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**Numerical Investigation of the effect of adiabatic section location on thermal performance of a heat pipe network with the application in thermal energy storage systems** MAHBOOBE MAHDAVI, SAEED TIARI, SONGGANG QIU, Department of Mechanical Engineering, Temple University, 1947 N. 12th Street, Philadelphia, PA 19122, USA — Latent heat thermal energy storage systems benefits from high energy density and isothermal storing process. However, the low thermal conductivity of the phase change material leads to prolong the melting or solidification time. Using a passive device such as heat pipes is required to enhance the heat transfer and to improve the efficiency of the system. In the present work, the performance of a heat pipe network specifically designed for a thermal energy storage system is studied numerically. The network includes a primary heat pipe, which transfers heat received from solar receiver to the heat engine. The excess heat is simultaneously delivered to charge the phase change material via secondary heat pipes. The primary heat pipe composed of a disk shape evaporator, an adiabatic section and a disk shape condenser. The adiabatic section can be either located at the center or positioned outward to the surrounding of the container. Here, the effect of adiabatic section position on thermal performance of the system is investigated. It was concluded that displacing the adiabatic section outwards dramatically increases the average temperatures of the condensers and reduces the thermal resistance of heat pipes.

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