Title (en)

Distillation process and apparatus for variable argon production

Title (de)

Rektifikationsverfahren und -vorrichtung zur variablen Argon Herstellung

Title (fr)

Procédé et installation de distillation d'air avec production variable d'argon

Publication

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Application

EP 99400957 A 19990420

Priority

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Abstract (en)

The installation is dimensioned to produce argon with a nominal yield rho n of argon from the column outlet. When the need for argon is reduced to a yield rho , where rho is less than or equal to rho o less than or equal to rho n and rho o is a preset optimal yield, the extraction yield from the column is maintained at rho o. The excess argon is used as a refrigeration source for the air to be distilled The air distillation installation (1) comprises an air distillation device (2) and at least one column (3) producing impure argon. The excess argon is extracted from the top of the column in liquid or gas form and is sent to at least one heat exchanger (5, 24). This extracted fraction is mixed (in 33) with a residual fluid taken from one of the columns (4, 9) before it is sent to the heat exchanger. This residual fluid comes from the medium pressure column and is sent to the low pressure column. The fluid can be impure argon extracted from the levels below the top of the medium pressure column and the mixture is sent to the top of the low pressure column. The installation also includes a column producing pure argon (4) by de-nitrogenation in the impure argon production column (3), extracting at least part of the excess argon in liquid or gas form from the top of the pure argon production column (4) and send it to a heat exchanger or to the distillation apparatus. The air distillation device has a double column comprising a medium pressure column (8), a low pressure column (9) and a vaporizer - condenser (10) thermally linking the top of the medium pressure column with the base of the low pressure column. rho o is the yield for which a maximum flow D(rho o) of nitrogen can be extracted and for required yields less than rho o a nitrogen flow greater than D(rho) or equal to D(rho o) is extracted. The additional nitrogen is used as a refrigerant after being expanded through a turbine and passage through a heat exchanger to cool the air to be distilled. Installation to carry out this process with at least one bypass pipe (48) sending part of the impure argon to the heat exchanger.

Abstract (fr)

Procédé de distillation d'air avec production d'argon au moyen d'une installation (1) de distillation d'air comprenant un appareil (2) de distillation d'air, notamment à double colonne, et au moins une colonne (3) de production d'argon impur, l'installation étant dimensionnée pour fournir de l'argon avec un rendement nominal pn d'extraction d'argon en sortie de la colonne (3) de production d'argon impur. Pour des besoins en production d'argon réduits correspondant à un rendement nécessaire ρ d'extraction d'argon en sortie de la colonne de production d'argon impur, avec ρ <= ρo <= ρn où ρo est un rendement optimal prédéterminé, on maintient le rendement d'extraction d'argon en sortie de la colonne de production d'argon impur sensiblement à la valeur ρo. <IMAGE>

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Citation (search report)

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