

Title (en)
Engine starting system

Title (de)
Startsystem für Verbrennungsmotor

Title (fr)
Système de démarrage de moteur

Publication
EP 1591658 A2 20051102 (EN)

Application
EP 05009350 A 20050428

Priority
JP 2004135240 A 20040430

Abstract (en)
Disclosed is an engine starting system for restarting an automatically stopped engine in such a manner as to rotate a crankshaft in a reverse rotation direction and then to rotate the crankshaft in a reverse rotation direction. The engine starting system comprises start-adequacy evaluation means operable to evaluate the adequacy of the engine start in accordance with an inspection engine speed defined by an engine speed N_e at an inspection time t_{12} which is set at a time when a given time lapses from initiation of the combustion in a cylinder in the state after being stopped in a compression stroke. The engine restart system is designed such that, when the start-adequacy evaluation means determines that the inspection engine speed is less than an engine speed required for normally restarting the engine, a start assist device is driven at a given timing. The engine starting system of the present invention can automatically stop an engine to improve fuel consumption, and quickly restart the engine in a manner for minimizing the frequency in use of a starter motor and/or needless combustion to facilitate energy saving.

IPC 1-7
F02N 11/08; **F02N 17/00**; **F02N 11/00**

IPC 8 full level
F02N 15/00 (2006.01); **F02D 17/00** (2006.01); **F02D 29/02** (2006.01); **F02D 45/00** (2006.01); **F02N 9/02** (2006.01); **F02N 11/00** (2006.01); **F02N 11/08** (2006.01); **F02N 99/00** (2010.01)

CPC (source: EP)
F02D 35/026 (2013.01); **F02D 41/042** (2013.01); **F02N 11/00** (2013.01); **F02N 11/0851** (2013.01); **F02N 99/004** (2013.01); **F02D 41/0295** (2013.01); **F02N 11/0818** (2013.01); **F02N 2019/007** (2013.01); **F02N 2300/2002** (2013.01); **F02N 2300/2011** (2013.01)

Citation (applicant)
• WO 0144636 A2 20010621 - BOSCH GMBH ROBERT [DE], et al
• JP 2002004985 A 20020109 - MITSUBISHI MOTORS CORP

Cited by
EP1840369A1; GB2508028A; GB2508028B; CN108831277A; GB2517752A; RU2684155C2; GB2517752B; US9416742B2; US8763580B2; WO2009086957A1; US8192327B2; US8574122B2; US9175658B2; US7931002B1; US8136497B2

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)
EP 1591658 A2 20051102; JP 2005315197 A 20051110; JP 3800226 B2 20060726

DOCDB simple family (application)
EP 05009350 A 20050428; JP 2004135240 A 20040430