

Title: **An improved design of photovoltaic/thermal solar collector**

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### **Abstract**

An improved photovoltaic/thermal (PV/T) solar collector combined with hexagonal honeycomb heat exchanger was studied. It is a combination of photovoltaic panel and solar thermal components in one integrated system. The honeycomb was installed horizontally into the channel located under the PV module. Air, as heat remover fluid is made to flow through the honeycomb. The system was tested with and without the honeycomb at irradiance of  $828\text{W/m}^2$  and mass flow rate spanning from  $0.02\text{kg/s}$  to  $0.13\text{kg/s}$ . It was observed that the aluminium honeycomb is capable of enhancing the thermal efficiency of the system efficiently. At mass flow rate of  $0.11\text{kg/s}$ , the thermal efficiency of the system without honeycomb is 27% and with is 87%. The electrical efficiency of the PV module improved by 0.1% throughout the range of the mass flow rate. The improved design is suitable to be further investigated as solar drying system and space heating.