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Editorial

Green Energy and Applications

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Abstract: Sustainable energy is increasing in importance as Earth's resources continue to be depleted in an ascending trend year by year. The utilization of sustainable energy is influenced by many factors, such as technology, the economy, and business management. Although it is unaffected by energy shortages, it is influenced by natural conditions—for example, hydraulic, wind, and solar power generation are all necessarily dependent on resource availability. In addition, investment and maintenance costs are high, which has been becoming an important obstacle to the utilization of sustainable resources. Therefore, a number of scientists are seeking new technologies and methods for improving renewable energy, to alleviate the impact of resource shortage on the world's economy.

Keywords: green energy; sustainable energy; sustainability; green energy and applications

1. Introduction

The Special Issue provides a practical and comprehensive forum for exchanging novel research ideas or empirical practices that bridge the latest renewable energy, energy research, and sustainable energy, and encompasses theoretical, analytical, and empirical research; comprehensive reviews of relevant research; and conceptual frameworks and case studies of effective applications in this area. In the meantime, we have received quality research from many authors. We are grateful to all these authors, and it is our great pleasure to introduce a collection of 9 selected high-quality research papers in this Special Issue.

2. Contributions

2.1. Green Supply Chain and Coordination

In the process of producing, selling, using, and recycling green products, the effectiveness of supply chain is an important factor affecting the efficiency of resources and energy use. Effective supply chain coordination mechanisms can reduce energy consumption and environmental impact of products in their life cycle. Some authors have explored this issue. For example, Zhu and Yu [1] determined the Stackelberg outcome for a market when a durable electronic product has three different forms: new product, remanufactured product, and refurbished product, and designed a revenue-sharing contract and two toll contracts to coordinate the double marginal effect and increase the system's revenue capacity. In addition, in a closed-loop supply chain system for power battery remanufacturing, Zhu and Yu [2] studied the "adverse selection" of the third-party recyclers and "moral hazards" hidden in their purported effort levels based on information screening models in the principal-agent theory. They concluded that manufacturers could identify high-capacity agents through information screening contracts and get higher profit.

In addition to supply chain coordination for green products, emission reduction and low-carbon promotion of general supply chains is also an important issue of widespread concern. Yuan et al. [3]

developed an evolutionary game model to analyze players' behavioral patterns regarding their interacting strategies in a two-echelon supply chain conducted by one manufacturer and one retailer. They also investigated long-term evolutionary stability strategies with vertical cooperative emission reduction in supply chain under different parameter combinations.

2.2. Monitoring Technology and Application

Monitoring the use process of equipment and products is a prerequisite for in-depth analysis of their performance and improvement of their utilization efficiency. Brestovič et al. [4] introduced a diagnostic method for compressors, which could determine the minimum cooling water flow rate that is required to ensure the continuous compressor operations, which enables the optimization of the compressor's operating parameters, as well as a reliable energy-saving operation. Capron et al. [5] investigated the thermal characterization of both uncycled and cycled battery cells at cycling temperature (or 35 °C), which is closer to real cycling conditions than commonly studied 25 °C room temperature, leading to a more objective assessment of the battery cells' performance. They observed higher temperature increases and non-uniformity of the temperature distribution at the cycled battery cell surface.

2.3. Traditional Energy Utilization

Both efficient utilization of traditional fossil energy and development of clean energy are key issues in the field of green energy. Xiao et al. [6] used image processing method to obtain the geometric dimensions of coal fragments, in order to analyze the effects of the jet impact velocity and coal strength on the fragmentation features, which provides a basis for further research on coal fragment transportation in water jet drilling and parameter selection for discharging coal fragments during drilling for CBM development. Bai et al. [7] focused on CO_2 fracturing in the reservoir reform. They analyzed the controlling factors for CO_2 fracturing, to help optimize the working parameters of CO_2 fracturing.

2.4. Sustainable Energy Development

In the field of new energy utilization, solar and wind power generation systems are severely affected by geographical distribution, seasonal variations, and day–night cycles. Shi et al. [8] designed a 10 MW S-CO_2 three-stage axial turbine, which can adapt to the variable operating conditions of the solar power generation system and meet the accompanying design requirements. Wang et al. [9] developed a hybrid fuzzy analytic hierarchy process (FAHP) and Technique for Order of Preference by Similarity to an Ideal Solution (TOPSIS) to select wind power plant sites in Vietnam, which also provided a useful guideline for wind power plant location selection in other countries.

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