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Experimental Characterisatics of small oil Thermal Energy Storage (TES) tank for domestic applications

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Abstract content
   (Max 300 words)

A small thermal energy storage (TES) tank is designed to test the thermal performance of oil for domestic heat storage applications. Charging experiments to store thermal energy are done using an oil circulating coil in contact with a hot plate. Discharging experiments to extract the energy stored are performed using an oil heat exchanger immersed in a water bath. The temperature distribution along the height of the storage as a function of flow rate is monitored for the charging and discharging experiments. The energy and exergy stored are evaluated for each experimental test. Results of the experimental tests indicate various degrees of thermal stratification along the height of the storage tank. Lower flow-rates are suggested to maintain a reasonable degree of thermal stratification during charging. For discharging, high flow-rates enable a faster rate of energy extraction at the expenses of a loss in thermal stratification. Water boiling for simple domestic cooking applications is also found to be possible using the experimental setup.

Keywords: Charging and discharging; oil storage tank; thermal stratification; energy and exergy stored; water boiling; flow rate

Apply to be
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   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD)?

MSc

Main supervisor (name and email)
and his / her institution

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Would you like to <br> submit a short paper <br> for the Conference
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