

Title (en)  
ENGINE UNIT AND VEHICLE

Title (de)  
MOTOREINHEIT UND FAHRZEUG

Title (fr)  
UNITÉ DE MOTEUR ET VÉHICULE

Publication  
**EP 3051118 A4 20170201 (EN)**

Application  
**EP 14871975 A 20141218**

Priority  
• JP 2013263306 A 20131220  
• JP 2014083592 W 20141218

Abstract (en)  
[origin: EP3051118A1] The present invention provides, for example, an engine unit that has a high-load region and a low-load region and that can achieve mountability to vehicle and shortening of the length of time required for restarting after a combustion stop instruction. The engine unit includes a four-stroke engine body, a three-phase brushless motor, an inverter, and a control device. After a combustion operation of the four-stroke engine body and forward rotation of a crankshaft are stopped, the control device controls a voltage applied from a battery to the three-phase brushless motor by controlling a plurality of switching parts of the inverter under a state where a start instruction is not received while the combustion operation of the four-stroke engine body and the forward rotation of the crankshaft are stopped, to drive the crankshaft in forward rotation from a stopped position to a compression stroke included in four strokes. Upon receiving the start instruction, the control device drives the crankshaft in forward rotation from a position where the crankshaft is located at a time point when the start instruction is received.

IPC 8 full level  
**F02N 11/08** (2006.01); **F02D 29/02** (2006.01); **F02N 11/04** (2006.01); **F02N 19/00** (2010.01); **F02D 41/06** (2006.01)

CPC (source: EP)  
**F02N 11/04** (2013.01); **F02N 11/08** (2013.01); **F02N 19/005** (2013.01); **F02D 41/062** (2013.01); **F02N 19/004** (2013.01); **F02N 2011/0896** (2013.01); **F02N 2250/04** (2013.01)

Citation (search report)  
• [I] US 2013247871 A1 20130926 - TERUYA HIROSHI [JP]  
• [I] EP 1233175 A1 20020821 - MITSUBA CORP [JP]  
• [A] EP 1321666 A1 20030625 - MITSUBA CORP [JP]  
• [A] US 2007204827 A1 20070906 - KISHIBATA KAZUYOSHI [JP], et al  
• [A] US 2013060455 A1 20130307 - KAWASUMI SHINJI [JP]  
• See references of WO 2015093575A1

Cited by  
EP3306074A3; PH12017050057A1; EP3626956A4; EP3306073A3; EP3315764A3; EP3640078A4; WO2023187806A1

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 3051118 A1 20160803; EP 3051118 A4 20170201; EP 3051118 B1 20180725**; AP 2016009239 A0 20160531; CN 105705771 A 20160622; ES 2689695 T3 20181115; JP 2017031808 A 20170209; TW 201527641 A 20150716; TW I544143 B 20160801; WO 2015093575 A1 20150625

DOCDB simple family (application)  
**EP 14871975 A 20141218**; AP 2016009239 A 20141218; CN 201480060531 A 20141218; ES 14871975 T 20141218; JP 2013263306 A 20131220; JP 2014083592 W 20141218; TW 103144931 A 20141219