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(71) Applicant (for all designated States except US): FISHER-ROSEMOUNT SYSTEMS, INC. [US/US]; 12301 Research Blvd., Research Park Plaza, Bldg. III, Austin, TX 78759 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): MILLER, John, Philip [US/US]; 8473 Hiawatha Ave., Eden Prairie, MN 55347 (US). LUNDEBERG, Marcus, Richard [US/US]; 4531 Heritage Hills Circle, Bloomington, MN 55437 (US).

(74) Agent: PETERS, Aaron, M.; Marshall, Gerstein & Borun LLP, 233 S. Wacker Drive, Suite 6300, Sears Tower, Chicago, IL 60606-6357 (US).

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(54) Title: STATISTICAL SIGNATURES USED WITH MULTIVARIATE ANALYSIS FOR STEADY-STATE DETECTION IN A PROCESS

(57) Abstract: Methods and systems to detect steady-state operations in a process of a process plant include collecting process data. The collected process data is generated from a plurality of process variables of the process. A multivariate statistical model of the operation of the process is generated using the process data. The multivariate statistical model may be generated from a principal component analysis. The model is executed to generate outputs corresponding to the most significant variations in the process. Statistical measures of the outputs are generated and used to determine whether a steady-state or unsteady-state is related to the process.



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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

INV. G05B23/02

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)

G05B

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 practical, 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.
A	ARTIOLI M ET AL: "Time-domain signal analysis for monitoring of electromechanical systems" INDUSTRIAL TECHNOLOGY, 2004. IEEE ICIT '04. 2004 IEEE INTERNATIONAL CONFERENCE ON HAMMAMET, TUNISIA DEC. 8-10, 2004, PISCATAWAY, NJ, USA, IEEE, 8 December 2004 (2004-12-08), pages 154-158, XP010822235 ISBN: 0-7803-8662-0 page 154, right-hand column, line 17 - line 31 ----- -/--	1,9,17, 21

 Further documents are listed in the continuation of Box C. See patent family annex.

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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Kelperis, K

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	HAITOA ZHANG ET AL: "Dynamic process monitoring using multiscale PCA" ELECTRICAL AND COMPUTER ENGINEERING, 1999 IEEE CANADIAN CONFERENCE ON EDMONTON, ALTA., CANADA 9-12 MAY 1999, PISCATAWAY, NJ, USA, IEEE, US, vol. 3, 9 May 1999 (1999-05-09), pages 1579-1584, XP010359680 ISBN: 0-7803-5579-2 -----	