Mini Review
Volume 9:02, 2023

Journal of Food & Industrial Microbiology

ISSN: 2572-4134

Important Agricultural Energy Internet Technologies and Uses for the Farming and Fishing Industries

Zegeye Musyoki*

Department of Agricultural Economics, University of Nairobi, Nairobi, Kenya

Abstract

Agriculture accounts for 20% of China's overall energy usage, which is a large amount. Agriculture's development is greatly aided by Agricultural Energy Internet, a significant extension of Energy Internet in the agricultural sector. The growth of the Agricultural Energy Internet is greatly aided by its key technologies. This article thoroughly examines the primary Agricultural Energy Internet technologies for the fields of agriculture and fisheries. Several cutting-edge new-energy agricultural intelligent equipment's operating principles and power consumption traits are discussed. The agro-industrial complementary operating model's fundamental ideas and profit-generating strategies are also introduced. The development tendencies of some cutting-edge new energy agricultural intelligent equipment, agro-industrial complementary, and carbon-neutral technology are also proposed in this study against the background of the Agricultural Energy Internet.

Keywords: Agricultural Energy • Internet • Fisheries Industry • Agricultural Planting • Carbon Neutrality

Introduction

Energy reestablishment and advancement of fuel sources are critical for each authentic change in agribusiness. The availability of energy is also a fundamental guarantee of the normal and steady development of agricultural production and rural life. Due to global population growth, industrialization, and climate change, agricultural energy issues have received more attention recently. Providing agricultural production processes with renewable energy, such as energy derived from corn, energy derived from cellulosic ethanol, energy derived from the sun, and energy derived from the wind, for instance, is suggested by the United States as a means of lessening the country's reliance on imported fossil fuels. At the same time, the Dutch government has encouraged agricultural greenhouses to use biofuels and solar energy instead of natural gas as their primary energy source [1].

Literature Review

To meet the electric energy requirements of agricultural modernization construction, biomass energy cogeneration, distributed photovoltaic wind power, and other energy development methods are organically combined to form an intelligent and efficient regional energy network and comprehensive energy cascade utilization system. The "dual carbon" goal emphasizes that energy conservation and emission reduction are the development goals for agricultural energy use. It is anticipated that agricultural production will move toward high energy efficiency, low carbon emissions, and low energy consumption in the future [2].

The development of agriculture from a physical and informed perspective has been facilitated by technological advancement. Integrated energy systems and agricultural electrification have aided in the structural transformation of agricultural energy from a physical perspective. For instance, the development of an integrated energy system has been aided by the ongoing optimization of biomass-driven cogeneration systems. The reliance of agricultural production on conventional fossil energy has decreased as a result of advancements in distributed photovoltaic technologies like photovoltaic roofs and greenhouses. The development of agricultural electrification has been accelerated by the use of electric agricultural equipment like electric tractors and weeders. China's agricultural electrification rate has reached 18 percent at this point, indicating a significant reduction in rural energy consumption [3].

Discussion

The Power Internet of Things and Agricultural Internet of Things have laid the groundwork for agricultural production from an information perspective. Through information control, rural intelligent distribution networks can evenly distribute agricultural electricity. Savvy horticulture, joining progressed Web based data innovation and agrarian creation, acknowledges smart administration of rural creation. The impact of agricultural electrification on the power grid, the impact of the smart grid, and the impact of agricultural informatization on agricultural electrification are all understudied in the existing literature. Moreover, with the improvement of savvy matrix and data innovation, the intelligentization and informatization of horticultural energy usage will turn into the pattern of agrarian turn of events. As a result, in-depth research is required in addition to focusing on the impact of agricultural electrification on production and its interaction with the power system and the agricultural Internet of Things [4].

The integrated energy system of agricultural electrification is the predecessor to AEI and combines the integrated energy system with rural electrification based on the rural distribution network. The first agricultural load model was developed for the purpose of analyzing agricultural energy systems with light integration and plant evapotranspiration in mind. Chen looked into how the cost of land affects energy systems in rural areas and argued that agricultural waste can be a good source of biofuels. Agrivoltaic systems have a lot of room for growth in rural energy systems and can optimize PV generation and food production together. China has begun installing renewable energy systems in rural areas, and the agricultural and energy systems are becoming increasingly intertwined. According to the research, weather will have an impact on crops as well as new energy, causing significant disruptions to agricultural energy systems. Since the foundation of rural models and energy

***Address for correspondence:** Zegeye Musyoki, Department of Agricultural Economics, University of Nairobi, Nairobi, Kenya, E-mail: zegeyemusyoki@gmail.com*

Received: 01 March 2023, Manuscript No. jfim-23-94916; **Editor assigned:** 03 March 2023, Pre QC No. P-94916; **Reviewed:** 15 March 2023, QC No. Q-94916; **Revised:** 20 March 2023, Manuscript No. R-94916; **Published:** 27 March 2023, DOI: 10.37421/2572-4134.2023.9.269

models doesn't consider solidarity, the hypothetical exploration of farming energy frameworks necessities to alter the models in their separate fields to meet the prerequisites of joint examination [5].

