

Title (en)

Method of estimating the in cylinder temperature after combustion

Title (de)

Methode des Schätzens der im Brennraum befindlichen Temperatur nach der Verbrennung

Title (fr)

Méthode d'estimation de la température dans la chambre de combustion après la combustion

Publication

EP 1544443 A1 20050622 (EN)

Application

EP 04029561 A 20041214

Priority

JP 2003418644 A 20031216

Abstract (en)

In a combustion temperature estimation method for an internal combustion engine, upon each arrival of fuel injection start timing, the pre-combustion temperature of cylinder interior gas at the time of ignition (ignition-time compressed cylinder interior gas temperature T_{pump}) is estimated on the basis of the fact that the state of the cylinder interior gas changes adiabatically. The quantity of heat generated as a result of combustion of fuel is divided by the product of the post-combustion mole amount and constant-pressure specific heat of the cylinder interior gas, which can be obtained from the concentration proportions of gas components contained in intake gas, to thereby estimate an increase in temperature of the cylinder interior gas stemming from combustion (combustion ascribable temperature increase ΔT_{burn}). Further, an increase in temperature of the cylinder interior gas stemming from an increase in combustion speed (combustion-speed ascribable temperature increase $\Delta T_{\text{b_velo}}$) is estimated on the basis of fuel injection pressure and engine speed, which are factors which influence the combustion speed. Then, the highest combustion temperature T_{flame} is estimated by the equation $T_{\text{flame}} = T_{\text{pump}} + \Delta T_{\text{burn}} + \Delta T_{\text{b_velo}}$. <IMAGE>

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Citation (search report)

- [DA] PATENT ABSTRACTS OF JAPAN vol. 2002, no. 06 4 June 2002 (2002-06-04)
- [A] PATENT ABSTRACTS OF JAPAN vol. 2000, no. 11 3 January 2001 (2001-01-03)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1997, no. 11 28 November 1997 (1997-11-28)

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