



Contribution ID: 292

Type: **Poster Presentation**

Testing of a 4 K to 2 K Heat Exchanger with an Intermediate Pressure Drop

Tuesday, June 30, 2015 2:00 PM (2 hours)

Most large sub-atmospheric helium refrigeration systems incorporate a heat exchanger at the load, or in the distribution system in some cases, to counter-flow the sub-atmospheric return with the super-critical or liquid supply. A significant process improvement is theoretically obtainable by handling the exergy loss across the Joule-Thompson throttling valve supplying the flow to the load in a simple but different manner. As briefly outline in previous publications, the exergy loss can be minimized by allowing the supply flow pressure to decrease to a sub-atmospheric pressure concurrent with heat exchange with the flow from the load. One practical implementation is to sub-divide the supply flow pressure drop between two heat exchanger sections, incorporating an intermediate pressure drop. Such a test is being performed at Jefferson Lab's Cryogenic Test Facility (CTF). This paper will briefly discuss the theory, practical implementation and test results and analysis obtained to date.

Primary author: KNUDSEN, Peter (Jefferson Lab)

Co-author: Dr GANNI, Rao (JLAB)

Presenter: KNUDSEN, Peter (Jefferson Lab)

Session Classification: C2PoG - Heat Exchangers

Track Classification: CEC-02 - Large-Scale Systems, Facilities, and Testing