ABSTRACT

PROCESS TO PRODUCE HIGH PRESSURE NITROGEN USING A HIGH PRESSURE COLUMN AND ONE OR MORE LOWER PRESSURE COLUMNS

A process is set forth for the cryogenic distillation of an air feed to produce high pressure nitrogen of various purity, varying from moderately high purity (99.9% nitrogen) to ultra-high purity (less than 1 part per billion of oxygen). The process is particularly suited for cases where the high pressure nitrogen is needed directly from the distillation column system to avoid contamination concerns associated with compressing nitrogen that is produced at lower pressures. The process uses a high pressure column, which operates at a pressure to directly produce the nitrogen at the desired high pressure, and one or more lower pressure columns which produces a portion of the nitrogen product at a lower pressure. At least a portion of the lower pressure nitrogen is compressed and fed to the high pressure column at a location which is below the removal location of the high pressure nitrogen.

(Figure 1)