

# **SOLAR TIM INSULATED ICS WATER HEATING SYSTEM: A NEW AND INDIGENOUS DESIGN**

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## **ABSTRACT**

A novel and indigenous design of TIM insulated ICS system is presented in this paper. The system is very simple and consists of a storage water tank, cuboid-cylindrical in shape, transparently insulated at the absorbing surface and covered with opaque insulation on all other surfaces. A transparent honeycomb cover of 10X10 mm (cell size) made of polycarbonate sheet of 0.5 mm thick is used as cover system. To estimate the system performance, an optimized thermal model has been formulated. The model has been validated by field experiments which showed good agreement. The year round performance of system is estimated to be in the range of 30 to 36 percentage.

*Keywords:* Transparent Insulation Materials (TIM), Integral Collector Storage (ICS) Solar Water Heater, Honeycomb, Polycarbonate sheet