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paraffin-wax-thermal-storage

608-238-6001 [TEL]

greg@infinityturbine.com [Email]

Infinity Turbine LLC

Paraffin Wax Thermal Energy Storage

This webpage QR code

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Paraffin Wax Thermal Energy Storage can charge in 3 hours and discharge up to 15 hours still at 49 C as a PCM phase change material

PDF Version of the webpage (first pages)

Analysis of Paraffin Wax as a Phase Change Material

During the charging process, the Paraffin wax took around 3 hours and 5minutes and the discharge process comparatively long duration than that of charging process i.e. 15 hours and 28 minutes and still the temperature is around 49.0355°C and still the a lot of energy is stored in the sample as the storage duration prolongs the sample releases the heat energy In order to improve the performance of the Paraffin wax by adding suitable amount of micro or nano particles in to it, the care should be taken that the micro and nano particles disperses homogenously throughout the sample otherwise the micro or nano
particle settle at the bottom experimentation

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Paraffin Wax As a Phase Changing Material PCM Based Composites Containing Multi-Walled Carbon Nanotubes for Thermal Energy Storage (TES) Development

Thermal energy storage (TES) technologies are considered as enabling and supporting technologies for more sustainable and reliable energy generation methods such as solar thermal and concentrated solar power. A thorough investigation of the TES system using paraffin wax (PW) as a phase changing material (PCM) should be considered. One of the possible approaches for improving the overall performance of the TES system is to enhance the thermal properties of the energy storage materials of PW. The current study investigated some of the properties of PW doped with nano-additives, namely, multi-walled carbon nanotubes (MWCNs), forming a nanocomposite PCM. The paraffin/MWCNT composite PCMs were tailor-made for enhanced and efficient TES applications. The thermal storage efficiency of the current TES bed system was approximately 71%, which is significant. Scanning electron spectroscopy (SEM) with energy dispersive X-ray (EDX) characterization showed the physical incorporation of MWCNTs with PW, which was achieved by strong interfaces without microcracks. In addition, the FTIR (Fourier transform infrared) and TGA (thermogravimetric analysis) experimental results of this composite PCM showed good chemical compatibility and thermal stability. This was elucidated based on the observed similar thermal mass loss profiles as well as the identical chemical bond peaks for all of the tested samples (PW, CNT, and PW/CNT composites).

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THERMAL ENERGY STORAGE USING PARAFFIN WAX AND STABILITY STUDY OF THE PHASE CHANGE MATERIAL CONTAINING NANOPARTICLES

Nanoparticles may only lead to a 13 percent increase in efficiency due to coagulation.

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