



Contribution ID: 164

Type: **Oral presentation (15min)**

## **Prevention methods of natural convection in inclined pipes –an experimental study**

*Thursday, 10 July 2014 17:30 (15 minutes)*

It is widely known in cryogenics that interconnecting pipework between a warm and a cold temperature level contribute to the heat intake of a cryogenic storage tank, especially under critical inclination. With the help of a recently published correlation the additional heat intake by possibly upcoming convection can be estimated. However, for practical application the knowledge of additional heat leaks is only one thing that matters. Rather interesting are methods for an effective prevention of natural convection –even under critical inclinations. Within this paper we discussed several approaches which presumably have potential to reduce convective heat transfer. With the help of a theoretical analysis and experiments in our test cryostat we evaluated the impact of all approaches with remarkable results. Further, a comparison was carried out with literature hints for the prevention of natural convection in pipes. As the main result of our study we could clearly distinguish the most effective prevention methods and –even more interesting –the almost useless ones which have been anticipated as effective in literature.

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**Session Classification:** Thu-Af-Orals Session 18

**Track Classification:** C-06: Heat transfer and thermo-physical properties of solids and fluids