valley filling and effectively solve the problems of renewable energy storage and consumption. The application of energy storage technologies is aimed at storing energy and supplying energy when needed according to the storage requirements. The existing research ...

The participation of energy storage system in distribution network is an effective method to suppress the fluctuation of RE like wind/photovoltaic power, thus improving the power quality and increasing the penetration rate and utilization rate of RE [4], [5]. Furthermore, optimization allocation for energy storage system can reduce the resource waste, investment ...

Single branch of energy storage submodules to integrate energy storage devices in HVDC systems. 19th International Conference on AC and DC Power Transmission (ACDC 2023), Mar 2023, Glasgow, United Kingdom. ?10.1049/icp.2023.1329?. ?hal-04088752?

In addition, due to the high energy storage density and long lifetime of hydrogen energy storage devices, as well as breakthroughs in hydrogen production, storage and transportation technologies, the research efforts on hydrogen-based energy systems have intensified [13]. Researchers have been actively exploring the integration of hydrogen-based ...

The results show that the productivity of multi-branch wells is affected by both wellbore interference and multi-branch wells control area. Li et al. (2009) established the unsteady seepage mathematical model of horizontal wells and multi-branch wells, and then solved the model in Laplace space. The result shows that the seepage characteristics ...

In the planning of energy storage system (ESS) in distribution network with high photovoltaic penetration, in order to fully tap the regulation ability of distributed energy storage and achieve economic and stable operation of the distribution network, a two-layer planning method of distributed energy storage multi-point layout is proposed. Combining with the ...

A unique multi-branch input mode was adopted to accurately predict battery lifespan in the early stages. ... memory, and health management units. Once the data sampling unit completes the collection of cycle data such as voltage, current, and temperature in the early battery stage and stores them in the data memory unit, it triggers a lifespan ...

The progress in hyperspectral image (HSI) classification owes much to the integration of various deep learning techniques. However, the inherent 3D cube structure of HSIs presents a unique challenge, necessitating an innovative approach for the efficient utilization of spectral data in classification tasks. This research focuses on HSI classification through the ...

The complete flow profile can be divided into nine distinct regimes: wellbore storage and skin, vertical radial flow, linear flow, pseudo-radial flow, composite flow, dissociated flow, transitional flow, improvement flow and stress-sensitive flow. ... A new semi-analytical flow model for multi-branch well testing in natural gas hydrates ...

Energy Storage Applications Branch (ESA) of China Industrial Association of Power Sources o European Association for Storage of Energy (EASE) o ... U.S. Energy Storage Association (ESA) o U.S. National Renewable Energy Lab (NREL) o World Bank Group, ESMAP ESP Partners IT IS EXPECTED THAT BY 2025

Techno-environmental-economical performance of allocating multiple energy storage resources for multi-scale and multi-type urban forms towards low carbon district ... data collection and pre-processing, (2) model construction, (3) performance comparison and analysis. In the first part, information about buildings, EVs and weather data in ...

In recent years, multi-energy systems (MESs) have become increasingly important due to their ability to integrate various energy sectors, such as electricity, fuels, heat, and cooling, resulting in reduced costs and lower emissions compared to separate energy systems [1] enabling interactions between different energy sources, MESs can unlock the ...

An order picker performs repetitive tasks, which may result in fatigue, body pain, and injuries. Therefore, it is essential to approach the storage location assignment from an ergonomic standpoint as well. This study presents an energy consumption based optimization model for storage location assignment in an industrial warehouse that stores metal bars. ...

In order to solve the above problems, this paper studies the modular multi-level energy storage power conversion system with grid support capability. First, the topology and mathematical model of MMC-ESS are introduced. Then, the working principle and control strategy of grid-supported control are analyzed. Finally, the correctness and ...

Matrix A , the connection matrix or branch and bus incident matrix, plays a pivotal role in network configuration, where $A_{ij} = 1$ indicates that the i th branch is linked from bus j , $A_{ij} = -1$ signifies that the i th branch is connected to bus i and $A_{ij} = 0$ confirms no connection between the i th branch and j th bus. Eq. 28-31 outline the ...

1 Beijing branch -State grid information & telecommunication group, Beijing, China ... [11] Xu W. B., Cheng H. F., Bai Z. H. et al 2019 Optimal design and operation of energy storage power station in multi-station fusion mode Power supply 36 84-91. Google Scholar

Mobile Edge Computing (MEC) (Abbas et al., 2017) has emerged as a promising solution to overcome the above disadvantages. MEC places computing and storage resources closer to mobile devices, called the edge of the network (Xu et al., 2019). The difference between MEC and cloud computing is that MEC places computing resources at the edge of ...

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