**Exergy Analysis of an Integrated Solar Flat Plate Collector with Packed Bed System**

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**Abstract**

The demand for energy requirement is increasing with growing population and depletion of available conventional resources the global movement took towards thinking about alternative sources, which will sustain the energy demand requirements. The alternative (renewable) energy sources play a major role in providing the solution to meet our energy demand. Solar energy is one of the most promising source when comparing with other renewable sources of energies like wind, biomass, tidal, geo-thermal etc. Solar energy is a very large inexhaustible source of energy. The amount of solar radiation incident on a collector is very important so as to meet the energy requirements. Solar collectors play a crucial role in converting the solar radiant energy either into thermal energy of fluid or electrical energy. Solar flat plate collectors are used to convert solar radiation energy to thermal energy. Solar Flat Plate Collectors are widely used in agricultural, textile, chemical processing industries, space heating and cooling, where the fluid temperature requiring less than 100**0** C. In order to harness the maximum solar energy through a solar flat plat collector a packed bed system is fabricated and integrated. The performance of an integrated solar flat plate collector with packed bed system is evaluated by carrying out the experimentation for regular intervals of time. The aim of developed model is to maximize the energy extraction from the incident solar radiation on the collector area. The experiments are conducted on the conventional collector and also the results are compared with the integrated solar collector packed bed setup. The objective of this paper is to present the exergy analysis of an integrated solar flat plate collector with packed bed system.

*References:*

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