(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
23 March 2006 (23.03.2006)

PCT

(10) International Publication Number
WO 2006/031750 A2

(51) International Patent Classification:
G06F 15/00 (2006.01)

(21) International Application Number:
PCT/US2005/032447

(22) International Filing Date:
9 September 2005 (09.09.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/609,161 10 September 2004 (10.09.2004) US
11/212,211 26 August 2005 (26.08.2005) US

(71) Applicant *(for all designated States except US)*: **EXXONMOBIL RESEARCH AND ENGINEEERING COMPANY** [US/US]; 1545 Route 22 East, P. O. Box 900, Annandale, NJ 08801-0900 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **EMIGHOLZ, Kenneth, F.** [US/US]; 4120 Woodbine Street, Chevy Chase, MD 20815-5044 (US). **KENDI, Thomas, A.** [US/US]; 173 Applegate Drive, Sterling, VA 20164 (US). **WOO, Stephen, S.** [CA/CA]; 20 Ellingwood Court, Markham, Ontario L3R 8A8 (CA).

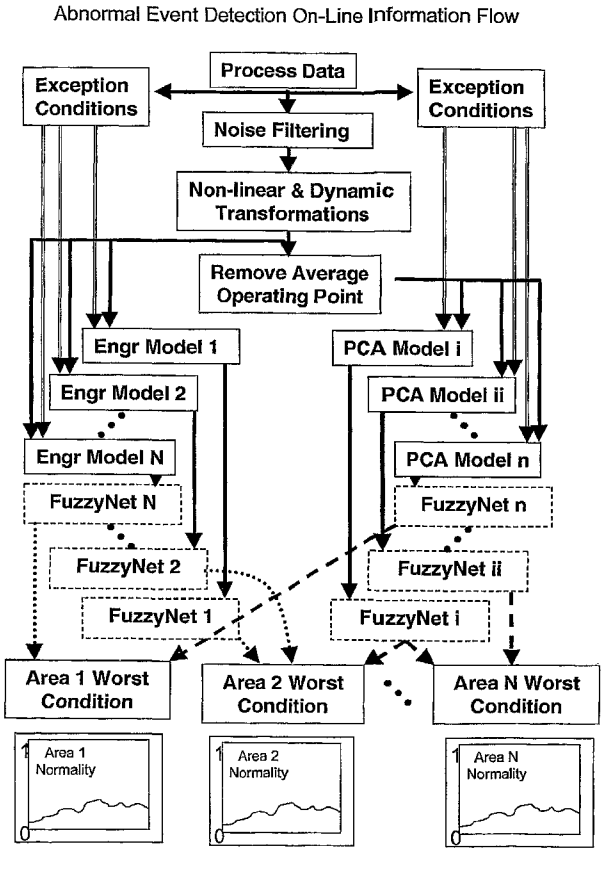
(74) Agents: **SCUORZO, Linda, M.** et al.; ExxonMobil Research and Engineering Company, 1545 Route 22 East, P.O. Box 900, Annandale, NJ 08801-0900 (US).

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

[Continued on next page]

(54) Title: APPLICATION OF ABNORMAL EVENT DETECTION TECHNOLOGY TO HYDROCRACKING UNITS



(57) Abstract: The present invention is a method for detecting an abnormal event for process units of a hydrocracking unit. The method compares the operation of the process units to a model developed by principle components analysis of normal operation for these units. If the difference between the operation of a process unit and the normal operation indicates an abnormal condition, then the cause of the abnormal condition is determined and corrected.

WO 2006/031750 A2

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, 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:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.