

How can digital technology improve energy management in a park?

Meanwhile, digital technology can be used to collect various energy data in the park, such as photovoltaic, energy storage and charging stations, enabling intelligent management and control of the park.

Fig. 1.

What technologies are involved in zero-carbon industrial parks?

In addition, many scholars have conducted in-depth research on the technologies involved in zero-carbon industrial parks, such as hydrogen energy storage [7, 8, 9, 10, 11], Integrated Energy System planning [12, 13, 14, 15], CCUS [16, 17, 18, 19], zero-carbon transportation [20, 21], zero-carbon buildings [22, 23], etc.

What is energy infrastructure in an industrial park?

The energy infrastructure in an industrial park is defined as shareable utilities that are located within the park and provide energy for the park, e.g., heat and electricity³¹. Climate change mitigation requires decoupling energy services and GHG emissions.

Does energy infrastructure decarbonize industrial parks?

In existing studies, GHG mitigation of industrial parks and energy infrastructure have been mostly analyzed separately, and very few studies emphasized energy infrastructure decarbonization at the industrial park level³¹.

Why are industrial parks important?

Industrial parks are flourishing globally and are mostly equipped with a shareable energy infrastructure, which has a long service lifetime and thus locks in greenhouse gas (GHG) emissions.

Why is shared energy infrastructure important in industrial parks?

Shareable energy infrastructure is universally used in industrial parks and generally has a long service lifetime²⁷⁻²⁹; thus, the GHG emissions from industrial parks are locked in. Efficient, resilient, and sustainable infrastructure is a crucial pathway to greening industrialization³⁰.

One of our focal points is the energy sector, which is essential for parks to operate. Our goal is to provide safe industrial parks by aligning with strict infrastructure regulations. ... for example, has not evolved into a world-class real estate development. We must help industrial parks evolve into digital parks and welcome new types of ...

Industrial parks are the central units for the development and aggregation of industries, playing an important role in implementing China's "dual-carbon" strategy. Zero-carbon industrial parks represent a new form of development for future industrial parks and how to build them has become a focus of current research.

The theory of industrial parks is seductive governments must provide public goods, . It holds that particularly infrastructure, for industrial firms to be competitive;co-located firms generate agglomeration economies; and so the public goods should be ...

ESS energy storage system ETP effluent treatment plant EU European Union GDP gross domestic product ... industrial parks (EIPs), as well as the technologies and business models adopted in EIPs, are ... » Harnessing digital technologies to increase resource circularity and material exchange

Industrial Park is one of the important scenarios of distributed generation development. This paper proposes an optimal allocation method of distributed generations and energy storage systems in ...

Eco-industrial parks in Vietnam towards sustainable industrial zones Thu Trang Vu^{1*}, Thi Song Thuong Phan², and Khanh Duong Phan¹ ¹ Graduate Academy of Social Sciences, 477 Nguyen Trai street, Hanoi, 10000, Vietnam ² Institute of Regional Sustainable Development, 1 Lieu Giai street, Hanoi, 10000, Vietnam Abstract. Eco-industrial park is the new trend in developing ...

providing a stronger guarantee for the safe and stable operation of battery energy storage systems in industrial parks. Keywords: industrial parks; battery energy storage; deep Q-network; charging and discharg-ing strategies 1. Introduction With the integration of large-scale renewable energy equipment in a new power

In recent years, researchers have analyzed industrial parks mainly from the following perspectives: (1) industrial symbiosis from the perspective of study content, including energy management (Tom ...

Battery energy storage technology is an important part of the industrial parks to ensure the stable power supply, and its rough charging and discharging mode is difficult to meet the application ...

July 2023, Opinion: "The location of industrial activities reflects our carbon-based energy system, with its low storage and transportation costs. Green energy, by contrast, is expensive to store and transport, implying that reducing greenhouse-gas emissions will require energy-intensive industries to relocate to regions with cheap renewable sources."

DOI: 10.1016/J.ENERGY.2021.121732 Corpus ID: 238689966; Roadmap to carbon emissions neutral industrial parks: Energy, economic and environmental analysis @article{Wei2022RoadmapTC, title={Roadmap to carbon emissions neutral industrial parks: Energy, economic and environmental analysis}, author={Xinyi Wei and Rui Qiu and Yongtu ...

Different types of parks have different characteristics, and their zero-carbon transformation paths also have different focuses. Industrial parks are usually large in scale and high in energy consumption, focusing on green energy transformation, port logistics parks focus on green transportation, and business office parks focus on

green buildings.

With the continuous growth of global energy demand and the increasing emphasis on environmental protection, comprehensive energy management has become one of the key strategies to promote sustainable development [1,2,3] industrial parks, efficient utilization and management of energy are crucial for the sustainable development of ...

How can overseas industrial parks open a new chapter of the Belt and Road? 1. Source: The Global Economic Prospects, the World Bank, 8 June 2020 2. Source: Report on the Work of the Government 2020, 22 May 2020; the excerpt from Chinese State Councilor and Foreign Minister Wang Yi's answers to journalists' questions on China's diplomatic policies and international ...

