

Title (en)
NATURAL GAS LIQUEFYING SYSTEM AND LIQUEFYING METHOD

Title (de)
ERDGASVERFLÜSSIGUNGSSYSTEM UND VERFLÜSSIGUNGSVERFAHREN

Title (fr)
SYSTÈME DE LIQUÉFACTION DE GAZ NATUREL ET PROCÉDÉ DE LIQUÉFACTION

Publication
EP 3091319 A1 20161109 (EN)

Application
EP 14873799 A 20141226

Priority
• JP 2013270011 A 20131226
• JP 2014050786 A 20140313
• JP 2014006501 W 20141226

Abstract (en)
By using the power generated by an expander by an expansion of material gas, the outlet pressure of a compressor is increased, and a requirement on the cooling capacity of a cooler is reduced. The liquefaction system (1) for natural gas comprises a first expander (3) for generating power by using natural gas under pressure as material gas; a first cooling unit (11, 12) for cooling the material gas depressurized by expansion in the first expander; a distillation unit (15) for reducing or eliminating a heavy component in the material gas by distilling the material gas cooled by the first cooling unit; a first compressor (4) for compressing the material gas from which the heavy component was reduced or eliminated by the distillation unit by using power generated in the first expander; and a liquefaction unit (21) for liquefying the material gas compressed by the first compressor by exchanging heat with a refrigerant.

IPC 8 full level
F25J 1/00 (2006.01); **F25J 3/02** (2006.01); **F25J 3/06** (2006.01); **F25J 5/00** (2006.01)

CPC (source: CN EP KR RU US)
F25J 1/0022 (2013.01 - EP KR RU US); **F25J 1/0035** (2013.01 - EP KR RU US); **F25J 1/0052** (2013.01 - EP KR RU US);
F25J 1/0055 (2013.01 - EP KR RU US); **F25J 1/0082** (2013.01 - EP RU US); **F25J 1/0085** (2013.01 - EP RU US);
F25J 1/0087 (2013.01 - EP RU US); **F25J 1/0204** (2013.01 - CN); **F25J 1/021** (2013.01 - EP KR RU US); **F25J 1/0216** (2013.01 - EP KR RU US);
F25J 1/0218 (2013.01 - US); **F25J 1/0239** (2013.01 - EP KR RU US); **F25J 1/0241** (2013.01 - EP KR US); **F25J 1/0262** (2013.01 - EP US);
F25J 1/0292 (2013.01 - EP KR US); **F25J 3/0209** (2013.01 - EP US); **F25J 3/0214** (2013.01 - RU); **F25J 3/0233** (2013.01 - EP US);
F25J 3/0238 (2013.01 - EP US); **F25J 5/00** (2013.01 - CN); **F25J 2200/02** (2013.01 - EP US); **F25J 2200/40** (2013.01 - US);
F25J 2200/72 (2013.01 - EP KR US); **F25J 2200/74** (2013.01 - EP KR US); **F25J 2200/76** (2013.01 - EP US); **F25J 2205/02** (2013.01 - US);
F25J 2205/04 (2013.01 - EP US); **F25J 2210/60** (2013.01 - CN US); **F25J 2220/64** (2013.01 - EP US); **F25J 2220/66** (2013.01 - US);
F25J 2220/68 (2013.01 - US); **F25J 2230/08** (2013.01 - EP US); **F25J 2230/20** (2013.01 - EP US); **F25J 2230/22** (2013.01 - EP US);
F25J 2230/30 (2013.01 - EP US); **F25J 2230/60** (2013.01 - EP US); **F25J 2235/60** (2013.01 - US); **F25J 2240/02** (2013.01 - US);
F25J 2240/04 (2013.01 - EP US); **F25J 2240/40** (2013.01 - US); **F25J 2270/12** (2013.01 - EP US); **F25J 2270/18** (2013.01 - EP US);
F25J 2270/60 (2013.01 - EP US); **F25J 2270/66** (2013.01 - EP US)

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3091319 A1 20161109; **EP 3091319 A4 20180228**; **EP 3091319 B1 20201202**; AP 2016009308 A0 20160731; AP 2016009309 A0 20160731;
AP 2016009511 A0 20161031; AU 2014371866 A1 20160804; AU 2014371866 B2 20190214; AU 2014371866 B9 20190704;
AU 2014371867 A1 20160804; AU 2016250325 A1 20170119; AU 2016250325 B2 20190829; CA 2934435 A1 20150702;
CA 2934895 A1 20150702; CA 2934895 C 20190514; CA 3029950 A1 20150702; CA 3029950 C 20210720; CN 106062495 A 20161026;
CN 106062495 B 20200310; CN 107339853 A 20171110; CN 107339853 B 20200310; EP 3168558 A1 20170517; EP 3168558 B1 20190529;
ES 2838498 T3 20210702; JP 2015143600 A 20150806; JP 6225049 B2 20171101; KR 101840721 B1 20180321; KR 101894076 B1 20180831;
KR 20160111935 A 20160927; KR 20160129100 A 20161108; MY 176671 A 20200819; PE 20161119 A1 20161124; PE 20170506 A1 20170524;
RU 2016130314 A 20180131; RU 2016130314 A3 20180301; RU 2016130315 A 20180131; RU 2016130315 A3 20180301;
RU 2651007 C2 20180418; RU 2668303 C1 20180928; SA 516371407 B1 20210414; SA 516380183 B1 20210607;
US 2016313056 A1 20161027; US 2016327334 A1 20161110; US 2017030633 A1 20170202; US 2017160008 A9 20170608;
WO 2015098124 A1 20150702; WO 2015098125 A1 20150702

DOCDB simple family (application)
EP 14873799 A 20141226; AP 2016009308 A 20141226; AP 2016009309 A 20141226; AP 2016009511 A 20141226;
AU 2014371866 A 20141226; AU 2014371867 A 20141226; AU 2016250325 A 20161024; CA 2934435 A 20141226; CA 2934895 A 20141226;
CA 3029950 A 20141226; CN 201480071324 A 20141226; CN 201611162705 A 20141226; EP 16201992 A 20141226;
ES 14873799 T 20141226; JP 2014006501 W 20141226; JP 2014006502 W 20141226; JP 2014050786 A 20140313;
KR 20167020287 A 20141226; KR 20167030036 A 20141226; MY PI2016702301 A 20141226; PE 2016000954 A 20141226;
PE 2016002091 A 20141226; RU 2016130314 A 20141226; RU 2016130315 A 20141226; RU 2016144151 A 20141226;
SA 516371407 A 20160624; SA 516380183 A 20160624; US 201415104564 A 20141226; US 201415108042 A 20141226;
US 201615293485 A 20161014