

## Title (en)

METHANE CONVERSION APPARATUS AND PROCESS USING A SUPERSONIC FLOW REACTOR

## Title (de)

METHANUMWANDLUNGSVORRICHTUNG UND -VERFAHREN UNTER VERWENDUNG EINES ULTRASCHALLSTRÖMUNGSREAKTORS

## Title (fr)

APPAREIL DE CONVERSION DE MÉTHANE ET PROCÉDÉ UTILISANT UN RÉACTEUR À FLUX SUPERSONIQUE

## Publication

**EP 3641926 A4 20210414 (EN)**

## Application

**EP 18821165 A 20180619**

## Priority

- US 201715629447 A 20170621
- US 2018038171 W 20180619

## Abstract (en)

[origin: WO2018236790A1] Apparatus and methods are provided for converting methane in a feed stream to acetylene. A hydrocarbon stream is introduced into a supersonic reactor and pyrolyzed to convert at least a portion of the methane to acetylene. The reactor effluent stream may be treated to convert acetylene to another hydrocarbon process.

## IPC 8 full level

**B01J 3/00** (2006.01); **B01J 19/02** (2006.01); **B01J 19/24** (2006.01); **B01J 19/26** (2006.01); **C07C 2/76** (2006.01); **C07C 11/24** (2006.01)

## CPC (source: EP RU)

**B01J 3/00** (2013.01 - RU); **B01J 4/002** (2013.01 - EP); **B01J 19/0013** (2013.01 - EP); **B01J 19/002** (2013.01 - EP); **B01J 19/02** (2013.01 - EP); **B01J 19/2405** (2013.01 - EP); **B01J 19/26** (2013.01 - EP); **C07C 2/78** (2013.01 - EP); **B01J 2219/00063** (2013.01 - EP); **B01J 2219/00076** (2013.01 - EP); **B01J 2219/00078** (2013.01 - EP); **B01J 2219/00081** (2013.01 - EP); **B01J 2219/00083** (2013.01 - EP); **B01J 2219/00092** (2013.01 - EP); **B01J 2219/00094** (2013.01 - EP); **B01J 2219/00119** (2013.01 - EP); **B01J 2219/00121** (2013.01 - EP); **B01J 2219/0027** (2013.01 - EP); **B01J 2219/0218** (2013.01 - EP); **B01J 2219/0236** (2013.01 - EP)

## Citation (search report)

- [Y] US 2014056769 A1 20140227 - BEDARD ROBERT L [US], et al
- [Y] US 2014058167 A1 20140227 - BEDARD ROBERT L [US], et al
- [AP] US 2017291860 A1 20171012 - BEDARD ROBERT L [US], et al
- [A] US 2014058144 A1 20140227 - BRICKER JEFFERY C [US], et al
- [A] US 2014058159 A1 20140227 - BEDARD ROBERT L [US], et al
- [A] EP 0158863 A2 19851023 - ROCKWELL INTERNATIONAL CORP [US]
- [A] US 5219530 A 19930615 - HERTZBERG ABRAHAM [US], et al
- [A] US 2015073183 A1 20150312 - NICHOLAS CHRISTOPHER P [US]
- [A] US 2014058135 A1 20140227 - BRICKER JEFFERY C [US], et al
- [Y] HOLMEN A. ET AL: "High-Temperature Pyrolysis of Hydrocarbons. 1. Methane to Acetylene", INDUSTRIAL AND ENGINEERING CHEMISTRY PROCESS DESIGN AND DEVELOPMENT., vol. 15, no. 3, 1 July 1976 (1976-07-01), US, pages 439 - 444, XP055780413, ISSN: 0196-4305, DOI: 10.1021/i260059a017
- [Y] LU FRANK ET AL: "Pyrolysis of Methane in a Supersonic, Arc-Heated Flow", 42ND AIAA AEROSPACE SCIENCES MEETING AND EXHIBIT, 5 January 2004 (2004-01-05), Reston, Virginia, XP055780360, ISBN: 978-1-62410-078-9, DOI: 10.2514/6.2004-1132
- [Y] MILLER S A ET AL: "HAZARDS IN HANDLING ACETYLENE IN CHEMICAL PROCESSES PARTICULARLY UNDER PRESSURE", 31 December 1960 (1960-12-31), SYMPOSIUM ON CHEMICAL PROCESS HAZARDS 1960, pages 87 - 94, XP055780320, Retrieved from the Internet <URL:https://www.icheme.org/media/8404/i-paper-13.pdf> [retrieved on 20210227]
- [A] FINCKE J.R. ET AL: "Thermal Conversion of Methane to Acetylene Final Report", USDOE OFFICE OF FOSSIL ENERGY (FE) (US), 31 January 2000 (2000-01-31), XP055780316, Retrieved from the Internet <URL:http://citenpl.internal.epo.org/wf/web/citenpl/citenpl.html> [retrieved on 20210226], DOI: 10.2172/774309
- See references of WO 2018236790A1

## 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

## DOCDB simple family (publication)

**WO 2018236790 A1 20181227**; CA 3067826 A1 20181227; CN 110769926 A 20200207; CN 110769926 B 20220624; EP 3641926 A1 20200429; EP 3641926 A4 20210414; RU 2019142726 A 20210621; RU 2019142726 A3 20210930; RU 2767113 C2 20220316

## DOCDB simple family (application)

**US 2018038171 W 20180619**; CA 3067826 A 20180619; CN 201880041192 A 20180619; EP 18821165 A 20180619; RU 2019142726 A 20180619