A Unique Solar System that Captures the Heat Energy of the Sun in an Efficient Way

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Our project is a unique design that proved more efficient than the traditional solar panels in capturing and storing energy from the sun.Converting solar energy to heat energy using paraffin oil,incorporated in an advanced and unique piping system embedded in a new solid that enabled us to achieve higher efficiency compared to conventional solar water heating systems.With knowledge of thermodynamics and heat capacities we deduced which materials are the most effective in absorbing heat energy,and with practical experiments carried out in the lab we exposed materials such as aluminum,iron,copper,graphite,paraffin oil and distilled water,to the sun to improve the efficiency of the unique solid part of the system and the liquid medium that circulates inside.Results indicated that graphite and copper are the most efficient solid absorbents and paraffin oil is the best liquid medium.Leading to the formation of a unique piping system that involves three coaxial pipes,first inner copper pipe containing paraffin oil,surrounding it grinded graphite held by a second copper pipe,finally a vacuumed glass pipe covering the two copper pipes.The final system has two connected pipes stored in a jacketed metal box allowing us to vacuum the container and form a circulation of oil.Due to the presence of graphite the system is able to store great amounts of heat energy that is transferred to paraffin oil when the circulation begins.Final results proved the accuracy of prior procedures as the temp. of the oil after two circulations through the system increased greatly from an initial temp. of 20°C to 60°C,compared to a conventional heating system in which the temp. of water increased from 18°C to 40°C considering that outside temp. was 9°C and weather conditions were cloudy.

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