By introducing energy storage devices to store excess energy in industrial parks, a portion of energy is stored for parks whose output exceeds the demand state. Conversely, it ...

The energy infrastructure in an industrial park is defined as shareable utilities that are located within the park and provide energy for the park, e.g., heat and electricity 31 .Climatechange

How to plan the energy storage capacity and location against the backdrop of a fully installed photovoltaic system is a critical element in determining the economic benefits of users ...

In-use stocks of energy infrastructure in the 1604 Chinese industrial parks a The inner bar chart refers to the organization of stocks in terms of the rated capacity and number of units. b The pie ...

Hybrid Energy Storage in Industrial Parks Based on Energy . Performance Contracting . Feng Xiao 1, * and Yali Wang 2. 1 Hunan Provincial Architectural Design Institute, Changsha 410208, China .

Abstract: This paper focuses on how distributed resources such as electric vehicles in industrial parks can achieve operational value-added, and build solutions and ...

China has become a global manufacturing hub, supplying a vast array of industrial products to the world. However, this massive industrial production accounts for 65 % of its overall energy consumption [1] and emits approximately two-thirds of the national total CO₂ emissions industrial parks, which contribute to more than half of the nation's total industrial ...

The global GHG, including CO₂, emissions are still rising year by year, especially for fuels and industrial emissions. Achieving carbon emissions neutrality is a goal for many governments to achieve around 2060. Industrial emissions are one of the main sources of carbon emissions, and the flexibility of their emission reduction methods makes carbon emissions ...

By decarbonizing energy infrastructure stocks in the industrial parks, the GHG mitigation potential will achieve 8%~16% relative to the GHG emissions in the baseline scenario with positive economic benefits, water savings and air pollutant emission reductions. Industrial parks are flourishing globally and are mostly equipped with a shareable energy infrastructure, ...

The contributions of industrial parks towards addressing climate change remains unclear. Here, the authors studied the energy infrastructure of 1604 industrial parks in China ...

Energy storage has been widely used in industrial parks, but the role of a single energy storage technology in such industrial parks" is limited and cannot meet the full needs of energy storage ...

Battery energy storage technology is an important part of the industrial parks to ensure the stable power supply, and its rough charging and discharging mode is difficult to meet the application requirements of energy saving, emission reduction, cost reduction, and efficiency increase. As a classic method of deep reinforcement learning, the deep Q-network is widely ...

Smart and eco-sustainable industrial parks that can provide a cost-effective, efficient and resilient production space for large pools of local workers can and must become a reality. Manufacturing as a Key Engine of Economic Growth . Industrial parks can become key drivers of economic activities for developed and developing countries.

This article is devoted to discussing the feasibility and the optimal scheme to implement an electric-thermal carbon emissions neutral industrial park and perform a 3E analysis on various scenarios. A carbon emissions neutral framework of electric-thermal hydrogen-based containing MILP energy optimisation model is constructed. Photovoltaic power generation, ...

In this framework, the concepts of energy industrial parks, zero-carbon industrial parks and positive energy industrial parks have been introduced [27, 28]. In [29], the development of a zero ...

It is a hub for various industrial activities such as manufacturing, transportation, and storage facilities, aimed at fostering business growth and development. ... and energy consumption within and around industrial parks is essential to minimize the negative impact on the quality of life for nearby residents. ... Industrial parks prioritize ...

This article is devoted to discussing the feasibility and the optimal scheme to implement an electric-thermal carbon emissions neutral industrial park and perform a 3E analysis on various scenarios.

In 2015, China's industrial parks generated 39% of the country's total industrial output value and 30.2% of the country's total energy consumption (Yu et al., 2020). Stimulated ...

construction of a group of energy-saving and low-carbon smart parks that reach an internationally advanced level, as well as green factories and green industrial parks. The plan also encourages the circular development of industrial parks and selected 100 representative cities and parks for pilot construction under the principle of carbon peaking.

reasonable configuration of energy storage can effectively alleviate the problem of voltage overruns and fluctuations caused by large-scale new energy grid connection [1-3]. Industrial ...

The multi-vector energy solutions such as combined heat and power (CHP) units and heat pumps (HPs) can fulfil the energy utilization requirements of modern industrial parks. The energy ...

The location of industrial activities reflects our carbon-based energy system, with its low storage and transportation costs. Green energy, by contrast, is expensive to store and transport, implying that reducing greenhouse-gas emissions will require energy-intensive industries to relocate to regions with cheap renewable sources

Firstly, the concept and connotation of zero-carbon industrial parks are analyzed. Secondly, the pathways for achieving zero-carbon industrial parks are summarized by ...

T oday, China overseas industrial parks have become an important medium to promote B& R development and international capacity cooperation. The overseas industrial parks effectively encourage China's advantageous industries to "go abroad". For host countries, these industrial parks have attracted more Chinese enterprises to invest and build factories in their ...

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