26th National Symposium on Cryogenics and Superconductivity

Contribution ID : 129

EFFECTS OF CHARCOAL PARTICLE AND BED SIZE FOR DESIGN OF HELIUM GAS PURIFICATION SYSTEM AT 80 K FOR HELIUM PLANT

Content :

The Helium Refrigerator/Liquefier (HRL) is normally operated with helium gas having purity better than 99.999 % by volume which is equivalent to having 10 PPM (parts per million) impure gas in the helium gas. To get such high purity, it is necessary to include a purifier operating at about 80 K to remove gases like N2, O2, Ar, etc. up to the level of 5 PPM at the outlet of adsorber bed and this is normally placed inside the cold box of helium plant. Charcoal particle size, adsorber bed diameter and its length effect significantly the length of mass transfer zone (MTZ) of adsorption process and hence the design of the purifier. It is found that this MTZ is of significant size of the total charcoal bed length. The operating pressure of the helium stream is about 14 bar and inlet impurity level to the bed considered here is about 100 PPM. Flow rate of helium stream entering the bed is about 100 g/s. Details of these will be discussed in this paper.

Primary authors : Mr. BOHRA, D (L D Engg. College, Ahmedabad)

Co-authors : Mr. PRAJAPATI, D (Bhakti Consultancy, Gandhinagar, Gujarat) ; Mr. BEHERA, A (Cryogenic & Vacuum Technology, NIT, Rourkela, Odissa) ; Mr. SAHU, A K (Institute For Plasma Research,Gandhinagar, India) ; Prof. PATEL, J M (Mechanical Engg. Deptt, L D College of Engg, Ahmedabad, Gujarat)

Presenter : Mr. BOHRA, D (L D Engg. College, Ahmedabad)

Session classification : Poster Session 2: Abstract ID 11,33,34,35,36,38,39,40,43,48,52,54,59,66, 67,70,71,78,88,89,90,92,94,100,102,105,107,108, 109,111,112,115,116, 120,121,124,125,127,128,129,131,190

Track classification : Air / Gas Separation / Purification

Type : --not specified--