

Heat sinks are a kind of heat exchangers used for cooling the electronic devices due to the simplicity of fabrication, low cost, and reliability of heat dissipation. The extended surfaces from the heat sinks are either flat-plate fins or pins fins shapes. In the last decades, intensive attentions were spent on miniaturizing the electronic devices because of the high sophisticated micro- and nano-technology development. But the heat dissipation is still the major problem of enhancing the thermal performance the heat sink. In this article, a comprehensive review is carried out on the methods used for optimizing the hydrothermal design of heat sinks. Therefore, available investigations regarding the passive and active techniques utilized for enhancing the heat removal from heat sinks by modifying either the solid domain or fluid domain are covered. The purpose of this study is to summarize the investigational efforts spent for developing the thermal performance of the heat sinks, limitations, and unsolved proposed solutions.