

ABSTRACT

PATS is a water heater technology that is widely known to the public. PATS uses water as a thermal energy storage medium. The use of water has advantages, namely the value of high thermal conductivity. On the other hand the PATS system has disadvantage namely low energy density. Phase change material (PCM) has a high energy density. The application of PCM as a thermal energy storage on passive PATS needs to be developed. In previous studies the application of PCM on thermosyphon type PATS has not been done so much that it is interesting to study. Therefore the provision of tools for similar research is important to be designed and made. The purpose of this design is to get a design of PATS performance test equipment involving PCM with a volume of 60 liters of tank.

The design of the PATS system starts with the selection of materials, designing the frame in the tank and collector, determining the piping system in the tank and placing the measuring instrument used.

The result of this design is to obtain a PCM-based PATS system with the main dimensions of the tool which is 215 cm long, 153 cm high, and 150 cm wide. Based on the trial of the tool, the PATS system works properly so that it can be used for further testing.

Keywords: PCM, PATS, piping system, Thermosyphon, Tank