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The effect of heating power distribution on the startup time and overshoot of a loop thermosyphon with dual evaporators

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Abstract: Loop thermosyphon with multiple evaporators is a promising device in multi-source heat transfer. The startup performance is very important for its thermal control ability. In this paper, the effect of heating power distribution on the startup of a loop thermosyphon with dual evaporators is investigated experimentally. The startup time and stationarity under different power distributions are analyzed utilizing three parameters: peak time, transition time and temperature (pressure) overshoot. The results show that the startup process is faster and the overshoot of pressure and temperature is larger when the distribution is more uneven; Heating on one evaporator with the same heating power with the other evaporator makes the startup process longer while it makes the overshoot smaller or even disappear; The transition time is approximately twice as much as the peak time when the peak time exists.

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