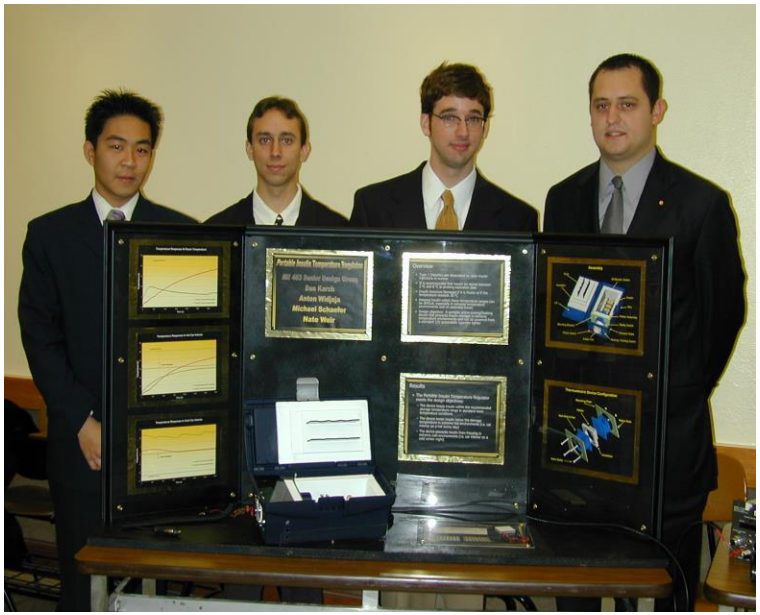
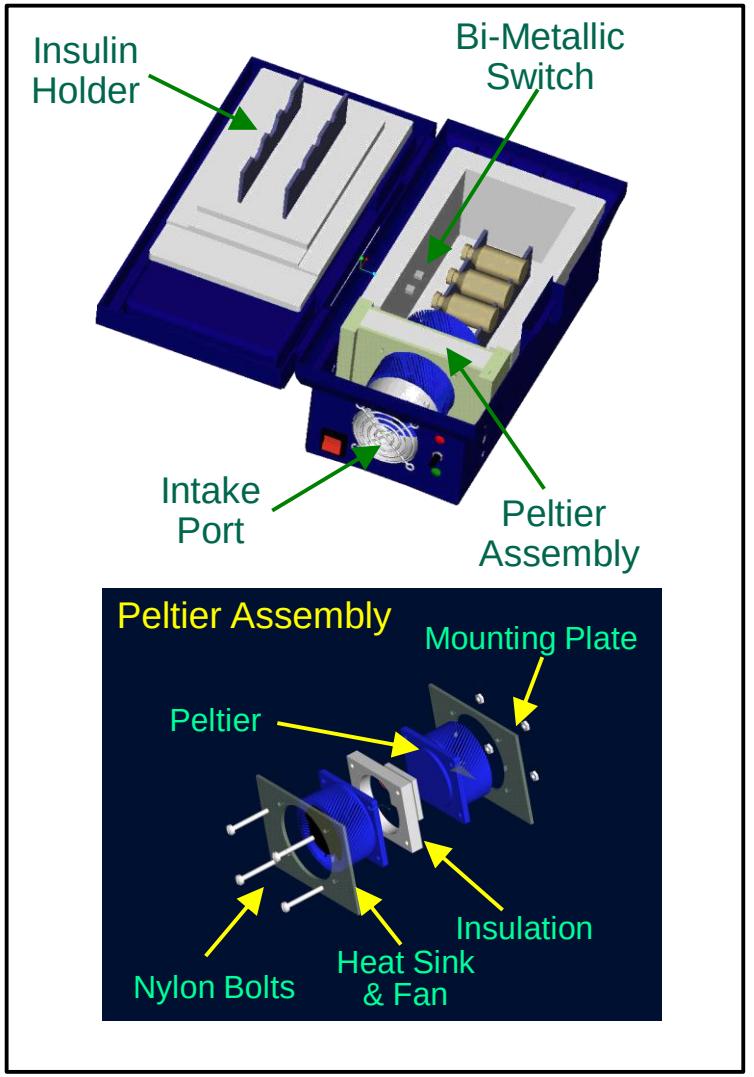
Portable Insulin Cooler

Project: Design and prototype a portable thermoelectric temperature-regulating device a diabetic person can use in a car while traveling

Team (L to R): Anton Widjaja, Daniel Karch, Nathan Weir, Michael Schaefer



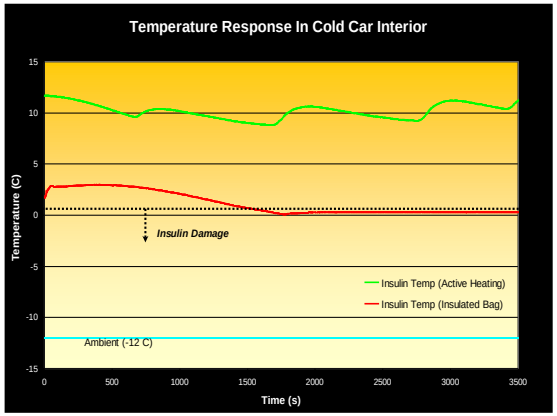


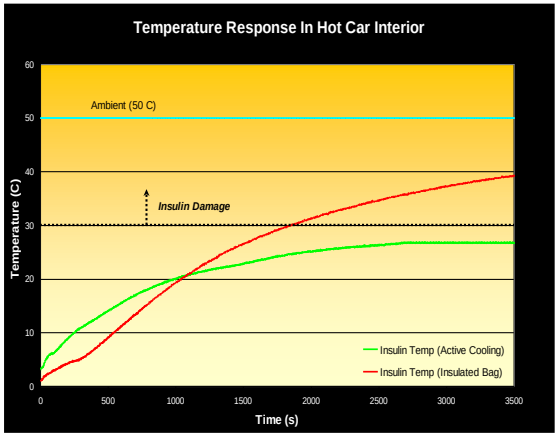
Design Goals:

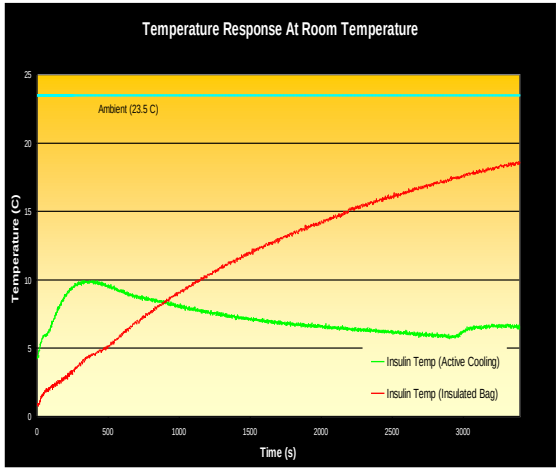
- Small and portable
- Maintain a temperature of 36 to 46˚ C
- Securely hold insulin vials
- Protect insulin from Ultraviolet radiation
- Cost effective

Overview

- Type 1 diabetics are dependent on daily insulin injections
- It is recommended that insulin be stored between 2 and 8° C to prolong expiration date
- Insulin damage will occur if it is frozen or if temperature exceed 30° C
- Keeping insulin within these temperature ranges can be difficult, especially in extreme temperature environments and during extended travel







Performance:

- Device maintains insulin within recommended temperature range in room temperature
- Device maintains insulin below damage temperature in extreme hot environments (e.g., car interior on hot summer day)
- Device prevents insulin freezing in extreme cold environments (e.g., car interior on cold winter night)