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Renewable Energy from Thermal Electric Generator with Solar Concentration Source

A passive renewable energy system is proposed, with a thermal electric generator (TEG) placed between a hot plate extended from a thermally insulated molten salt tank and a cold plate attached to a sizable passive heat sink. The molten salt is used to keep the hot side temperature at a steady state throughout the day maintaining a large temperature difference between the hot plate and the cooling fins, keeping the efficiency of the TEG higher and stable. Materials, heat transfer analysis, structural design concepts and theoretical TEG power output are explored for project feasibility; with no moving parts, greatly reducing maintenance, compact, quiet, environmentally friendly and lifetime of system is increased, ensuring it as a sustainable renewable energy resource.

Solar energy is concentrated by a 1 m² Fresnel lens and deposited onto an absorbing material such as Saltstream 700, Halotecnics' proprietary substance capable of operating temperatures of up to 700 °C; new material research has opened the possibility for commercial viability as efficiency of certain TE materials reach 15% to 20% efficiency, rivaling photovoltaics. Research findings are based on theoretical model analysis constructed using latest material options for a modern approach to sustainable renewable energy resources.



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