

Title (en)  
METHOD AND DEVICE FOR AIR SEPARATION BY CRYOGENIC DISTILLING

Title (de)  
GERÄT UND VERFAHREN ZUR TRENNUNG VON LUFT DURCH KRYOGENE DESTILLATION

Title (fr)  
APPAREIL ET PROCÉDÉ DE SÉPARATION D'AIR PAR DISTILLATION CRYOGÉNIQUE

Publication  
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Application  
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Priority  
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Abstract (en)  
[origin: US2019041130A1] Method for separating air by cryogenic distillation, wherein air is compressed in a compressor and is subsequently sent to a heat exchanger, with the air cooled in the exchanger being sent to a check valve downstream of the heat exchanger and subsequently to a turbine, the valve being positioned so that air from a short-circuiting duct cannot return to the exchanger from the compressor.

Abstract (fr)  
Procédé de séparation d'air par distillation cryogénique dans lequel on surpresse au moins une partie de l'air à distiller dans un surpresseur d'air (C2), on détend dans au moins une turbine de détente (T2, T1) de l'air comprimé et si la perte de charge entre deux points du surpresseur passe en dessous d'un seuil et/ou un débit du surpresseur passe en dessous d'un débit minimal du surpresseur, on détend une partie de l'air surpressé dans le surpresseur sans l'avoir refroidi entre le surpresseur et la détente et on envoie l'air surpressé détendu en amont ou en aval de l'au moins une turbine, sans avoir été refroidi dans l'échangeur de chaleur après avoir été surpressé.

IPC 8 full level  
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Citation (search report)  
• [A] FR 2851330 A1 20040820 - AIR LIQUIDE [FR] & EP 0644388 A1 19950322 - BOC GROUP INC [US]  
• [A] GB 1500610 A 19780208 - NUOVO PIGNONE SPA  
• [A] CN 201173660 Y 20081231 - HANGZHOU FUSIDA GAS EQUIPMENT [CN]  
• [A] MACCONNELL: "Process Control and Optimization, Vol. II, Chapter 8.37 - Separation Controls, Air", 1 January 2006 (2006-01-01), pages 2123 - 2136, XP055173780, Retrieved from the Internet <URL:ftp://ftp.ucauca.edu.co/Facultades/FIET/DEIC/Materias/Instrumentacion%20Industrial/Instrument%20Engineers%20Handbook,%20Fourth%20Edition,%20Volume%20Two-%20Process%20Control%20and%20Optimization/1081ch8\_37.pdf> [retrieved on 20150304]

Cited by  
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