The electrification of aquaculture, planting, and fishing has increased both the level of automation and the quality of agricultural products thanks to the growth of renewable energy sources in rural areas. Fu and co. formally introduced the idea of AEI, which combines agricultural production with multi-energy transformations like cold, heat, electricity, and gas. In order to ensure mutual security in the areas of energy, food, and the environment, AEI implements intensive and massive agricultural development while simultaneously boosting energy utilization efficiency and lowering pollution levels in the surrounding environment. Fu and co. investigated the security issues brought about by AEI using the security analysis technology of AEI in order to guarantee the dual security of food and energy. AEI has become an extension of the comprehensive agricultural energy system and an inevitable trend in China's agricultural development as an application of Energy Internet in the agricultural sector [6-9].

The key technologies of AEI are presented in this paper in a methodical manner from the perspectives of agriculture and fisheries (the agriculture and fisheries discussed below may all be classified as agriculture, and fisheries are classified as the breeding industry in agriculture). The most cutting-edge novel energy-intelligent agricultural equipment, such as plasma nitrogen fixation equipment, is first presented, and its power consumption, energy savings, and emission reduction efficiency are analyzed. Photovoltaic sand control and "offshore wind power and marine ranching," two advanced agricultural and industrial complementary models, are also elaborated in terms of their principles and profit strategies. In the end, new energy-intelligent equipment, agro-industrial complementarity, and carbon-neutral technology are proposed as future development trends and prospects within the context of AEI [10].

Conclusion

China first proposed the "Dual Carbon" Target in 2020, which called for "carbon neutrality" by 2060 and "carbon peak" by 2030. Advancing the energy structure, diminishing fossil fuel byproducts, and endeavoring to accomplish carbon impartiality have sweeping importance in adapting to worldwide energy deficiencies and unforgiving conditions. Agriculture was responsible for 50% of China's pollution emissions and 20% of China's total energy consumption. In particular, burning coal provides the majority of winter heating in the northern hemisphere. Low-quality bulk coal, which accounts for up to 80% of the market, is widely used in rural areas due to the stagnant economy. As a result, utilizing clean energy in agriculture is crucial to achieving carbon neutrality.

Acknowledgement

None.

Conflict of Interest

None.

References

1. Hou, Rui, Shanshan Li, Hongyan Chen and Guowen Ren, et al. "Coupling mechanism and development prospect of innovative ecosystem of clean energy in smart agriculture based on blockchain." *J Clean Prod* 319 (2021): 128466.
2. Chen, Yi-kuang, Jon Gustav Kirkerud and Torjus Folsland Bolkesjø. "Balancing GHG mitigation and land-use conflicts: Alternative Northern European energy system scenarios." *Appl Energy* 310 (2022): 118557.
3. Riaz, Muhammad Hussnain, Hassan Imran, Habeel Alam and Muhammad Ashraful Alam, et al. "Crop-specific optimization of bifacial PV arrays for agrivoltaic food-energy production: The light-productivity-factor approach." *IEEE J Photovolt* 12 (2022): 572-580.
4. Fu, Xueqian, Yazhong Zhou, Feifei Yang and Lingxi Ma, et al. "A review of key technologies and trends in the development of integrated heating and power systems in agriculture." *Entropy* 23 (2021): 260.
5. Adye, Katherine, Nathaniel Pearre and Lukas Swan. "Contrasting distributed and centralized photovoltaic system performance using regionally distributed pyranometers." *Solar Energy* 160 (2018): 1-9.
6. He, Dongxian, Zhengnan Yan, Xuan Sun and Po Yang. "Leaf development and energy yield of hydroponic sweetpotato seedlings using single-node cutting as influenced by light intensity and LED spectrum." *J Plant Physiol* 254 (2020): 153274.
7. Zhong, Chongshan, Alex Martynenko, Patrick Wells and Kazimierz Adamiak. "Numerical investigation of the multi-pin electrohydrodynamic dryer: Effect of cross-flow air stream." *Drying Technol* 37 (2019): 1665-1677.
8. Wang, Fang, Deli Zhang, Xiuli Shen and Weidong Liu, et al. "Synchronously electricity generation and degradation of biogas slurry using microbial fuel cell." *Renew Energ* 142 (2019): 158-166.
9. Cheng, Xiangju, Yuning Xie, Huaiqiu Zheng and Qian Yang, et al. "Effect of the different shapes of air diffuser on oxygen mass transfer coefficients in microporous aeration systems." *Procedia Eng* 154 (2016): 1079-1086.
10. De W Blackburn, Clive, and Peter J. McClure, eds. Foodborne pathogens: Hazards, risk analysis and control. *Elsevier* (2009).

How to cite this article: Musyoki, Zegeye. “Important Agricultural Energy Internet Technologies and Uses for the Farming and Fishing Industries.” *J Food Ind Microbiol* 9 (2023): 269.