**Preliminary analysis of a concentrated solar driven thermionic-thermoelectric hybrid generator**

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A concentrated solar driven thermionic-thermoelectric hybrid generator composed of solar heat collector, thermionic generator (TIG), thermoelectric generator (TEG), and radiator is introduced in this paper. Analytic expressions for the power output and efficiency of the hybrid generator are derived based on the heat source of the concentrated solar radiation rather than isothermal heat source. The impacts of the concentrated solar radiation I0 and the TIG anode temperature TA on the internal temperature distributions, output power and efficiency have been discussed. For comparison purpose, a single TIG driven by solar energy has also been modeled and calculated. Results show that, the optimal concentrated solar radiation I0 for the maximum output power Pmax and the maximum efficiency ηmax differs, which are I0,P=2.5×106 W/m2 and I0,η=2×106 W/m2, respectively. While, the output power and efficiency of the TIG-TEG hybrid system simultaneously reach their maximum values with the optimal TIG anode temperature TA,opt=1025K. The maximum output power and efficiency of the hybrid TIG-TEG system are respectively 35% and 4% higher than that of the single TIG.