ABSTRACT

NITROGEN GENERATION METHOD AND APPARATUS

A method and apparatus for generating nitrogen from the separation of air in a single column nitrogen generator. Nitrogen rich vapor is condensed to form reflux through the vaporization of an oxygen-rich liquid stream produced as column bottoms. The vaporized oxygen-rich stream is in part recompressed in a recycle compressor, cooled and reintroduced back into the column to increase nitrogen production. The vaporized oxygen-rich stream is also in part expanded with the performance of work. The work of expansion is applied to the compression. A supplemental refrigerant stream produced by a nitrogen liquefaction unit allows the nitrogen to be taken as a liquid and increases the amount of work of expansion able to be applied to the compression.

Fig 1