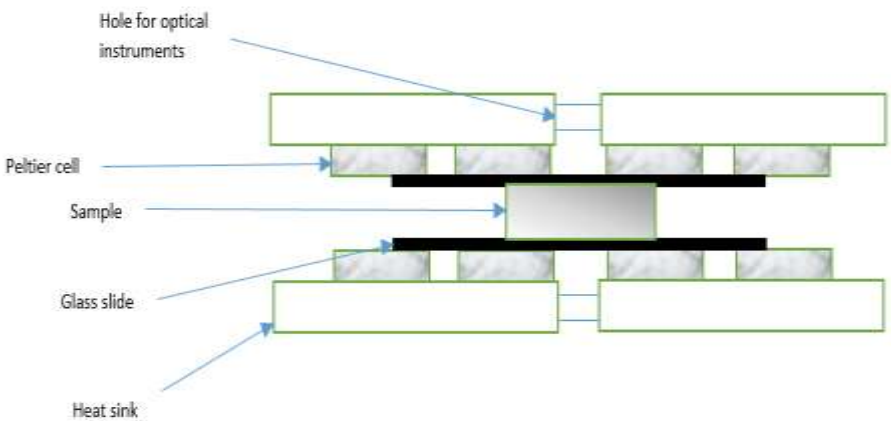


Format for the Project Submission

Project Id/No	AEL-04
Project Name	Study of solar powered Peltier cooler and its applications
Project Members	Mentors – Dr. Swati Arora Dr. Harendra Pal Singh Mentee – Anand Ratna Rawat, Dhairya Kathpalia, Rahul Chandani, Sudhanjali Sethi
Abstract	Temperature-controlled devices are widely employed these days. Peltier cells are extensively used in thermoelectric devices to attain precise temperature control. The aim here is to design the most optimum thermoelectric module. A thermoelectric module consisting of eight Peltier cells was studied, and a mathematical model was built. The entire process involved steps - First, several maximum performance parameters were defined to be global variables and a mathematical model was formed; second, imposed current was varied using pulse width modulation and the subsequent temperature difference was observed; third, transient heat transfer was studied; fourth, system dynamics was taken into account; and finally the derived differential equations were solved using finite element analysis. The results obtained from the mathematical model were then compared with those of the simulations. Several graphs were obtained and comparisons were made between thermoelectric modules containing different number and arrangements of Peltier cells. Finally the most optimum model is discussed.
Project Photo	
Project Report	https://docs.google.com/document/d/1BTxhaFo2_hTvSWzD7Zm2SdnHoA0Gi8Ep1WeNPmegOTQ/edit?usp=sharing

