

Title (en)

METHOD AND APPARATUS FOR COOLING AND/OR LIQUEFYING A HYDROCARBON STREAM

Title (de)

VERFAHREN UND VORRICHTUNG ZUM KÜHLEN UND/ODER VERFLÜSSIGEN EINES KOHLENWASSERSTOFFSTROMS

Title (fr)

PROCÉDÉ ET APPAREIL DE REFROIDISSEMENT D'UN FLUX D'HYDROCARBURE

Publication

**EP 2215414 A2 20100811 (EN)**

Application

**EP 08856792 A 20081202**

Priority

- EP 2008066623 W 20081202
- EP 07122288 A 20071204
- EP 08856792 A 20081202

Abstract (en)

[origin: WO2009071538A2] A refrigerant stream (10) is provided at a refrigerant pressure, and passed through at least three heat exchange steps (12, 14, 16, 18) operating at different pressure levels. A hydrocarbon stream (20) is passed through at least two of these heat exchange steps to provide a cooled hydrocarbon stream (30). A fraction of the refrigerant stream (10) is expanded and evaporated at each heat exchange step (12, 14, 16, 18) to a different pressure, to provide a first evaporated refrigerant stream (40) at a first evaporation pressure, and at least two other evaporated refrigerant streams (50, 60, 70) at evaporation pressures lower than the first evaporation pressure. The first evaporated refrigerant stream (40) is compressed through a highest-pressure compressor stage (22) to provide at least a fraction of the refrigerant stream (10) at the refrigerant pressure, and the other evaporated refrigerant streams (50, 60, 70) are compressed through at least two parallel lower pressure compressor stages (24, 26, 28) to provide two or more part-compressed refrigerant streams (50a, 60a, 70a), all of which part-compressed refrigerant streams (50a, 60a, 70a) being passed through the highest pressure compressor stage (22).

IPC 8 full level

**F25J 1/02** (2006.01); **F25B 1/10** (2006.01)

CPC (source: EP US)

**F25B 1/10** (2013.01 - EP US); **F25J 1/0022** (2013.01 - EP US); **F25J 1/0052** (2013.01 - EP US); **F25J 1/0087** (2013.01 - EP US); **F25J 1/0294** (2013.01 - EP US); **F25B 5/04** (2013.01 - EP US); **F25B 2400/13** (2013.01 - EP US)

Citation (search report)

See references of WO 2009071538A2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA MK RS

DOCDB simple family (publication)

**WO 2009071538 A2 20090611**; **WO 2009071538 A3 20100311**; AU 2008333301 A1 20090611; AU 2008333301 B2 20110915; EP 2215414 A2 20100811; JP 2011506893 A 20110303; JP 5259727 B2 20130807; RU 2010127331 A 20120110; RU 2499962 C2 20131127; US 2010293997 A1 20101125

DOCDB simple family (application)

**EP 2008066623 W 20081202**; AU 2008333301 A 20081202; EP 08856792 A 20081202; JP 2010536425 A 20081202; RU 2010127331 A 20081202; US 74578708 A 20081202