ABSTRACT

AIR SEPARATION

In air separation method for supplying gaseous oxygen to meet the requirements of a variable demand cycle, air is rectified in a double rectification column 20 comprising high pressure column 22 and low pressure column 24. A liquid oxygen stream 46 is withdrawn from the column 24 and a nitrogen stream 34 from the column 72. The nitrogen stream 34 is warmed within a main heat exchanger 18. A variable part of it is expanded in turbine 76 to create plant refrigeration. When a demand for gaseous oxygen exists, a product stream formed of withdrawn liquid oxygen is raised by pump 62 to delivery pressure and at least part of the nitrogen stream is warmed to ambient temperature in heat exchanger 18, is compressed in compressor 70 and is then condensed against a vaporising product oxygen stream to form the gaseous oxygen. The resulting condensed nitrogen is then flashed into a tank 54. The flash vapour is added to the nitrogen stream upstream of its compression, thereby increasing the rate at which oxygen can be vaporised. Resultant liquid nitrogen condensate is introduced into the low pressure column 24 as reflux to allow the withdrawal of the liquid oxygen. Any excess amounts of the liquid oxygen and condensed nitrogen not immediately used are stored.

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