

Title (en)
GASOLINE PARTICULATE REDUCTION USING OPTIMIZED PORT AND DIRECT INJECTION

Title (de)
BENZINPARTIKELREDUKTION MIT OPTIMIERTEM EINLASS UND DIREKTER EINSPRITZUNG

Title (fr)
RÉDUCTION DE PARTICULES D'ESSENCE À L'AIDE D'UN ORIFICE OPTIMISÉ ET D'UNE INJECTION DIRECTE

Publication
EP 3189221 A4 20180509 (EN)

Application
EP 15838005 A 20150901

Priority

- US 201462044761 P 20140902
- US 201414391906 A 20141010
- US 201462079885 P 20141114
- US 201562128162 P 20150304
- US 201514840688 A 20150831
- US 2015047857 W 20150901

Abstract (en)
[origin: WO2016036684A1] Additional approaches for the reduction of particulate emissions in gasoline engines using optimized port+direct injection are described. These embodiments include control of the amount of directly injected fuel so as to avoid a threshold increase in particulates due to piston wetting and reduction of cold start emissions by use of air preheating using variable valve timing.

IPC 8 full level
F02B 7/00 (2006.01); **F02B 47/04** (2006.01); **F02D 13/02** (2006.01); **F02D 19/08** (2006.01); **F02D 35/02** (2006.01); **F02D 37/02** (2006.01); **F02D 41/00** (2006.01); **F02D 41/04** (2006.01); **F02D 41/06** (2006.01); **F02D 41/30** (2006.01); **F02D 41/38** (2006.01); **F02M 25/14** (2006.01); **F02P 5/15** (2006.01)

CPC (source: EP)
F02D 13/0249 (2013.01); **F02D 35/027** (2013.01); **F02D 41/006** (2013.01); **F02D 41/064** (2013.01); **F02D 41/3023** (2013.01); **F02D 41/3094** (2013.01); **F02P 5/1506** (2013.01); **F02D 37/02** (2013.01); **F02D 41/0007** (2013.01); **F02D 41/005** (2013.01); **F02D 41/047** (2013.01); **F02D 2013/0292** (2013.01); **F02D 2041/001** (2013.01); **F02D 2041/389** (2013.01); **F02D 2250/38** (2013.01); **F02M 25/14** (2013.01); **Y02T 10/12** (2013.01); **Y02T 10/40** (2013.01)

Citation (search report)

- [I] WO 2014089304 A1 20140612 - ETHANOL BOOSTING SYSTEMS LLC [US] & US 2016326971 A1 20161110 - COHN DANIEL R [US], et al
- [I] US 2011162620 A1 20110707 - BIDNER DAVID KARL [US], et al
- [A] WO 2013080371 A1 20130606 - TOYOTA MOTOR CO LTD [JP], et al & EP 2787206 A1 20141008 - TOYOTA MOTOR CO LTD [JP]
- See references of WO 2016036684A1

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 2016036684 A1 20160310; CN 107076006 A 20170818; EP 3189221 A1 20170712; EP 3189221 A4 20180509

DOCDB simple family (application)
US 2015047857 W 20150901; CN 201580059544 A 20150901; EP 15838005 A 20150901