A Better Solar Heater in the Form of a Triangular Pyramid

Inostroza, Bianca

This investigation proposes to create a model of a water solar heater which maximizes the usage of available solar radiation in order to reach higher water temperatures. The problem was which of the two designs of solar water heaters achieve the greater capture of solar radiation to increase the water temperature: the triangular pyramid or the one in rectangular form? The hypothesis under study was that the solar water heater in the form of a triangular pyramid will produce a higher rise in water temperature than the rectangular solar water heater for the same amount of time of Sun exposure. Two prototypes were constructed, one in the typical rectangular form and the other one in form of a triangular pyramid. Water temperature measurements were made three times a day with four hours between observations. Temperature comparisons demonstrated an increase of two to three degrees Celsius higher for the triangular pyramid water heater. This leads to the conclusion that the prototype in the form of a triangular pyramid obtains higher temperatures than the rectangular solar water heater and the water maintains its heat for a longer period of time. This new design with more angles and various panels can maximize the capture of the solar radiation from sunrise to sunset. The results of this investigation are important because this design is innovative and opens doors for new scientific investigations.

Awards Won: