



Carter Kreft

Master's Degree
Mechanical Engineering

Office: 1335 ERB
Email: ckreft@wisc.edu
Hometown: McFarland, Wi

Project: N2 Continuous Sublimation Cooling
Advisor(s): Franklin Miller, John Pfothenauer
Sponsor: Sumitomo Heavy Industries



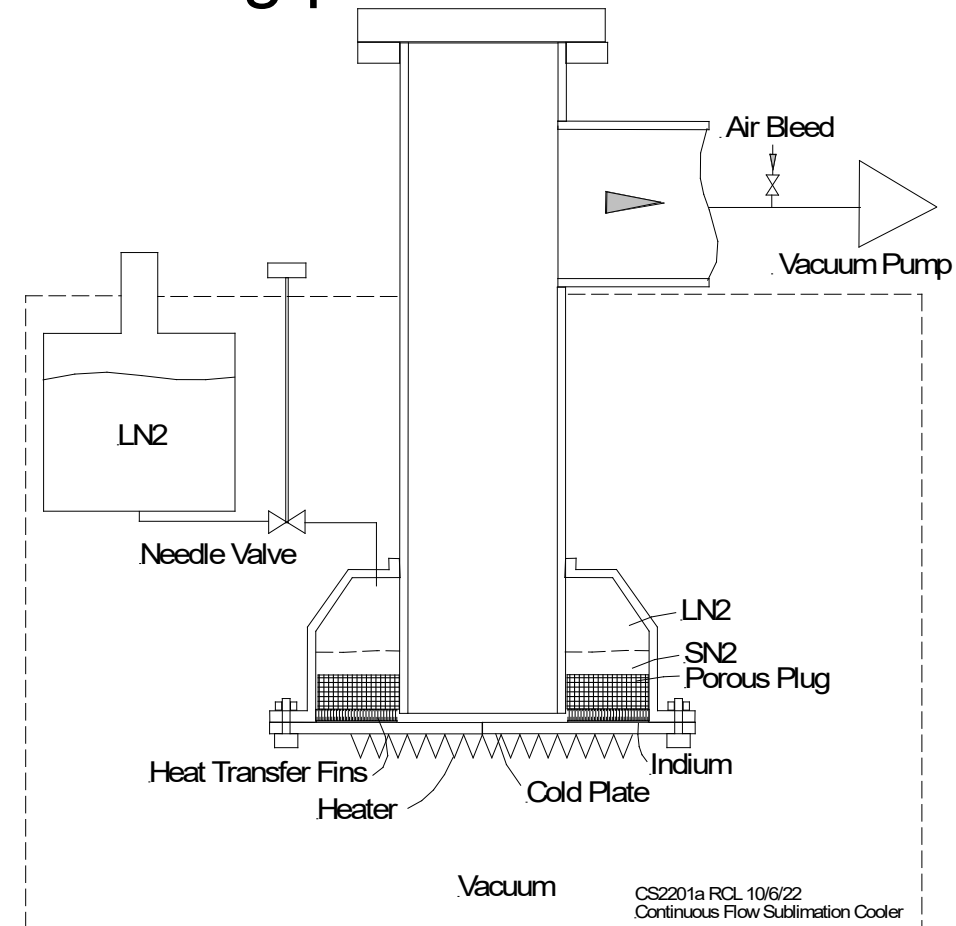
Background

- Most HTS magnets require cooling below the boiling point of N₂ (77K)
- Continuous cooling without solid formation below that temperature requires use of other, less-desirable gases like H₂ or Ne
- Batch cooling requires periodic refill and may have associated vibrations



Project Goals

- Model, prototype, and test a continuous flow SN2 sublimation cryocooler capable of reaching below the melting point of N2 (63K)
 - Deliverables include:
 - Mathematical Model
 - Porous plug specifications
 - Dimensioning
 - Instrumentation
 - Heat Exchanger Design



Test setup for Continuous Flow Sublimation Cooler
T and P sensors not shown