# Solar collectors for night cooling

Solar thermal collectors are generally unproductivity at night without sunlight. Radiative cooling, on the other hand, is another renewable technology harvesting coldness from extraterrestrial space and can effectively work nocturnally. Therefore, this study proposes a scheme that integrates the nocturnal

This work examines the performance of the combination of night radiative cooling with solar thermal and photovoltaic technologies under three different climates using a PV/T collector. It also proposes the use of radiative cooling technology as a method for enhancing the temperature and electrical efficiency of PV cells of the same ...

In this work, a PVT-TE collector is used to exploit night radiative cooling and solar thermal energy for the continuous production of electrical energy for 24 h. The proposed PVT-TE-RC technology will take advantage of the yearly availability of radiative cooling capacity to generate electrical energy. This will save a significant amount of ...

International Energy Agency Solar Heating & Cooling (IEA SHC) programme states the fact that space/water heating and cooling demand account for over 75% of the energy consumed in single and multi-family homes. Solar energy technology can meet up to 100% of this demand depending on the size of the system, storage capacity, the heat load and the region"s ...

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The results show that the PVTfilm collectors combine satisfactory solar thermal cooling and nocturnal passive cooling performances, with an annual total energy yield that is 10% and 32%...

The collectors that have been used for solar heating and cooling in meeting the building energy demand can be classified as photovoltaic-thermal collectors, water/air solar collectors and spectrally selective surface solar collectors. The performances of these collectors consistent with their usage at different regions of the world are ...

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Abstract A new photovoltaic-thermal (PVT) system has been developed to produce electricity and cooling energy. Experimental studies of uncovered PVT collectors were carried out in Stuttgart to validate a simulation model, which calculates the night radiative heat exchange with the sky. Larger PVT frameless modules with 2.8 m 2 surface area ...

Another popular choice is the evacuated tube solar collector, which is more efficient in colder climates and can provide higher efficiency for heating and hot water.. Additionally, solar air collectors are used to heat air directly for space heating and can offer a cost-effective solution. Lastly, solar photovoltaic panels are used to generate electricity for residential use and can ...

This work examines the performance of the combination of night radiative cooling with solar thermal and photovoltaic technologies under three different climates using a PV/T collector. It...

The reliable solar air heating system loses heat to the night sky if mounted on a building roof so it can be used as a passive cooling system based on thermal radiation. The collector plate cools ...

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The collectors that have been used for solar heating and cooling in meeting the building energy demand can be classified as photovoltaic-thermal collectors, water/air solar collectors and ...

The results showed that the solar collectors" field can provide up to 6.5 kW of useful heat to the absorption cooling system at temperatures up to 105 °C with thermal efficiencies up to 19.8% ...

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