

## **IMPROVED LUMPED PARAMETER MODEL FOR PHASE CHANGE IN LATENT THERMAL ENERGY STORAGE SYSTEMS**

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### **Abstract**

A modified lumped parameter model has been used to study transient conduction in phase change materials (PCM) in cylindrical coordinates. The two-point Hermite approximation is used to compute the average temperatures and the temperature gradient in each phase. The performance of PCM has been analyzed during the charging process in terms of energy storage and density. The effect of Stefan number on melting front dynamics is comprehensively studied. The results are verified with exact solutions as well as steady-state asymptotes and also show good agreement with existing experimental data.