

Title (en)

Process for removing hydrogen by cryogenic distillation in the production of high purity nitrogen

Title (de)

Verfahren zur Entfernung von Wasserstoff bei der kryogenen Destillation zwecks Erzeugung von hochreinem Stickstoff

Title (fr)

Procédé d'élimination d'hydrogène par distillation cryogénique en vue d'obtenir de l'azote à grande pureté

Publication

EP 0539268 B1 19971119 (EN)

Application

EP 92402799 A 19921014

Priority

US 77550391 A 19911015

Abstract (en)

[origin: EP0539268A1] A process for removing hydrogen by cryogenic distillation in the production of high purity nitrogen, which comprises: a) feeding a compressed, cleaned and dried feed mixture (12) comprising oxygen and nitrogen, which has been cooled to about the dew point thereof, to a first distillation column 13, whereby said nitrogen 16 is extracted at the top of said distillation column as a liquid, and a liquid stream rich in oxygen 17 is extracted at the bottom of said first distillation column; b) extracting a minor fraction of the gas 30 at the top of the first distillation column, the minor fraction containing the lighter impurities; c) expanding said liquid nitrogen at the top of the first distillation column into a second distillation column 14 at an intermediate level, said second distillation column being operated at a pressure sufficiently lower than the pressure of said first distillation column to provide a sufficient temperature difference in a condenser-reboiler located between the first and second distillation columns; d) vaporizing the liquid stream rich in oxygen in the overhead condenser 4 of the second distillation column 14 against the condensing vapor at the top of the second distillation column to form a condensate at the top of the second distillation column, and returning said condensate to the top of the second distillation column as reflux; e) extracting a minor fraction of the gas 31 at the top of the second distillation column containing substantially all lighter impurities; and f) vaporizing the liquid at the bottom of the second distillation column 14 by heat exchange with the condensing gas at the top of the first distillation column 13, and recovering as product a fraction of the liquid 24, a fraction of the vaporized liquid 29 or both, the product containing substantially no lighter air impurities. <IMAGE>

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Citation (examination)

H. Hausen et al., "Tieftemperaturtechnik", Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1985

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CN102506559A; EP1080765A1; EP1080763A1; US6141989A; EP0924486A3; CN102589250A; CN107062800A; EP1300640A1; CN100334412C; CN107560318A; US6708523B2

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