

ABSTRAK

Ketersediaan air bersih masih menjadi masalah di banyak daerah, terutama yang minim listrik dan infrastruktur. Penelitian ini menganalisis peningkatan kinerja alat distilasi air energi surya dengan menambahkan plat aluminium bergelombang segitiga. Metode eksperimental digunakan dengan membandingkan sistem tanpa plat dan sistem dengan dua serta empat gelombang, menggunakan lampu sebagai sumber panas. Parameter yang diamati adalah volume air hasil distilasi, temperatur air, dan temperatur kaca kondensasi. Variasi yang digunakan adalah variasi temperature kaca, volume air dan jumlah gelombang pada plat. Hasil menunjukkan bahwa penggunaan plat empat gelombang meningkatkan hasil distilasi hingga 65%, terutama pada temperatur dan volume tinggi. Efektivitas ini disebabkan oleh peningkatan luas penyerapan panas, efisiensi perpindahan kalor, dan distribusi panas yang lebih merata. Modifikasi ini terbukti meningkatkan efisiensi distilasi secara signifikan.

Kata kunci: distilasi air, plat bergelombang, hasil air

ABSTRACT

Access to clean water remains a major issue in many regions, particularly in areas with limited electricity and infrastructure. This study aims to improve the performance of a solar water distillation system through the modification of the absorber plate by adding triangular corrugated aluminum sheets. An experimental method was employed by comparing three configurations: a system without a plate, a system with two wave corrugations, and a system with four wave corrugations. A lamp was used as the heat source to simulate solar energy. The main parameters observed were the volume of distilled water, water temperature, and condensation glass temperature. Variations included different glass temperatures, water volumes, and the number of waves on the plate. The results demonstrated that the system with four corrugations achieved a distillate yield increase of up to 65%, particularly at higher temperatures and larger water volumes. The improved performance is attributed to the increased heat absorption area, enhanced thermal transfer efficiency, and better heat distribution. These findings indicate that the proposed modification significantly enhances the efficiency of solar water distillation systems and offers a practical solution for clean water production in remote areas.

Keywords: water distillation, corrugated plate, water yield