

Schematic diagram of rice solar power generation

How is rice husk used for energy conversion?

Rice husk contains about 30 - 50% of organic carbon and have high heat value of 13 - 16 MJ per kg. It can be used to generate fuel, heat, or electricity through thermal, chemical, or bioprocesses. The energy conversion processes of rice husk are presented in a diagram in Figure 1. Fig.1. Process route of energy from rice husk.

How is rice husk processed?

Rice husk is collected after rice milling, with moisture content of about 14 - 15%. This fits the requirement for further pretreatment or processing. Thermal processes, including combustion, gasification, and pyrolysis, are applied for rice husk processing. Energy products from rice husk are heat, electricity, and biofuel (solid or liquid).

How to solve barriers in energy conversion from rice husk?

Available solution to solve barriers in energy conversion from rice husk is pretreatment. Rice husk could be pretreated through mechanical, physical, and chemical means and through bioprocessing, or a combination of these processes to increase efficiency in further energy conversion.

How is rice husk gasification performed?

In the gasification, no steam was required to be fed to the gasifier as the collected and pretreated rice husk contained approximately 10% moisture that was enough for the rice husk gasification. Finally, the produced gas was collected from the exhaust port and processed for analysis using an infrared gas analyzer.

What is the moisture content of rice husk biomass?

Collected rice husk biomass was dried in an oven in the laboratory of Rajshahi University of Engineering & Technology, Bangladesh, for about 5-7 h at a temperature of 105-115 °C. However, the average moisture content of the collected rice husk was approximately 10%.

Does gasifier reactor heat rice husk and sawdust?

Outlet temperature of gasifier reactor for rice husk, sawdust, and coconut shell. By using the composition of synthetic gas, it was found that the lower heating values of rice husk, sawdust, and coconut shell were approximately 9336, 1118.9, and 1278.18 kcal/Nm³, respectively. These values are comparable with the heating values obtained in [38].

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Schematic diagram of rice solar power generation

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