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C2Po1D-03: Exergy Analysis and Improvement of Helium Internal Purifier

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Exergy analysis was applied to the evaluation of helium internal purifier in this paper. The important operating parameters has been given to determine the exergy destructions in components as well as in the entire cycle of internal purifier. The analysis results show that the recovery of liquefied air energy can improve the performance of purifier and the exergy destruction of different heat exchanger is different. Results from the analysis helped evolving guidelines for designing appropriate technological process for practical helium internal purifier. An internal purifier with an optimized structure was designed to remove air impurities up to 10 mol%, beyond previous maximum impurity content. The impact on liquefaction capacity is minimized because of the small consumption of cold flow. The achievable performance were also provided in this paper. The purifier could remove air impurities up to 8 mol%.

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