

Title (en)

Method for operating a combustion engine, in particular a motor vehicle

Title (de)

Verfahren zum Betreiben einer Brennkraftmaschine insbesondere eines Kraftfahrzeugs

Title (fr)

Procédé de fonctionnement d'un moteur à combustion interne, en particulier d'automobile

Publication

EP 1375882 B2 20081119 (DE)

Application

EP 03009204 A 20030423

Priority

DE 10228063 A 20020617

Abstract (en)

[origin: EP1375882A1] Fuel injected by injection valve into engine combustion chamber. The injection valve nozzle needle is displaced by piezoelectric actuator (A) applying voltage for needle displacement and fuel injection. A first voltage (U1) is applied to the actuator, without actuating any displacement of needle. After a given time period a second voltage (U2) is applied to the actor for displacement of the needle. The second voltage is so chosen that the difference between both voltages equals to that for needle displacement. Independent claims are included for injection controlling computer program, car IC engine and control appts. for i.c. engine operation.

IPC 8 full level

F02D 41/20 (2006.01); **F02M 51/00** (2006.01); **F02M 51/06** (2006.01); **H10N 30/80** (2023.01)

CPC (source: EP)

F02D 41/2096 (2013.01)

Citation (opposition)

Opponent :

- EP 0371469 A2 19900606 - TOYOTA MOTOR CO LTD [JP]
- DE 19905340 C2 20010913 - SIEMENS AG [DE]
- DE 19921242 C1 20001026 - SIEMENS AG [DE]
- US 5779149 A 19980714 - HAYES JR EDWARD JAMES [US]
- DR.-ING. M. DORNHOLZ ET AL: "Piezoelektrisch gesteuertes Einspritzsystem zur Verbesserung d", VDI VERLAG, vol. 12, no. 182, 6 May 1993 (1993-05-06) - 7 May 1993 (1993-05-07), 14. INTERNATIONALES WIENER MOTORENSYMPOSIUM, pages 324

Cited by

EP1681450A3; EP2039918A1

Designated contracting state (EPC)

DE FR GB IT

DOCDB simple family (publication)

EP 1375882 A1 20040102; **EP 1375882 B1 20050316**; **EP 1375882 B2 20081119**; DE 10228063 A1 20040108; DE 50300360 D1 20050421; JP 2004019666 A 20040122; JP 4264303 B2 20090513

DOCDB simple family (application)

EP 03009204 A 20030423; DE 10228063 A 20020617; DE 50300360 T 20030423; JP 2003172402 A 20030617