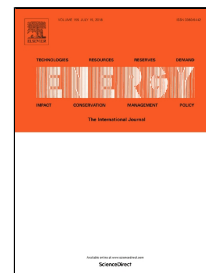


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The Effect of Hydrodynamic and Ultrasonic Cavitation on Biodiesel Production: An Exergy Analysis Approach

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Abstract

Today, the increase in the production and consumption of biofuels such as biodiesel in the transportation sector is considered an appropriate solution to decrease the consumption of fossil fuels and their consequent pollutions. However, in order to increase energy efficiency and minimize energy losses and waste materials, the biodiesel production processes require the particular revisions and modifications. In the present study, the exergy analyses of the mechanical stirrer (MS), ultrasonic cavitation (UC) and hydrodynamic cavitation (HC)-based biodiesel production processes were performed and the results were compared together, in order to improve the efficiency of the biodiesel production process. To compare the results, three parameters of the exergy waste emission, the exergy destruction, and the exergy efficiency were used. The results indicated that both the cavitation processes lead to improved exergy efficiency in the biodiesel

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