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**Oil Palm Fiber Ash Characterization and Application in Solar Evaporator for Seawater Desalination**

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**EXTENDED ABSTRACT**

Solar evaporator is a non-conventional technology, cheapest, cleanest process and simplest technique for seawater desalination. However, low thermal efficiency is the main problem in solar evaporation process. The objective of this paper is to study the effect of oil palm fiber ash application in seawater evaporation of seawater to produce clean water. The spent and fresh oil palm fiber ash were characterized by using Nitrogen Adsorption (BET), X Ray Detector (XRD) and Scanning Electromagnetic Microscope (SEM). The investigation was conducted in a 0.4m x 0.45m x 0.15m basin type solar evaporator. The oil palm ash to seawater mass ratio was varied from 1:50 to 1:500. The investigation was carried out for eight hours in sunny daylight. The water qualities including pH, conductivity, total dissolve solid (TDS), chemical oxygen demand (COD) and turbidity of the seawater and the evaporated water were determined. It was found that the addition of oil palm fiber ash in the seawater increased the seawater temperature to 57 °C when the oil palm ash to seawater mass ratio of 1:100 was used. The maximum temperature was achieved at 1:00 pm. About 12 % of evaporated was produced at the same condition. Interestingly, the COD value of seawater reduced drastically when oil palm fiber ash was used. The pH of the seawater increased slightly after the investigation might be due to the mineral content of oil palm fiber ash content which rich in CaO. It can be concluded that the application of oil palm fiber ash improve the performance of the solar evaporator and increase the production of evaporated water.

Keywords: Oil palm fiber ash, Desalination, Seawater, Solar energy, evaporator