

SYSTEM AND METHOD FOR PRE-PURIFICATION OF A FEED GAS STREAM

Abstract

A system and method of pre-purification of a feed gas stream is provided that is particularly suitable for pre-purification of a feed air stream in cryogenic air separation unit. The disclosed pre-purification systems and methods are configured to remove substantially all of the hydrogen, carbon monoxide, water, and carbon dioxide impurities from a feed air stream and is particularly suitable for use in a high purity or ultra-high purity nitrogen plant. The pre-purification systems and methods preferably employ two or more separate layers of hopcalite catalyst with the successive layers of the hopcalite separated by a zeolite adsorbent layer that removes water and carbon dioxide produced in the hopcalite layers. Alternatively, the pre-purification systems and methods employ a hopcalite catalyst layer and a noble metal catalyst layer separated by a zeolite adsorbent layer that removes water and carbon dioxide produced in the hopcalite layer.

Figure 1