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Aim: Create a prototype that utilizes vacuum technology to protect electronics from extreme temperatures

Background

- Limitations of current harsh environment electronics
 - Self heating in an insulated package limits processor power and speed
 - Protection from external heat also implies reduced heat dissipation potential
 - Conventional insulation technologies can provide heat conduction path
 - Use of Vacuum significantly reduces heat conduction and convection
 - Packaging must protect against heat radiation

Objectives

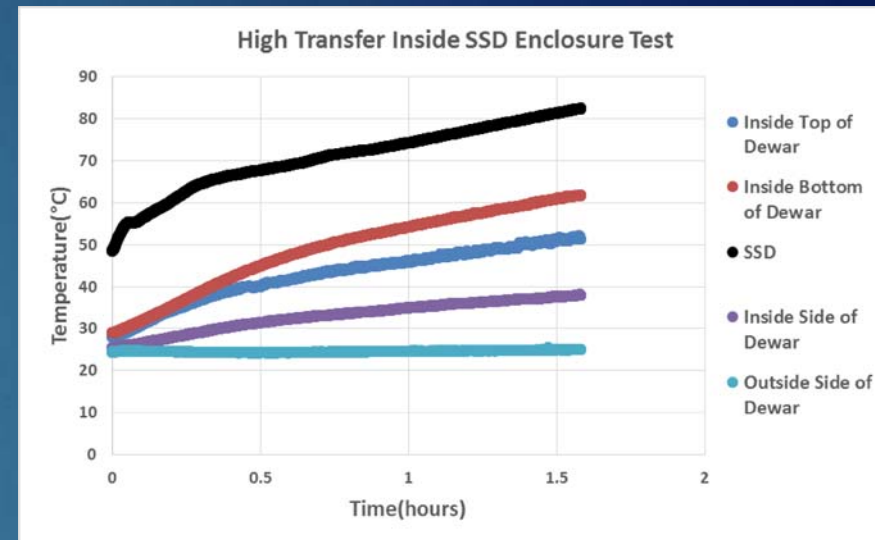
- Explore the use of vacuum insulation
- Maintain internal components at or below 85°C
- Keep both size and weight to a minimum

Off the Shelf Prototype

- Vessel, with USB inside of it, placed in 200+°C oven for 10 hours
- Burnt the duck tape that held thermocouples
- USB survived with only smoke damage
 - No data corruption



Dewar Flask after the fire test



Data obtained from the SSD test. The SSD was inside of its' enclosure, which was placed inside of the Dewar.

Future Work:

- Finish building prototype
- Test prototype in oven
- Develop way to receive more accurate temperature readings during test