

ABSTRACT

The main problem faced by coastal residents is the difficulty of obtaining clean water. Creating technology to treat brackish-well water or sea water into freshwater which feasible to consume (desalination) is one of the choice which can be selected. The developed-technology should be adjusted to the condition of the population and the limited-potential that exist in the area. Water treatment technology which potentially to be improved is distillation technology.

Distillation is the process of separation between the liquid to the mixture through a boiling point or by the ability of objects to evaporate. Commonly distillation system use the basin with a flat-plate form which black painted as heat sink and has a hole on the upper wall as output channels of freshwater. This research makes an innovation on distilator design to improve the production efficiency. The innovation is to modify the distilator shape and using mirror as the distilator wall.

The results of this modification is a sloping basin with black cardboard has a temperature rise of ± 64 °C, 82% of humidity and produces 235 ml mineral water during 5 hours of heating. The salt solution which prepared from 100 g of salt dissolved in 4 liters of water has the maximum temperature in distilator and water temperature of 64.2 °C and 65.8 °C, and produce 235 ml mineral water. The 15 cm lamp distance with 70.200 lux light intensity has the maximum temperature in distilator and water temperature of 60.6 °C and 65 °C and produce 45 ml mineral water. Based on the experiments, we can conclude that temperature, humidity, light intensity, exposure time, and solvent concentration influence the brine evaporation rate.

Keyword : Brine, Basin, Desalination, Distillation, Distilator, Evaporation rate.