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Editorial

Special Issue: Advances in Renewable Energy Systems

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The greatest challenge that the industrialized world faces today is converting its energy production systems into those that utilize renewable sources, which are more environmentally friendly compared to traditional systems [1]. In recent years, this challenge has become twofold: on the one hand, it is necessary to develop new technologies capable of freeing themselves from traditional energy sources, which are responsible for the emission of greenhouse gases; on the other hand, it is urgent to accelerate this energy transition to mitigate global warming and its consequences on the natural environment as quickly as possible [2]. Ecosystems around the world have been stressed by obsolete energy production schemes in an attempt (which now clearly appears unsustainable) to pursue the paradigm of constant growth, characterized by the assumption of available resources and an environment capable of absorbing and accepting changes introduced by humans. The international scientific community has the task of guiding industrial systems towards energy generation processes that respect the planet through the use of sources, with medium- to long-term sustainable production processes, capable of producing economic returns that justify investments for the energy transition [3]. Energy production must undergo a period of profound change that leads to the adoption of energy systems that do not cause further damage to the climate [4].

To achieve these results, it is necessary to completely review the energy production structure, with a particular focus on the energy production systems implemented in the first industrialization countries, but, above all, in the emerging countries experiencing stronger economic and demographic growth. These systems must be able to adequately exploit every available energy source, with zero emissions and with respect for the environment [5]. The electrification of energy end uses will change the entire energy production chain, as well as the energy supply network [6]. Therefore, the sustainability of the entire energy supply chain needs new management and design paradigms on which to reinvent itself and evolve in the near future [7]. Energy storage systems constitute one of the most relevant aspects on which scientific research will have to develop new technical solutions and technologically advanced materials to solve the known problems of the unpredictability of renewable sources [8].

The Special Issue "Advances in Renewable Energy Systems" is a collection of some interesting scientific works on these aspects, which have enriched the current state of the art in the scientific landscape. Experts from many research fields have shared their ideas and experiences in a multidisciplinary way on these topics. The following 18 arguments have been collected:

- Heat Pump (MAHP) to Produce Electrical Energy and Revaluated Heat [9].
- A Different Approach to Develop a District Heating Grid Based on the Optimization of Building Clusters [10].
- Impact of Electric Vehicles on Energy Efficiency with Energy Boosters in Coordination for Sustainable Energy in Smart Cities [11].
- Game Analysis of the Evolution of Energy Structure Transition Considering Low-Carbon Sentiment of the Decision-Makers in the Context of Carbon Neutrality [12].

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- Coordination of Configurations of Technologically Integrated "European Green Deal" Projects [13].
- Analysis of Enhanced Heat Transfer Characteristics of Coaxial Borehole Heat Exchanger [14].
- How Does Public Sentiment Affect the Socially Responsible Behavior of Construction Enterprises? [15].
- Dynamic Performance Assessment of PMSG and DFIG-Based WECS with the Support of Manta Ray Foraging Optimizer Considering MPPT, Pitch Control, and FRT Capability Issues [16].
- Thermal, Lighting and IAQ Control System for Energy Saving and Comfort Management [17].
- CFD Modeling of an H-Type Darrieus VAWT under High Winds: The Vorticity Index and the Imminent Vortex Separation Condition [18].
- Life Cycle Assessment and Cumulative Energy Demand Analyses of a Photovoltaic/Thermal System with MWCNT/Water and GNP/Water Nanofluids [19].
- Modeling and Multi-Stage Planning of Cement-IIES Considering Carbon-Green Certificate Trading [20].
- Evaluating the Efficacy of Intelligent Methods for Maximum Power Point Tracking in Wind Energy Harvesting Systems [21].
- Existing Stature and Possible Outlook of Renewable Power in Comprehensive Electricity Market [22].
- Desiccant Technologies for Improving Air Quality: An Overview of the Brazilian Scenario and Comparison of Available Design Software for Manufactured Desiccant Wheels [23].
- Fast-Frequency-Response Control Method for Electrode Boilers Supporting New Energy Accommodation [24].
- Simulation Experiment Design and Control Strategy Analysis in Teaching of Hydrogen–Electric Coupling System [25].
- Research on Multi-Objective Energy Management of Renewable Energy Power Plant with Electrolytic Hydrogen Production [26].

The ultimate goal of this Special Issue is to encourage readers of these scientific contributions to initiate a debate on future scenarios related to climate change and its effects on energy systems, which must shift towards sustainability and the preferential use of renewable energy.

I must congratulate the Authors and Reviewers for their exceptional work and thank the Editors, Assistants, and the entire MDPI staff for the quality of their work.

A sustainable future is closer than we can imagine.

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