

ABSTRACT

The present investigation was carried out with a double glass cover, cascade type, parallel plate solar distillation unit to determine the effects of slope of cover, gap distance between evaporator and condensing surface and artificial cooling of the condensing surface on the performance of the still.

It was found that the performance increased with increasing slope to a maximum and then decreased with further increase in slope. The effect of the gap distance on the performance was found to be such that the performance increased with decreasing gap distance. For the investigated rate in cover cooling an increase in performance was noted though the operating temperatures decreased which was accompanied by an increase in temperature difference between evaporator and condensing surface.

From available expressions for evaporative heat transfer between parallel horizontal surfaces and experimental temperature measurements the theoretical yields were calculated and compared with the actual yields. The agreement was found to be satisfactory.

A performance factor was defined which allows the comparison of stills of various designs and operated at different locations and conditions since it takes into account only the radiation which actually enters the distillation unit through its transparent surfaces.