Title (en)

COMBUSTION METHOD WITH CHARGE STRATIFICATION FOR A DIRECT INJECTION, SPARK IGNITION INTERNAL COMBUSTION ENGINE

Title (de)

BRENNVERFAHREN MIT LADUNGSSCHICHTUNG FÜR EINE DIREKTEINSPRITZENDE, FREMDGEZÜNDETE BRENNKRAFTMASCHINE

Title (fr)

PROCEDE DE COMBUSTION AVEC STRATIFICATION DE LA CHARGE POUR UN MOTEUR A COMBUSTION INTERNE A INJECTION DIRECTE ET ALLUMAGE PAR ETINCELLES

Publication

EP 1454041 A1 20040908 (DE)

Application

EP 02804172 A 20021102

Priority

- DE 10159644 A 20011205
- EP 0212246 W 20021102

Abstract (en)

[origin: WO03048540A1] The invention relates to a combustion method with charge stratification for a direct injection, spark ignition internal combustion engine. According to said method with stratified charge, charge air is introduced, through one of two flow-optimised, valve-controlled inlet ports, into a cylinder of said internal combustion engine with a roof-shaped limit, on the cylinder head side, which contains inlet valves and at least one exhaust valve and with a piston having a crown, which is adapted to said roof-shaped limit and comprises a recess which is oriented towards the inlet side, said air being introduced to form a prevailing turbulent flow, into which fuel is injected from a fuel injector. The aim of said invention is, in said method with stratified charge, to avoid that the piston recess constitutes the essential device for forming an explosive mixture cloud. Said aim is achieved, whereby a high air charge is obtained through a flow-optimised filling channel to form a strong turbulent flow with a compact turbulent core. Said turbulent core is maintained in a fixed position within a piston recess at the latest in the 2d stroke section of the piston towards the top dead centre, such that the fuel introduced into said turbulent core, with a relatively late end to the injection, is supplied to an ignition device for triggering the combustion, such as to substantially remain in said core, by the piston movement towards the top dead centre.

IPC 1-7

F02B 23/10; F02B 31/00

IPC 8 full level

F02B 17/00 (2006.01); **F02B 23/10** (2006.01); **F02B 31/00** (2006.01); **F02B 31/02** (2006.01); **F02F 1/42** (2006.01); **F02F 3/26** (2006.01); **F02M 61/06** (2006.01); **F02M 61/14** (2006.01); **F02M 61/18** (2006.01); F02B 75/12 (2006.01)

CPC (source: EP US)

F02B 17/005 (2013.01 - EP US); **F02B 23/105** (2013.01 - EP US); **F02B 31/00** (2013.01 - EP US); F02B 23/104 (2013.01 - EP US); F02B 2075/125 (2013.01 - EP US); F02F 3/26 (2013.01 - EP US); Y02T 10/12 (2013.01 - EP US)

Citation (search report)

See references of WO 03048540A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

DOCDB simple family (publication)

WO 03048540 A1 20030612; DE 10159644 A1 20030703; EP 1454041 A1 20040908; JP 2005511945 A 20050428; JP 4336582 B2 20090930; US 2004216715 A1 20041104; US 6892695 B2 20050517

DOCDB simple family (application)

EP 0212246 W 20021102; DE 10159644 A 20011205; EP 02804172 A 20021102; JP 2003549705 A 20021102; US 86030904 A 20040604