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Advanced In Thermal Engineering

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Abstract - Low Temperature Energy Storage System (LTESS) stores the thermal energy from solar, exhaust gases and waste heat from industries. To achieve this energy storage, the medium adopted is Phase Change Materials (PCM). PCM is preferred because of their higher storage density, with less volume. The disadvantage of PCM for using as LTESS is that, the thermal conductivity of PCM is less and this requires more time period and surface area of contact, for loading and unloading of thermal energy. To overcome this problem, an attempt was made to incorporate CU Micro particles in the paraffin PCM to improve its thermal conductivity. The thermal conductivity of LTESS is determined both analytically and experimentally. Incorporating micro-particle in the PCM has improved the thermal conductivity of the LTESS. Maxwell-Garnett Equation is used to determine the thermal conductivity of PCM analytically and Transient Hot Wire Thermal Conductivity Measuring Apparatus KD2 probe is used to determine the thermal conductivity experimentally.