

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 January 2008 (31.01.2008)

PCT

(10) International Publication Number
WO 2008/014074 A3

(51) International Patent Classification:
FOIN 3/00 (2006.01)

(21) International Application Number:

PCT/US2007/071969

(22) International Filing Date: 25 June 2007 (25.06.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

11/459,737 25 July 2006 (25.07.2006) US

(71) Applicant (for all designated States except US): **GM GLOBAL TECHNOLOGY OPERATIONS, INC.** [US/US]; 300 Renaissance Center, P.O. Box 300, Detroit, MI 48265-3000 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **PARATORE, Michael, J., JR.** [US/US]; 1468 Andover Boulevard, Howell, MI 48843 (US). **BROWN, David, B.** [US/US]; 3681 Olde Dominion, Brighton, MI 48114 (US). **VIOLA, Michael, B.** [US/US]; 17394 Shinnecock Drive, Macomb Township, MI 48042 (US).

(74) Agent: **MARRA, Kathryn, A.**; GM Global Technology Operations, Inc., Legal Staff/MC 482-C23-B21, P.O. Box 300, Detroit, MI 48265-3000 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, **BR**, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, **HR**, HU, **ID**, IL, IN, IS, **JP**, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:

14 August 2008

(54) Title: METHOD AND APPARATUS FOR UREA INJECTION IN AN EXHAUST AFTERTREATMENT SYSTEM

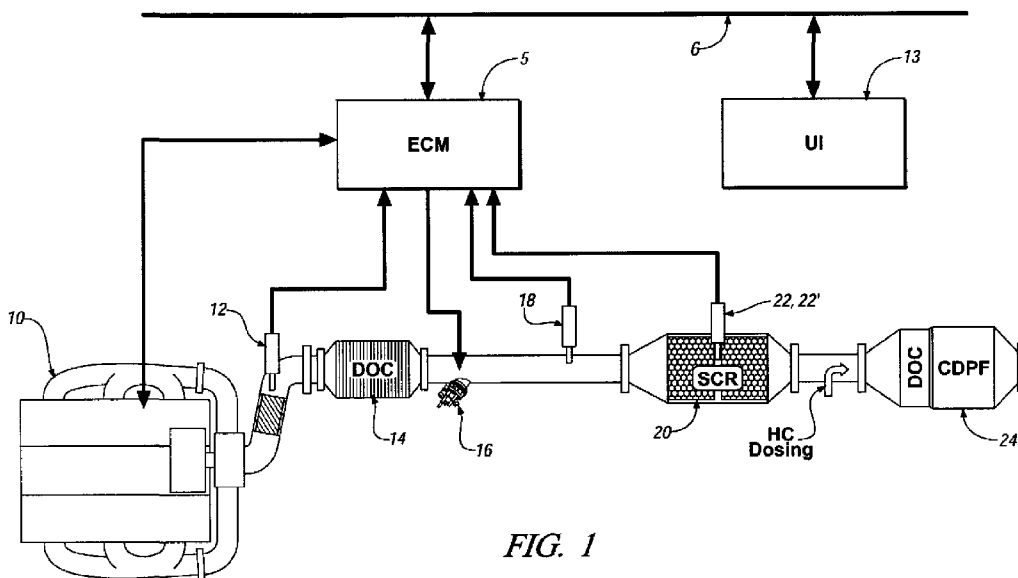


FIG. 1

(57) Abstract: An exhaust aftertreatment system and control system is provided, including a urea injecting device, a selective catalyst reduction device, and, a sensing device operative to monitor a forward portion of the selective catalyst reduction device. The sensing device can comprise a NO_x sensor, and alternatively, an ammonia sensor. A control module adapted to monitor signal inputs from the engine, the NO_x sensing system, the temperature sensing system, and the sensing device operative to monitor a forward portion of the selective catalyst reduction device; and, adapted to control operation of the urea injecting device.

WO 2008/014074 A3

INTERNATIONAL SEARCH REPORT

International application No

PCT/US07/71969

A CLASSIFICATION OF SUBJECT MATTER

IPC FOIN 3/00(2006 0 1)

USPC 60/274,285,286,301

According to International Patent Classification (IPC) or to both national classification and IPC

B FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U S 60/274,285,286,301

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	US 6,427,439 B1 (XU et al) 6 August 2002 (06 08 2002), Figure 1	1-3
X	US 5,540,047 (DAHLHEIM et al) 30 July 1996 (30 07 1996), column 3, lines 30-5 1	4-10
---		-----
Y		12, 14
X	US 6,119,448 (EMMERLING et al) 19 September 2000 (19 09 2000), column 1, lines 7-18, column 9, lines 5-24	11,13

☐

Further documents are listed in the continuation of Box C

☐

See patent family annex

* Special categories of cited documents		"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E"	earlier application or patent published on or after the international filing date	"Y"	document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

13 April 2008 (13 04 2008)

Date of mailing of the international search report

24 JUN 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn ISA/US
Commissioner for Patents
P O Box 1450
Alexandria, Virginia 22313-1450

Facsimile No (571) 273-3201

Authorized officer

Thomas E Demon

Telephone No 571-272-3750