EXPERIMENTAL STUDY OF ADVANCE SOLAR WATER DESTILATOR MODEL WITH GLASS VACUUM TECHNOLOGY INSULATION WITH ANGLE VARIATION

Student Name : Adhi Iswantoro  
Registration Number : 4210 100 077  
Departement : Marine Engineering  
Lecturers : 1. Taufik Fajar Nugroho, ST, M.Sc.  

Abstract

Indonesia is one country that has a tropical climate with the intensity of solar radiation is large enough. However, the utilization of sunlight in Indonesia is still very minimal. Though the sun can be harnessed and green energy renewable energy. Utilization of sunlight can be applied to meet the needs of fresh water for the people when the dry season water shortages. One solution to overcome this problem is with a solar water distillation. Processing brackish water into clean water by using solar water distillation are already there and are used as well as a wide variety of tools have been created. One of the innovations that made solar water distillation at this time is the development of solar water distillation by means of vacuum insulation in the walls. The purpose of this study is to design a solar water distillation design with glass vacuum insulation technology effective and constant temperature longer and how effective solar water distillation with glass vacuum insulation technology compared to other solar water distillation. There are four experiments conducted with the use of brackish water for 5 liters. The first experiment with a 30° angle without wall vacuum produces 345 ml of fresh water with the highest water temperature 75° C. The second experiment with a 20° angle without wall vacuum produces 285 ml of fresh water with the highest water temperature 72° C. The third experiment with a 30° angle with the wall vacuum -0.4 bar produces 366 ml of fresh
water with the highest water temperature 77° C. The fourth experiment with a 20° angle with the wall vacuum -0.4 bar produces 213 ml of fresh water with the highest water temperature 75° C. The experimental results showed that the glass cover angle 30° produce more distilled water and the water temperature is higher than 20° angle. In addition, the wall can isolate the vacuum system with the environment so as to increase the temperature of the water and be able to produce more than the distilled water experiments without vacuum walls.

**Keywords : Solar Energy, Destilator, Vacuum Insulation**