



TECHNOLOGY

Solar Water Heater

OVERVIEW

Background

Solar water heaters are environmentally-friendly, energy saving devices. Unfortunately, they are also often expensive, heavy, and difficult to install. A typical solar water heater is made of a metallic material including an absorbent device, a copper tube containing aluminum fins, which functions as a heat exchanger, and a translucent cover to absorb sunlight. When sunrays pass through the cover sheet, the temperature of an air pocket in contact with the heat exchanger rises due to the greenhouse effect, heating the water in turn. Such panels have a number of drawbacks, however, including the complexity of fabrication and the weight of the assembly. The weight, especially, causes constraints on the transportation of these water heaters and the installation (usually on rooftops).

Innovative Technology

Researchers at the University of Maryland have designed a novel water heater that is fabricated entirely from extruded components—thus cost, size, and weight of the heater will be minimal. The heater retains high performance and structural rigidity because of its unique design. Additionally, it can be fitted with a thin photovoltaic cell, which allows reliable and efficient generation of electrical power. The new water heater design is lightweight, making it portable. Its portability gives it numerous applications, including military use.

Advantages

- Fabrication from extruded parts makes heater lightweight and portable;
- Positioning of PV cell improves energy efficiency and reliability;
- Structural rigidity;
- Cheaper to manufacture than current models.

Applications

- May be used as roofing or siding material
- Can function as a stand-alone structure with a water tank added
- Well suited for military applications, where water heaters may need to be transported over long distances, and where power grids may not be accessible.

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Clean Tech

EXTERNAL RESOURCES

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