Title (en)

METHOD FOR ESTIMATING AN AIR MASS FLOW RATE ENTERING A FOUR-STROKE SPARK IGNITED ENGINE

Title (de)

VERFAHREN ZUR SCHÄTZUNG EINES ANSAUGLUFTMASSENSTROMS EINES FREMDGEZÜNDETEN VIERTAKTMOTORS

Title (fr)

PROCÉDÉ D'ESTIMATION D'UN DÉBIT MASSIQUE D'AIR ENTRANT DANS UN MOTEUR À QUATRE TEMPS À ALLUMAGE COMMANDÉ

Publication

EP 4296494 A1 20231227 (EN)

Application

EP 23179990 A 20230619

Priority

IT 202200013324 A 20220623

Abstract (en)

A method for estimating an air mass flow (m) entering a cylinder of a four-stroke positive ignition engine (E), equipped with an intake manifold (1M) and at least one intake valve and a pressure (PS) and a temperature (TS) sensor associated with the intake manifold, the method being based on a model for estimating the air mass flow rate comprising a first contribution (f(p,T,N_e,η,..,.)) calculated by means of a modelling in stationary conditions of the estimate of the mass of air entering the engine, a second contribution mp,T,…p˙pμ function of an average pressure and a relative derivative over time, estimated as a function of pressure at the intake manifold a third contribution mp,T,…T˙Tu as a function of a temperature and a relative time derivative estimated at said intake manifold, wherein the second contribution is positive, while the third contribution is negative.

IPC 8 full level

F02D 41/00 (2006.01); F02D 41/14 (2006.01)

CPC (source: EP)

F02D 41/0002 (2013.01); **F02D 41/1405** (2013.01); F02D 2041/1433 (2013.01); F02D 2041/1436 (2013.01); F02D 2200/0402 (2013.01); F02D 2200/0406 (2013.01); F02D 2200/0408 (2013.01); F02D 2200/0411 (2013.01); F02D 2200/0414 (2013.01); F02D 2200/101 (2013.01)

Citation (search report)

- [A] WO 2019198047 A1 20191017 - FPT IND SPA [IT] & IT 201800004431 A1 20191012
- [A] US 11286871 B1 20220329 - XU SHUONAN [US], et al
- [A] US 11174809 B1 20211116 - HAN YI [US], et al
- [A] US 11125202 B1 20210921 - XU SHUONAN [US], et al
- [A] PER ANDERSSON: "Intake Air Dynamics on a Turbocharged SI-Engine with Wastegate", INTAKE AIR DYNAMICS ON A TURBOCHARGED SI-ENGINE WITH WASTEGATE, DEPARTMENT OF ELECTRICAL ENGINEERING, LINKÖPING UNIVERSITY, LINKÖPING, SWEDEN, 1 January 2002 (2002-01-01), pages 1 - 84, XP002696866, ISBN: 978-91-7373-282-6
- [A] TSENG T-C ET AL: "AN ADAPTIVE AIR/FUEL RATIO CONTROLLER FOR SI ENGINE THROTTLE TRANSIENTS", SAE 2010 COMMERCIAL VEHICLE ENGINEERING CONGRESS SAE TECHNICAL PAPERS, SAE INTERNATIONAL, US, vol. 1999-01-0552, 1 January 1999 (1999-01-01), pages 37 - 48, XP001077055, ISSN: 0148-7191

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 ME MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA

Designated validation state (EPC)

KH MA MD TN

DOCDB simple family (publication)

EP 4296494 A1 20231227

DOCDB simple family (application)

EP 23179990 A 20230619