

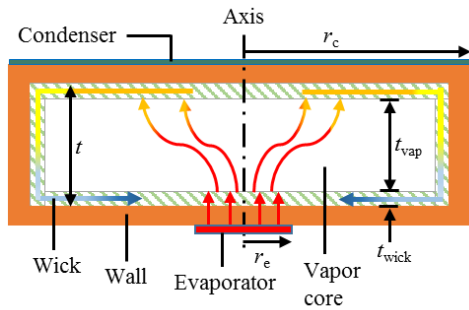
Simultaneous Wick and Fluid Selection for the Design of Minimized-Thermal-Resistance Vapor Chambers Under Different Operating Conditions

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Objective

Assess the effects of governing wick properties on vapor chamber design, in terms of fluid and wick selection at various operating conditions.



Approach

- Conventional thermal-resistance-based network modeling approach.
- The effect of each parameter on thermal performance of the vapor chamber was evaluated using a sensitivity analysis.

Impact

A generalized methodology is demonstrated that equips engineers with an ability to choose the best fluid-wick combination, out of all the possible combinations that arise in practical applications. This decision cannot be made based on intuition or any singular fluid/wick figure of merit.

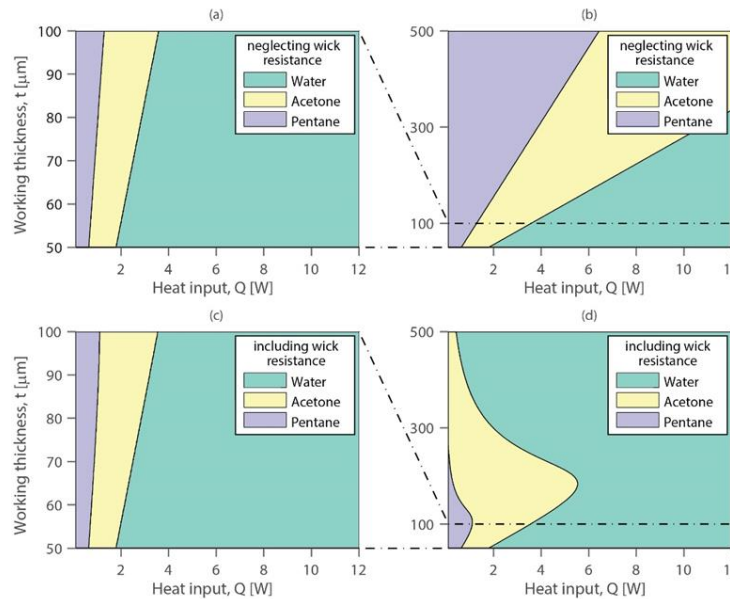
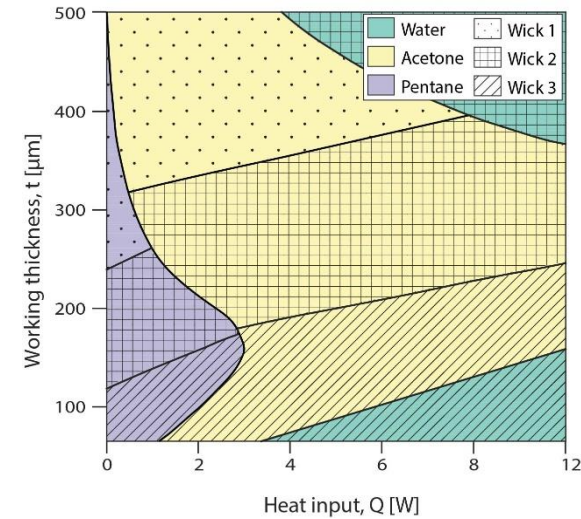


Figure showing working fluid selection map as a function of vapor chamber thickness and operating power with and without considering wick resistance.



Simultaneous working fluid and wick selection map for a vapor chamber for minimized thermal resistance.

Publication

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