

Title (en)  
SEPARATION PROCESS AND DEVICE FOR SYNTHESIS OFF-GAS

Publication  
**EP 0081849 A3 19860312 (DE)**

Application  
**EP 82111608 A 19821214**

Priority  
DE 3149846 A 19811216

Abstract (en)  
[origin: US4473385A] In a low temperature process for the fractionation of ammonia synthesis waste gas (N<sub>2</sub>, H<sub>2</sub>, Ar, CH<sub>4</sub>) comprising two successive separating stages and a nitrogen refrigeration cycle for supplying reboiler heat to each of the stages and also liquid nitrogen, wherein nitrogen is compressed in a compressor to a final pressure, cooled, expanded, and partially liquefied, gaseous and revaporized liquid nitrogen being recompressed, the improvement comprising compressing the nitrogen to a medium pressure, e.g., 6-20 bar, withdrawing a portion of resultant medium-pressure nitrogen from the compressor, compressing remaining medium-pressure nitrogen to the final pressure, e.g., 30-50 bar, cooling resultant medium-pressure nitrogen in parallel with resultant final-pressure nitrogen, further cooling the medium-pressure nitrogen by supplying reboiler heat to the two separating columns, expanding resultant cooled medium-pressure nitrogen to at least partially liquefy the same, expanding resultant cooled final-pressure nitrogen to at least partially liquefy the same, and combining both resultant at least partially liquefied nitrogen streams in a phase separator.

IPC 1-7  
**F25J 3/02**

IPC 8 full level  
**F25J 3/02** (2006.01)

CPC (source: EP US)  
**F25J 3/0219** (2013.01 - EP US); **F25J 3/0233** (2013.01 - EP US); **F25J 3/0252** (2013.01 - EP US); **F25J 3/0257** (2013.01 - EP US); **F25J 3/0285** (2013.01 - EP US); **F25J 2200/02** (2013.01 - EP US); **F25J 2200/30** (2013.01 - EP US); **F25J 2200/74** (2013.01 - EP US); **F25J 2200/76** (2013.01 - EP US); **F25J 2205/04** (2013.01 - EP US); **F25J 2210/20** (2013.01 - EP US); **F25J 2215/04** (2013.01 - EP); **F25J 2270/02** (2013.01 - EP US); **F25J 2270/04** (2013.01 - EP US); **F25J 2270/42** (2013.01 - EP US); **F25J 2270/90** (2013.01 - EP US); **Y10S 62/934** (2013.01 - EP US)

Citation (search report)  
• [A] NL 6403017 A 19640922  
• [A] FR 2083590 A1 19711217 - AIR PROD LTD  
• [A] DE 2814660 A1 19791011 - LINDE AG

Cited by  
AU578385B2

Designated contracting state (EPC)  
DE FR GB IT NL

DOCDB simple family (publication)  
**EP 0081849 A2 19830622; EP 0081849 A3 19860312; EP 0081849 B1 19870701**; DE 3149846 A1 19830721; DE 3276671 D1 19870806; IN 158298 B 19861011; US 4473385 A 19840925

DOCDB simple family (application)  
**EP 82111608 A 19821214**; DE 3149846 A 19811216; DE 3276671 T 19821214; IN 1448CA1982 A 19821215; US 44979482 A 19821214