



(11) **EP 2 075 662 A8**

(12) **CORRECTED EUROPEAN PATENT APPLICATION**

(15) Correction information:
Corrected version no 1 (W1 A1)
Corrections, see
Bibliography INID code(s) 72

(51) Int Cl.:
G05B 21/00 (2006.01)

(48) Corrigendum issued on:
30.09.2009 Bulletin 2009/40

(43) Date of publication:
01.07.2009 Bulletin 2009/27

(21) Application number: **08022300.1**

(22) Date of filing: **22.12.2008**

(84) Designated Contracting States:
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
Designated Extension States:
AL BA MK RS

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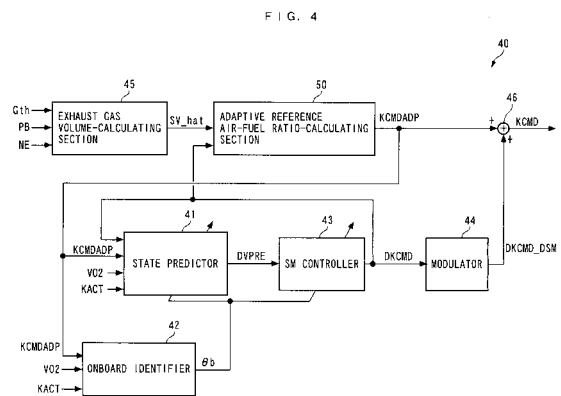
(30) Priority: **25.12.2007 JP 2007332969**

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(54) **Control apparatus and method**

(57) A control apparatus which can improve the accuracy of control of a controlled variable by a control input exhibiting a periodic fluctuating behavior. The control apparatus calculates an air-fuel ratio correction value DKCMD such that the output from an oxygen concentration sensor converges to a target output, and calculate a modulated value DKCMD_DSM by modulating DKCMD with an algorithm to which is applied a $\Delta\Sigma$ modulation algorithm. Further, the control apparatus calculates a reference air-fuel ratio KCMDBS according to an exhaust gas volume, calculates a model modification coefficient KTRQFF using a modification coefficient calculated such that DKCMD become equal to 0, calculates an adaptive reference air-fuel ratio KCMDADP by the equation of $KCMDADP = KCMDBS \times KTRQFF$, and calculates a target air-fuel ratio KCMD by the equation of $KCMD = KCMDADP + DKCMD_DSM$.



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