

Title (en)  
Alternative pre-cooling arrangement

Title (de)  
Alternative Vorkühlungsanordnung

Title (fr)  
Agencement de pré-refroidissement alternatif

Publication  
**EP 2199716 A3 20120808 (EN)**

Application  
**EP 09178825 A 20091211**

Priority  
US 33350008 A 20081212

Abstract (en)  
[origin: EP2199716A2] A natural gas liquefaction system, the system comprising a first precooling refrigeration system (106) that accepts at least a natural gas feed stream (102), a second precooling refrigeration system (108) that accepts at least a first refrigerant stream (104); and a cryogenic heat exchanger (146) fluidly connected to the first precooling refrigeration system and the second precooling refrigeration system that accepts the natural gas feed stream (150) from the first precooling refrigeration system and the first refrigerant stream (138) from the second precooling refrigeration system to liquefy the natural gas feed stream (166), where the second precooling refrigeration system accepts only stream(s) having a composition different from the stream(s) accepted by the first precooling refrigeration system.

IPC 8 full level  
**F25J 1/02** (2006.01)

CPC (source: EP KR US)  
**F25J 1/0022** (2013.01 - EP US); **F25J 1/0052** (2013.01 - EP US); **F25J 1/0055** (2013.01 - EP US); **F25J 1/0082** (2013.01 - EP US); **F25J 1/0085** (2013.01 - EP US); **F25J 1/0087** (2013.01 - EP US); **F25J 1/0095** (2013.01 - EP US); **F25J 1/0097** (2013.01 - EP US); **F25J 1/0216** (2013.01 - EP US); **F25J 1/0218** (2013.01 - EP US); **F25J 1/0268** (2013.01 - EP US); **F25J 1/0283** (2013.01 - EP US); **F25J 1/0287** (2013.01 - EP US); **F25J 1/029** (2013.01 - EP US); **F25J 1/0292** (2013.01 - EP US); **F25J 1/0295** (2013.01 - EP US); **F25J 3/00** (2013.01 - KR); **F25J 5/00** (2013.01 - KR); **F25J 2270/12** (2013.01 - EP); **F25J 2270/60** (2013.01 - EP)

Citation (search report)  
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• [Y] ROBERTS M J ET AL: "REDUCING LNG CAPITAL COST IN TODAY'S COMPETITIVE ENVIRONMENT", vol. 14TH, 1 March 2006 (2006-03-01), pages PS2 - 6/1, XP009108055, Retrieved from the Internet <URL:http://www.airproducts.com/NR/rdonlyres/A53BE221-250E-40B4-86DD-F58F69B33520/0/ReducingLNGCapitalCosts.pdf>  
• [A] SPILSBURY C ET AL: "Optimising the LNG liquefaction process", LNG JOURNAL, NELTON PUBLICATIONS, GRAVESEND, GB, vol. Jan/Feb, 1 January 2005 (2005-01-01), pages 40 - 43, XP009098734, ISSN: 1365-4314

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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 MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)  
AL BA RS

DOCDB simple family (publication)  
**EP 2199716 A2 20100623; EP 2199716 A3 20120808**; AU 2009245831 A1 20100701; BR PI0904895 A2 20110315; CA 2687673 A1 20100612; CN 101845340 A 20100929; JP 2010189622 A 20100902; KR 20100068194 A 20100622; PE 20100569 A1 20100820; RU 2009146074 A 20110620; TW 201027018 A 20100716; US 2010147024 A1 20100617

DOCDB simple family (application)  
**EP 09178825 A 20091211**; AU 2009245831 A 20091207; BR PI0904895 A 20091208; CA 2687673 A 20091207; CN 200911000238 A 20091211; JP 2009283039 A 20091214; KR 20090120500 A 20091207; PE 2009001299 A 20091209; RU 2009146074 A 20091211; TW 98141992 A 20091209; US 33350008 A 20081212