Thermoelectric Charging (TEC) Case

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Introduction
The goal of this project was to create a cellular phone case that can charge the device using body heat. The desired effect is to reduce time wasted hovering around a phone charger or needing to carry another portable device just to charge the phone. Eliminating those things will grant the user some flexibility during their day.

Design
The case’s major components included a PLA 3D-printed case, Peltier tiles, step up/step down voltage converter, and a lithium ion battery. The idea was to have the Peltier tile’s heat absorbing side facing out and exposed. The voltage that the four tiles produce will go to a step up/step down converter to produce a 5V output that trickle charges the lithium ion battery. From there the battery will be able to charge the phone.

Results
After assembling each of the components of the system, the tiles were able to begin charging the battery. This battery was then able to supplement the phone’s internal battery.

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References
Malette, Josee, and Russel Vetesnik. Thermoelectric Charging Case for Handheld Electronic Devices. 7 Jan. 2015.
Thermoelectric Generator: Mobile Device Charger.

Discussion
- If this was project was to continue forward, different configurations of the tiles and layout should be tested.
- Testing these configurations would allow for more insight into how the overall performance of the case could be improved.