

Title (en)

Method of controlling indicated torque for internal combustion engines

Title (de)

Verfahren zur Ansteuerung des indizierten Drehmomentes für Brennkraftmaschinen

Title (fr)

Méthode de contrôle du couple indiqué pour moteurs à combustion interne

Publication

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Application

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Priority

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Abstract (en)

[origin: EP1712766A1] The present invention relates to a method of controlling indicated torque for internal combustion engines by means of feedback control, wherein # the torque setpoint $T_{ind, setpt}$ is computed from the accelerator pedal position ($\pm ped$), the torque losses and, if necessary, additional signals like engine speed, gear and the like, # said torque setpoint $T_{ind, setpt}$ is converted into the injection pulse duration (t_{pulse}) within a feedforward path, # the in-cylinder pressure p created by burning the fuel injected during injection pulse duration (t_{pulse}) is measured and used for calculating actual indicated torque T_{ind} , # said actual indicated torque T_{ind} is controlled to the setpoint $T_{ind, setpt}$ via feedback control, i.e., by closing the control loop by means of a feedback path, in order to adjust said actual indicated torque T_{ind} , It is the object of the present invention to provide a method of controlling indicated torque for internal combustion engines by means of feedback control, which ensures consistency for the torque, for all operating modes of the engine and for the transitions between those modes. With respect to the object a method is provided, which is characterised in that # said feedback path is provided by a torque controller which uses, possibly in addition to other signals which describe the engine operating conditions, the deviation $\#T_{ind}$ between setpoint $T_{ind, setpt}$ and actual value T_{ind} for the indicated torque as an input for updating at least one lookup table storing the manipulated variable, i.e., the correction of said manipulated variable, which is used as output data to adjust said actual indicated torque T_{ind} , # said additional signals are used for scheduling said at least one lookup table in order to enable a fast controller reaction during transient conditions, when the engine operating conditions are changing such that the correction of the manipulated variable is read out from said at least one lookup table by using the scheduling parameters as input data, and # said torque controller is provided with a low bandwidth b due to noise on the measured in-cylinder pressure signal, p , and thus on the calculated torque, T_{ind} , in order to make said manipulated variable less sensitive to the noise of T_{ind} by slowing down the convergence of the actual value T_{ind} for the indicated torque to the setpoint $T_{ind, setpt}$, if deviation $\#T_{ind}$ is affected substantially by signal noise.

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Cited by

CN114526165A; CN114352420A; CN117846799A; US9719437B2; EP4039960A1; FR3119423A1; WO2011041723A1

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