ABSTRAK

Air bersih merupakan kebutuhan dasar manusia yang belum terpenuhi secara merata, terutama di daerah terpencil. Salah satu solusi sederhana untuk menghasilkan air bersih adalah melalui proses distilasi air tenaga surya, yaitu metode pemurnian air yang biasanya memanfaatkan panas dari matahari. Namun, dalam penelitian ini, lampu digunakan sebagai pengganti sinar matahari untuk simulasikan sumber panas secara stabil di dalam ruangan alat distilasi. Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan batu berselubung kain terhadap peningkatan jumlah hasil air distilasi. Penelitian dilakukan secara eksperimental menggunakan alat distilasi sederhana dengan beberapa variabel divariasikan yakni variasi volume air, kaca penerima panas, jumlah batu berselubung kain, serta parameter yang diukur temperatur air (Tw), temperatur kaca kondensasi (Tc) dan hasil air distilasi. Temperatur dicatat secara otomatis menggunakan Arduino selama proses distilasi berlangsung dalam 2 jam, dan hasil air distilasi diukur di akhir pengujian. Hasil penelitian menunjukkan bahwa penggunaan batu berselubung kain dapat memperluaskan area pengguapan, menyerap panas dan menyimpan panas lebih baik, sehingga membantu mempertahankan temperatur air dan mempercepat proses penguapan. Pada 8 batu berselubung kain dengan variasi jumlah menghasilkan peningkatan hasil air distilasi yang tinggi sebesar 43,68% terhadap konvensional dengan hasil air distilasi sebesar 18,65 ml. Selain itu, variasi volume air 100 ml menghasilkan peningkatan sebesar 37,56% terhadap konvensional dengan hasil air distilasi yang tertinggi sebesar 27,36 ml. Kemudian variasi temperatur kaca penerima panas 68˚C menghasilkan peningkatan sebesar 19,26% terhadap konvensional dengan hasil air distilasi 15,48 ml. Penggunaan batu berselubung kain terbukti efektif dalam meningkatkan jumlah hasil air distilasi. Metode ini dapat digunakan sebagai solusi sederhana untuk menghasilkan air bersih di daerah-daerah kesulitan untuk mendapatkan air bersih.

Kata Kunci: Distilasi air, batu berselubung kain

ABSTRACT

Clean water is a basic human need that has not been met evenly, especially in remote areas. One simple solution to produce clean water is through the solar water distillation process, a water purification method that usually utilizes heat from the sun. However, in this study, lamps were used instead of sunlight to simulate a stable heat source in the distillation device room. This study aims to determine the effect of using cloth coated stones on increasing the amount of distilled water yield. The study was conducted experimentally using a simple distillation device with several variables varied, namely variations in water volume, heating power, number of cloth coated stones, and the parameters measured were water temperature (Tw), condensation glass temperature (Tc) and distilled water yield. The temperature was recorded automatically using Arduino during the distillation process for 2 hours, and the distilled water yield was measured at the end of the test. The results showed that the use of cloth coated stones can expand the evaporation area, absorb heat and store heat better, thereby helping to maintain water temperature and accelerate the evaporation process. On 8 cloth-coated stones with variations in the amount produced a high increase in the yield of distilled water of 43.68% compared to conventional with a yield of 18.65 ml of distilled water. In addition, a variation in the volume of water of 100 ml resulted in an increase of 37.56% compared to conventional with the highest yield of distilled water of 27.36 ml. Then the variation in the temperature of the heat receiver glass of 68˚C resulted in an increase of 19.26% compared to conventional with a yield of 15.48 ml of distilled water. The use of cloth-coated stones has proven effective in increasing the amount of distilled water yield. This method can be used as a simple solution to produce clean water in areas where it is difficult to obtain clean water.

Keywords: Water distillation, cloth coated stones