Special Issues List in Section

Multi-Source Systems Energy Management
Guest Editors: Prof. Dr. Mamadou Baïlo Camara, Prof. Dr. Mamadou Lamine Doumbia and Dr. Mahamadou Abdou-Tankari
Deadline: **31 July 2022**

Key Technologies and Challenges of Wireless Energy Transmission and Harvesting
Guest Editor: Prof. Dr. Rivero-Ángeles Mario Eduardo
Deadline: **1 November 2022**

CO_2 Reduction and H_2 Promotion Techniques in Energies
Guest Editors: Dr. Sunel Kumar, Dr. Dingkun Yuan and Dr. Bairq Zain Ali Saleh
Deadline: **20 November 2022**

Energy Systems Planning and Operation under High Penetration of Renewable Energy Sources
Guest Editors: Dr. Phillipe Vilaça Gomes, Prof. Dr. Bruno Henriques Dias and Dr. Basharat Jamil
Deadline: **30 November 2022**

Innovative Energy Harvesting
Guest Editors: Dr. Bin Bao, Dr. Shitong Fang and Dr. Jixiao Tao
Deadline: **10 January 2023**

MDPI is a member of

Affiliated Societies

Follow Us

facebook.com/MDPIOpenAccessPublishing
twitter.com/MDPIOpenAccess
linkedin.com/company/mdpi
weibo.com/mdpicn
Wechat: MDPI-China
blog.mdpi.com

www.mdpi.com **mdpi.com/journal/energies**

See www.mdpi.com for a full list of offices and contact information. MDPI is a company registered in Basel, Switzerland, No. CH-270.3.014.334-3, whose registered office is at St. Alban-Anlage 66, CH-4052 Basel, Switzerland.

Basel, June 2022

IMPACT FACTOR 3.252
CITESCORE 5.0

energies

an Open Access Journal by MDPI

Section
K: Energy Sources

energies

IMPACT FACTOR 3.252

CITESCORE 5.0

an Open Access Journal by MDPI

Section Information

The modern world is seeking solutions to become more sustainable in terms of power generation and more efficient as well. One of the solutions are to implement renewable generation in the electrical power system and so far after hydropower - the wind turbine technology has been the fastest moving technology just followed tight by photovoltaic systems. The topic Wind Energy is trying to cover all aspects of wind power in order promote the multi-disciplinary aspects of the technology.

Some trends are that the power electronic converters move towards full scale power conversion, large efforts are done towards lower cost pr kW and kWh all the time in the wind turbine system to stay competitive compared to other renewable energy technologies, higher power density and lower weights are needed as well as there is a constant need for a higher reliability for all system components in order to reduce operation and maintenance costs. Also substantial efforts are carried out on the wind turbine technology to comply with the more stringent grid codes, especially grid faults ride-through and reactive power injection, which challenges the power converter topologies and the wind turbine components during operation. New materials, new foundations, new mechanical constructions, new blades relevant for the wind power technology are also very welcome to submit to this journal.

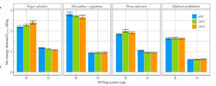
Featured Papers

DOI:10.3390/en13133392

Impact of the Drying Temperature and Grinding Technique on Biomass Grindability

Authors: Marcin Jewiarz, Marek Wróbel, Krzysztof Mudryk and Szymon Szufa

Abstract: The process of biomass compaction depends on many factors, related to material and process. One of the most important is the proper fragmentation of the raw material. In most cases, more fragmented raw material makes it easier to achieve the desired quality parameters of pellets or briquettes. While the chipping of biomass prefers moist materials, for grinding, the material needs to be dried. As drying temperature changes the properties of the material, these may affect the grinding process. The aim of this work was to determine the influence of the drying temperature of biomass raw material in the range of 60–140 °C on the biomass grindability. To only determine this effect, without the influence of moisture, grinding was carried out on the material in a dry state. The research was carried out on a mill with a knife and hammer grinding system, which is the most popular in the fragmentation of biomass. The analysis of particle size distribution and bulk density of the obtained material was carried out. The energy demand for the grinding process was determined and it was shown that drying temperature, grinding system, and mainly type of biomass affects the grindability.

