ABSTRACT

The research was conducted to optimize the parameter of a solar desalination equipment with the use of Fresnel lens as the solar concentrator. By designing and making a prototype to obtain data, the researchers were able to optimize an equation that relates the output volume to the ambient temperature of air and the time duration of cloud cover. The prototype works by refracting the sun rays using the Fresnel lens to create a higher temperature output. The heat produced from the concentration is applied to the receiver designed by the researcher. The receiver serves as the boiler for the seawater. Upon boiling, the removal of salt through distillation occurs. The steam passes through the condenser for cooling to change the steam back to liquid. Parameters for data gathering included volume output (in mL), dry bulb temperature of ambient air (in °C) , incidence angle with respect to the sun (in degrees), the time duration of cloudy sky (in percentage), and the time of recording. The data gathered for 5 days were used as the basis for the mathematical model that was made by using Statistical Package for Social Sciences (SPSS).