



Contribution ID: 86

Type: **Poster Presentation**

## **CFD studies on heat transfer and pressure drop characteristics of an offset strip-fin heat exchanger in helium systems**

The accuracy of correlations of colburn(j) and friction(f) factor have important effect on the accuracy of simulation results in the dynamic simulation of large scale helium systems. However, the most available correlations in the literatures and experimental results are used air as heat transfer medium. A steady-state three-dimensional numerical model was built to study the heat transfer and pressure drop characteristics of an offset strip-fin heat exchanger in helium systems. Then, the j and f factor were obtained under different Reynolds though numerical analysis. These results were compared with the existing results obtained by air to find the influence of different fluid medium. Further, the most suitable and convenient correlations for helium were developed by regression analysis. This work may be helpful to guide the selection of the general correlations of j and f in calculation of heat exchanger in dynamic simulation.

**Primary author:** Dr XIE, Xiujuan (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

**Co-authors:** Ms LV, Cui (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Prof. LIU, Hui Ming (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Prof. WU, Jihao (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences); Prof. LI, Qing (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

**Presenter:** Prof. LI, Lai Feng (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences)

**Track Classification:** CEC-01 - Large-Scale Refrigeration and Liquefaction