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Evaluating the Solar Thermal Energy Recapture Capabilities of a Thermoelectric Tie-in Device

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In this study, the energy conversion efficiency of a thermoelectric device was evaluated when paired with a solar thermal system. This application to a real-world solar hot water system was compared to a previously prepared mathematical model of the systems performance. The comparison between theoretical and real-world values is likely due to the small temperature gradient and the inefficiencies inherent in the system's design. It is hoped that this work can result in a less expensive hybrid roof system to further the adoption of alternative energy in the residential sector. Further work will attempt to minimize the effects of efficiency losses.

Navarre R. Bartz is a Junior in the Ceramic Engineering Department program at the Missouri University of Science and Technology. He is involved on campus with the W.T. Schrenk Society, Solar Car, and the Water and Environment Federation. He has a vested interest in energy storage, production, and sustainable design. He hopes to pursue a Ph.D. in materials science with an emphasis in energy materials.