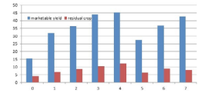


DOI:10.3390/en13082063

The Impact of a Controlled-Release Fertilizer on Greenhouse Gas Emissions and the Efficiency of the Production of Chinese Cabbage

Authors: Jakub Sikora, Marcin Niemiec, Anna Szeląg-Sikora, Zofia Gródek-Szostak, Maciej Kuboń and Monika Komorowska

Abstract: Optimization of plant fertilization is an important element of all quality systems in primary production, such as Integrated Production GLOBAL G.A.P. (Good Agriculture Practice) or SAI (Sustainable Agriculture Initiative). Fertilization is the most important element of agricultural treatments, affecting the quantity and quality of crops. The aim of the study was to assess greenhouse gas (GHG) emissions in the cultivation of Chinese cabbage, depending on the technological variant. The factor modifying the production technology was the use of fertilizers with a slow release of nutrients. One tonne of marketable Chinese cabbage crop was selected as the functional unit. To achieve the research goal, a strict field experiment was carried out. Calculation of the total amount of GHG emitted from the crop was made in accordance with ISO 14040 and ISO 14044. The system boundaries included the production and use of fertilizers and pesticides, energy consumption for agricultural practices and the emission of gases from soil resources and harvesting residue. The use of slow-release fertilizers resulted in a greater marketable yield of cabbage compared to conventional fertilizers. The results of the research indicate a significant potential for the use of slow-release fertilizers in reducing agricultural emissions. From the environmental and production point of view, the most favourable variant is the one with 108 kg N·ha^{-1} slow-release fertilizers. At a higher dose of this element, no increase in crop yield was observed. At this nitrogen dose, a 30% reduction in total GHG emissions and a 50% reduction in fertilizer emissions from the use of per product functional unit were observed. The reference object was fertilization in accordance with production practice in the test area.



DOI:10.3390/en14020319

Determinants of Energy Cooperatives' Development in Rural Areas—Evidence from Poland

Authors: Jakub Jasiński, Mariusz Kozakiewicz and Maciej Sołtysik

Abstract: The strategies, plans and legislation on energy market development and decarbonization in the European Union (EU) developed in recent years, such as the directives implementing the package "Clean energy for all Europeans", aim at promoting not only renewable energy sources, but also new institutions that involve the development of local energy markets and a greater role for citizens in managing their own energy generation. At the same time, Poland remains the economy most dependent on coal and one of the largest air polluters in the EU. In order to minimize this problem and to meet the direction of energy development in the EU, Poland decided to establish, among other things, an energy cooperative. It is intended to fill the gap in the development of the civil dimension of energy on a local scale and at the same time improve efficiency in the use of the potential of renewable energy sources in rural areas. The authors of the paper seek to verify the extent to which this new institution, which is part of the idea of a local energy community, one of the driving forces for the implementation of the objectives and directions of development of "clean energy" set by the EU, has a chance to develop. The research took into account the characteristics of energy producers and consumers in rural areas, economic preferences provided for by law, relating to the functioning of an energy cooperative and the existing alternative solutions dedicated to prosumers. A dedicated mathematical model in the mixed integer programming technology was used to optimize the functioning of an energy cooperative, and more than 5000 simulations were carried out, with a typical optimization task performed as part of the research with about 50,000 variables. The conclusions and simulations make it possible to confirm the thesis that profitable energy cooperatives can be established in rural areas, with the objective of minimizing the sum of energy purchases from the distribution network and losses on the energy deposit (virtual network storage) (the energy deposit (or network deposit) should be understood as energy introduced to the grid during generation surpluses for its subsequent consumption, taking into account the discount factor).