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Performance Evaluation of Extruded-type Heat sinks Used in Inverter for Solar Power Generation

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Abstract : In this study, heat release performances of the three extruded-type heat sinks can be used in the inverter for solar power generation were evaluated. Numbers of fins in the heat sinks (namely E-38, E-47 and E-76) were 38, 47 and 76, respectively. Heat transfer areas of them were 1.8, 1.9 and 2.8 m2. The heat release performances of E-38, E-47, and E-76 heat sinks were measured as 79.6, 81.6, and 83.2%, respectively. The results of heat release performance show that the larger amount of heat transfer area the higher heat release rate. While on the other, in this experiment, variations of the mass flow rates caused by different cross-sectional areas of the three heat sinks may not be the major parameter of the heat release. Despite the 47.4% increment of heat transfer area of E-76 heat sink than that of E-47 one, its heat release rate was higher by only 2.0%; this suggests that its heat transfer area need to be optimized.

Keywords : solar Inverter, heat sink, forced convection, heat transfer, performance evaluation
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