

ABSTRAK

Kebutuhan akan air bersih yang terus meningkat seiring dengan keterbatasan sumber daya menuntut adanya inovasi teknologi pengolahan air, salah satunya melalui sistem distilasi surya. Penelitian ini bertujuan untuk meningkatkan performa distilator surya tipe atap miring tunggal dengan menambahkan media penyerap panas (absorber) tambahan berupa tisu yang dikombinasikan dengan tinta dan arang briket. Metode penelitian dilakukan secara eksperimental dengan membandingkan empat variasi sistem: sistem konvensional (tanpa media tambahan), penggunaan tisu dengan tinta 20 ml, tisu dengan tinta 40 ml, dan tisu dengan arang briket 10 gram. Parameter yang diukur meliputi temperatur air, temperatur tisu, intensitas cahaya matahari, serta volume distilat yang dihasilkan selama waktu pengujian. Hasil penelitian menunjukkan bahwa seluruh variasi mengalami peningkatan temperatur seiring dengan bertambahnya waktu pemanasan dan intensitas cahaya matahari. Pada penggunaan media tisu secara signifikan meningkatkan luas permukaan penguapan melalui efek kapiler, yang pada akhirnya meningkatkan produktivitas air bersih. Dari hasil pengujian, variasi tisu dengan tinta 20 ml menghasilkan volume distilat terbanyak yaitu sebesar (320 ml), diikuti oleh tinta 40 ml (230 ml), arang briket 10 gram (190 ml), dan sistem konvensional (120 ml). Kesimpulan dari penelitian ini adalah penambahan media tisu dan tinta 20 ml merupakan variasi yang paling efisien dalam meningkatkan produktivitas sistem distilasi surya.

Kata Kunci: Distilasi Surya, Tisu, Tinta, Arang Briket.



ABSTRACT

The increasing demand for clean water, along with the limited availability of water resources, necessitates innovation in water treatment technologies, one of which is the solar distillation system. This study aims to improve the performance of a single-slope solar distiller by adding an additional heat-absorbing medium (absorber) in the form of tissue combined with ink and charcoal briquettes. The research method was conducted experimentally by comparing four system variations: a conventional system (without additional media), tissue with 20 ml of ink, tissue with 40 ml of ink, and tissue with 10 grams of charcoal briquettes. The parameters measured included water temperature, tissue temperature, solar radiation intensity, and the volume of distillate produced during the testing period. The results showed that all variations experienced an increase in temperature with longer heating time and higher solar radiation intensity. The use of tissue as a medium significantly increased the evaporation surface area through capillary effects, which ultimately enhanced clean water productivity. Based on the experimental results, the tissue with 20 ml of ink produced the highest distillate volume of 320 ml, followed by tissue with 40 ml of ink at 230 ml, tissue with 10 grams of charcoal briquettes at 190 ml, and the conventional system at 120 ml. The conclusion of this study is that the addition of tissue and 20 ml of ink is the most efficient variation for improving the productivity of the solar distillation system.

Keywords: Solar Distillation, Tissue, Ink, Charcoal Briquettes.

