



Experimental study of modified dual slope hybrid photovoltaic (PV/T) solar thermal still

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ABSTRACT

Potable water and energy are the two basic requirements for everyday life of human. The world is now known to the crisis of potable water and availability of energy in daily life utilities. The greatest challenge in front of the people is to get the pure water for daily uses. In this paper experimental studies and a comparison of modified dual slope hybrid photo voltaic (PV/T) solar thermal still and a photo voltaic thermal (PVT) double slope active solar still with two flat plate collectors connected and integrated to the basin of solar still has been performed at KIET Group of Institutions Ghaziabad, India at Campus premises of hostel roof top in two steps, also a solar powered modified PMDC motor has been used to circulate the water in the basin to increase the yield of the system for water production. Hybrid photo voltaic-thermal (PV/T) generates electrical energy and heat. A modified dual slope hybrid photo voltaic thermal (PV/T) dual slope solar thermal still has been designed and fabricated to study the performance for water production. Experimental data for distillate yield, water temperature have been included. The methodology for the modification in design and fabrication of dual slope active solar still has been discussed in detail. The actual setup specifications in addition to the mode of performing the experiment also given in details with the results proven after comparisons. The model of modified distillation system for water production is validated with experimental data. It has been also proven that the yield obtained from modified dual slope hybrid photo voltaic (PV/T) solar thermal still significantly more in comparison to the previous dual slope solar stills in use. Actual photograph of the setup and site are included.

Keywords: Solar stills; Sand based solar stills; Dual slope modified solar stills; Wood based solar stills; Water production

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