

Title (en)
Methods and apparatus for the low temperature air separation

Title (de)
Verfahren und Vorrichtungen zur Tieftemperaturzerlegung von Luft

Title (fr)
Procédés et dispositifs de séparation d'air à basse température

Publication
EP 0716280 A3 19970416 (DE)

Application
EP 95118951 A 19951201

Priority
DE 4443190 A 19941205

Abstract (en)
[origin: EP0716280A2] Process for low temp. decomposition of air comprises cooling a 1st partial stream (101) of compressed and purified air (1), passing to a main rectification system (4) and decomposing into liq. O₂ and gaseous N₂. In a 1st condenser-evaporator (2), a liq. fraction (20, 29) is vaporised in indirect heat exchange with a 2nd stream (202, 203) of compressed and purified air. The 2nd partial stream is partially condensed in this exchange and an argon-contg. oxygen fraction (22) from the rectification system (4) is fed to a raw argon column (24) where it is sepd. into raw argon and an oxygen rich liq.. Vaporous raw argon from the head of the column (24) is liquefied by indirect heat exchange with at least part of the 2nd stream (203) downstream of the 1st condenser-evaporator in a 2nd condenser-evaporator (27), where at least a part of the 2nd stream evaporates. Virtually the entire cold required for the liquefaction of raw argon is produced by the evapn. of the second stream. Also claimed is a process as above where at least a part of the 2nd partial stream (205) evaporated in the 2nd condenser-evaporator is fed to the rectification system without further pressure increase. Also claimed are devices to carry out the above processes.

IPC 1-7
F25J 3/04

IPC 8 full level
C01B 23/00 (2006.01); **F25J 3/04** (2006.01)

CPC (source: EP KR US)
F25J 3/04084 (2013.01 - EP KR US); **F25J 3/0409** (2013.01 - EP KR US); **F25J 3/04103** (2013.01 - EP KR US);
F25J 3/04296 (2013.01 - EP KR US); **F25J 3/04412** (2013.01 - EP KR US); **F25J 3/04672** (2013.01 - EP KR US);
F25J 2245/40 (2013.01 - EP KR US); **Y10S 62/924** (2013.01 - EP KR US)

Citation (search report)
• [X] US 4715873 A 19871229 - AUVIL STEVEN R [US], et al
• [DA] US 5245831 A 19930921 - AGRAWAL RAKESH [US], et al
• [PX] US 5469710 A 19951128 - HOWARD HENRY E [US], et al
• [PX] EP 0684438 A1 19951129 - BOC GROUP PLC [GB]
• [A] US 5049174 A 19910917 - THOROGOOD ROBERT M [US], et al

Cited by
EP0828122A1; DE102013017590A1; EP2801777A1; EP2963367A1; WO2016005031A1; DE102007031765A1; EP2015012A2; EP2312248A1;
EP2520886A1; EP2600090A1; DE102007031759A1; EP2963371A1; EP2015013A2; DE102009034979A1; DE102012017488A1;
EP2963369A1; EP2458311A1; DE102010052545A1; DE102011121314A1; EP2784420A1; DE102010052544A1; EP2466236A1; EP2568242A1;
DE102011112909A1; WO2014154339A2; EP2963370A1

Designated contracting state (EPC)
BE DE FR GB IT

DOCDB simple family (publication)
EP 0716280 A2 19960612; EP 0716280 A3 19970416; EP 0716280 B1 20010516; CN 1125838 A 19960703; DE 4443190 A1 19960613;
DE 59509262 D1 20010621; JP H08233458 A 19960913; KR 960024196 A 19960720; TW 299244 B 19970301; US 5644934 A 19970708

DOCDB simple family (application)
EP 95118951 A 19951201; CN 95117579 A 19951205; DE 4443190 A 19941205; DE 59509262 T 19951201; JP 33255095 A 19951129;
KR 19950046689 A 19951205; TW 84112821 A 19951201; US 56670195 A 19951204