

Title (en)

NOVEL CASCADE PROCESS FOR COOLING AND LIQUEFYING HYDROGEN IN LARGE-SCALE

Title (de)

NEUARTIGES KASKADENVERFAHREN ZUR KÜHLUNG UND VERFLÜSSIGUNG VON WASSERSTOFF IN GROSSEM UMFANG

Title (fr)

NOUVEAU PROCÉDÉ EN CASCADE DESTINÉ À REFROIDIR ET À LIQUÉFIER DE L'HYDROGÈNE À GRANDE ÉCHELLE

Publication

**EP 3368844 A1 20180905 (EN)**

Application

**EP 16784202 A 20161020**

Priority

- EP 15003068 A 20151027
- EP 2016075205 W 20161020

Abstract (en)

[origin: EP3163235A1] The present invention relates to a method for liquefying hydrogen in large-scale comprising the steps of: providing a feed gas stream comprising hydrogen, precooling the feed gas stream to an intermediate temperature yielding a precooled feed gas stream, cooling the precooled feed gas stream to a temperature of below the critical temperature of hydrogen yielding a liquid product stream comprising hydrogen. According to the invention, the precooled feed gas stream is cooled to a first temperature in a first cooling step by a first closed cooling cycle with a first refrigerant stream consisting of or comprising neon and/or hydrogen, and that the cooled feed gas stream is further cooled from the first temperature to temperature below the critical temperature of hydrogen in a second cooling step by a second closed cooling cycle with a second refrigerant stream comprising or consisting of hydrogen and/or helium

IPC 8 full level

**F25J 1/00** (2006.01); **F25J 1/02** (2006.01)

CPC (source: EP)

**F25J 1/001** (2013.01); **F25J 1/0042** (2013.01); **F25J 1/005** (2013.01); **F25J 1/0052** (2013.01); **F25J 1/0062** (2013.01); **F25J 1/0065** (2013.01); **F25J 1/0067** (2013.01); **F25J 1/0072** (2013.01); **F25J 1/0092** (2013.01); **F25J 1/0095** (2013.01); **F25J 1/0205** (2013.01); **F25J 1/0207** (2013.01); **F25J 1/0214** (2013.01); **F25J 1/0215** (2013.01); **F25J 1/0217** (2013.01); **F25J 1/0218** (2013.01); **F25J 1/025** (2013.01); **F25J 1/0259** (2013.01); **F25J 1/0268** (2013.01); **F25J 1/0279** (2013.01); **F25J 1/0288** (2013.01); **F25J 1/0291** (2013.01); **F25J 1/0292** (2013.01); **F25J 1/0294** (2013.01); **F25J 2205/82** (2013.01); **F25J 2220/02** (2013.01); **F25J 2230/08** (2013.01); **F25J 2230/30** (2013.01); **F25J 2240/40** (2013.01); **F25J 2270/16** (2013.01)

Cited by

FR3119883A1; WO2022175204A1

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 3163235 A1 20170503**; EP 3368844 A1 20180905; WO 2017072018 A1 20170504

DOCDB simple family (application)

**EP 15003068 A 20151027**; EP 16784202 A 20161020; EP 2016075205 W 20161020