Title (en)

Integrated process for air separation and energy generation and plant for carrying out the process

Title (de)

Integriertes Verfahren zur Luftzerlegung und Energieerzeugung und Anlage zur Ausführung des Verfahrens

Title (fr)

Procédé intégré de séparation d'air et de génération d'énergie et installation pour la mise en oeuvre d'un tel procédé

Publication

EP 1223395 A1 20020717 (FR)

Application

EP 01403286 A 20011218

Priority

FR 0100403 A 20010112

Abstract (en)

Air separation procedure produces fluid rich in oxygen and optionally a fluid rich in nitrogen in a plant comprising at least two air separators each having at least two distillation columns, an air compressor, a combustion chamber, and an expansion turbine. The amount of cryogenic liquid produced by the second separator in relation to the treated air flow is greater than that produced by the first separator. The air separation procedure produces a fluid rich in oxygen and optionally a fluid rich in nitrogen in a plant comprising at least two air separators (1, 101), each having at least two distillation columns, a first air compressor (13), a first combustion chamber (17), and a first expansion turbine (19). The first compressor feeds compressed air to the first separator and combustion chamber, while the second separator is fed with compressed air by an auxiliary compressor (21). A nitrogen-rich gas is fed to the first air separator upstream of the expansion turbine, which is fed with combustion gases from at least one combustion chamber (17). Nitrogen-rich gas from the first and second air separators also delivered upstream of the expansion turbine. In addition, the amount of cryogenic liquid produced as an end product by the second separator in relation to the treated air flow is greater than that produced by the first separator. An Independent claim is included for a plant in which the above process is performed.

Abstract (fr)

Procédé et installation intégrés de séparation d'air comprenant au moins deux appareils de séparation d'air (1, 101), un compresseur d'air (13) qui alimente en air comprimé une chambre de combustion et au moins un des appareils de séparation d'air et au moins un compresseur d'air dédié (21, 121) alimentant un des ou les appareils de séparation d'air, de sorte que, si les deux appareils de séparation d'air reçoivent de l'air du compresseur (13), les proportions d'air provenant du compresseur d'air sont différentes pour les deux appareils de séparation d'air. <IMAGE>

IPC 1-7

F25J 3/04

IPC 8 full level

F25J 3/04 (2006.01)

CPC (source: EP US)

F25J 3/04169 (2013.01 - EP US); **F25J 3/04545** (2013.01 - EP US); **F25J 3/04575** (2013.01 - EP US); **F25J 3/04606** (2013.01 - EP US); **F25J 3/04818** (2013.01 - EP US); **F25J 3/04951** (2013.01 - EP US); **F25J 3/04957** (2013.01 - EP US); F25J 2240/80 (2013.01 - EP US)

Citation (search report)

- [A] US 5740673 A 19980421 - SMITH ARTHUR RAMSDEN [US], et al
- [A] US 5572861 A 19961112 - SHAO YULIN [US]
- [A] US 4861369 A 19890829 - VON BOGDANDY LUDWIG [AT], et al
- [Y] "OPERATION FLEXIBILITY CONSIDERATIONS IN THE SELECTION OF A PUMPED LOX AIR SEPARATION PROCESS INCORPORATING A SOURCE OF HIGH PRESSURE FEED AIR", RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 391, 1 November 1996 (1996-11-01), pages 733 - 739, XP000680931, ISSN: 0374-4353
- [YA] KELLER W K F: "DER GUD-PROZESS", BWK BRENNSTOFF WARME KRAFT, VDI VERLAG GMBH. DUSSELDORF, DE, vol. 41, no. 9, 1 September 1989 (1989-09-01), pages 413 - 423, XP000068976, ISSN: 0006-9612
- [A] "PROCESS AND FACILITY WITH PARTICULARLY HIGH AVAILABILITY", RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 397, 1 May 1997 (1997-05-01), pages 276 - 279, XP000726402, ISSN: 0374-4353

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)

EP 1223395 A1 20020717; **EP 1223395 B1 20050803**; **EP 1223395 B2 20130515**; AT E301272 T1 20050815; AT E334365 T1 20060815; DE 60112396 D1 20050908; DE 60112396 T2 20060601; DE 60112396 T3 20131010; DE 60121830 D1 20060907; DE 60121830 T2 20070329; EP 1406052 A2 20040407; EP 1406052 A3 20050105; EP 1406052 B1 20060726; ES 2246301 T3 20060216; ES 2246301 T5 20131008; ES 2269951 T3 20070401; FR 2819584 A1 20020719; FR 2819584 B1 20030307; JP 2002243361 A 20020828; US 2002092306 A1 20020718; US 6550234 B2 20030422

DOCDB simple family (application)

EP 01403286 A 20011218; AT 01403286 T 20011218; AT 03300172 T 20011218; DE 60112396 T 20011218; DE 60121830 T 20011218; EP 03300172 A 20011218; ES 01403286 T 20011218; ES 03300172 T 20011218; FR 0100403 A 20010112; JP 2002004966 A 20020111; US 4162802 A 20020110