

Title (en)

COMBUSTION METHOD FOR A RECIPROCATING ENGINE

Title (de)

BRENNVERFAHREN FÜR EINE HUBKOLBEN-BRENNKRAFTMASCHINE

Title (fr)

PROCÉDÉ DE COMBUSTION POUR UN MOTEUR À COMBUSTION INTERNE À PISTONS ALTERNATIFS

Publication

EP 2129894 A2 20091209 (DE)

Application

EP 08716564 A 20080315

Priority

- EP 2008002088 W 20080315
- DE 102007016278 A 20070404

Abstract (en)

[origin: WO2008122343A2] The invention relates to a combustion method, in particular for a four-stroke reciprocating engine comprising a combustion chamber, the volume of which can be modified by a reciprocating piston and fuel can be directly injected into the combustion chamber, at least one gas exchange inlet valve and a gas exchange outlet valve for a charge cycle being provided and the combustion chamber having a minimum volume at an upper charge-cycle dead-centre position (LOT) and at an upper ignition dead-centre position (ZOT). Said method comprises the following steps: introduction of an inlet gas into the combustion chamber (a) in an intake phase; introduction of a primary quantity of fuel (x) into the combustion chamber during the intake phase (a) and/or a compression phase (b); compression of the inlet gas and the fuel in the compression phase (b); ignition of a mixture of inlet gas and fuel formed in the combustion chamber (c); expansion and discharge of an exhaust gas formed by the combustion in an expansion phase (d), wherein a pilot quantity of fuel (e) is introduced into the combustion chamber before the primary quantity of fuel (x) is introduced; intermediate products of the pilot quantity of fuel are formed (f) and the primary quantity of fuel (x) is introduced into the combustion chamber during the compression phase (b) in such a way that the complete ignition of the mixture consisting of inlet gas and the intermediate products is suppressed and other intermediate products are formed until a controlled ignition of the mixture and other intermediate products takes place (c). The claimed combustion method fulfils the conflict of objectives of fuel consumption versus NOx emissions during lean combustion (spark-ignition and diesel) and thus future emission regulations, without fuel consumption losses.

IPC 8 full level

F02D 13/02 (2006.01); **F02B 1/12** (2006.01); **F02D 41/30** (2006.01)

CPC (source: EP US)

F02D 13/0265 (2013.01 - EP US); **F02D 41/3035** (2013.01 - EP US); **F02B 1/12** (2013.01 - EP US); **F02B 2075/027** (2013.01 - EP US); **F02D 41/403** (2013.01 - EP US); **F02D 2041/001** (2013.01 - EP US); **F02M 26/01** (2016.02 - EP US); **Y02T 10/12** (2013.01 - EP US)

Citation (search report)

See references of WO 2008122343A2

Citation (examination)

- US 2004016415 A1 20040129 - WALTER BRUNO [FR], et al
- US 2001015192 A1 20010823 - URUSHIHARA TOMONORI [JP], et al

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

DOCDB simple family (publication)

DE 102007016278 A1 20081009; EP 2129894 A2 20091209; JP 2010532441 A 20101007; JP 2013144983 A 20130725; JP 5747050 B2 20150708; US 2010083934 A1 20100408; US 7874277 B2 20110125; WO 2008122343 A2 20081016; WO 2008122343 A3 20081211

DOCDB simple family (application)

DE 102007016278 A 20070404; EP 08716564 A 20080315; EP 2008002088 W 20080315; JP 2010501398 A 20080315; JP 2013035641 A 20130226; US 57340409 A 20091005