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Development of a solar water distiller with a receiver and condenser

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Abstract. The solar water distillation distils brackish water, which can mitigate the demand of pure water for human being. This study proposes a solar water distiller with a condenser and collector made from a tube bank. The receiver and condenser are connected together by the rubber tubes. The brackish water from a tank flows along condenser. The water temperature is relatively low, so this tube bank acts as a condenser for the water vapor that evaporates from a water basin of the distiller. It is believed that this can increase the condensation rate of the system. After passing through the condenser, the brackish water flows up along the receiver and it is heated by solar energy. Then the water flows to the basin of the system. According to the experiments, the water temperature in the basin of the proposed system is higher than that of the conventional system. This leads to the higher productivity of the proposed system (approximately 3.3 L/m^2 day). In addition, it was found that the temperature of condenser of the proposed system was lower than that of the glass cover of the conventional system.

Keyword: solar still, distillation, water production, solar collector.