

LabNotebook

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1 Objectives

The objective for our group this day was to learn more about the thermoelectric effect.

2 Setup

This lab was not set up very well, as there was no push to get the students to start work. As a result, a few students were lost and weren't able to do the lab.

2.1 Materials

We used blocks of aluminum. This is because aluminum has very high thermal conductivity.

2.2 Tools

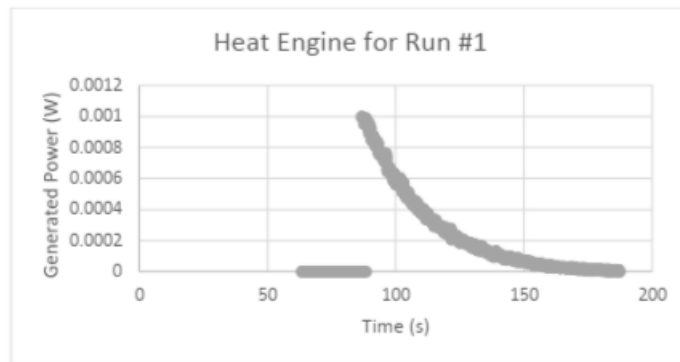
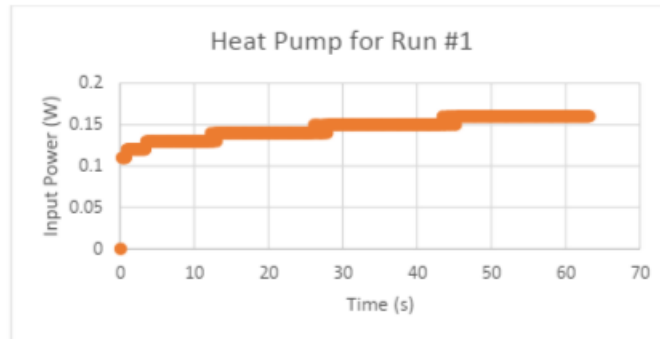
We used an electric system which was able to become a heat pump or a heat engine.

3 Procedure

First, we operated the apparatus in heat pump mode. The energy was pumped from one aluminum block to another. Once a temperature gradient was reached, the heat pump was switched to become a heat engine.

4 Results

We measured the input power from the power supply in heat pump mode. We also measured the power generated from the heat engine. A figure showing the relationship between the two is shown below.



5 Observations

Simply taking integrals of the two graphs gives us the energy from each process. Comparing a ration between these two energies gives us percent useful work which was about 2.7%. This is very bad, since aluminum gives off heat too easily.