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[Continued on next page]

(54) Title: HISTORICAL ALARM ANALYSIS APPARATUS AND METHOD

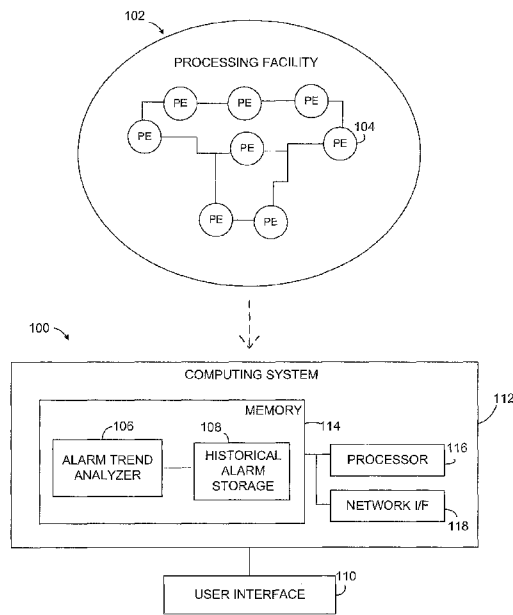


FIGURE 1

(57) Abstract: A method includes partitioning (404) alarms into two or more alarm groups (212). The alarms are associated with operation of an industrial process system (102) performing a process, and each alarm has multiple states. The method also includes generating (406) a graphical display (200) for presentation to a user. The graphical display identifies at least one of the alarm groups and multiple alarm indicators (214). Each alarm indicator indicates a state transition of an associated alarm between two of the alarm's states. The alarm indicators are arranged in the graphical display based on times of their respective state transitions.

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International application No.  
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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 23/00; G01R 31/00; H01L 21/02; G05B 23/02; G08B 29/00; G01D 21/00

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: "alarm","group\*", "filter\*", "analys\*", "control\*", "facility\*", "plant\*"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 2005-0062598 A1 (NOBUO AKAMATSU et al.) 24 March 2005 See the abstract; paragraphs [0046]-[0059]; claim 1; and figure 2.	1-2,6-8,12-13 3-5,9-11
Y A	KR 10-2010-0043507 A (SEMES CO., LTD.) 29 April 2010 See the abstract; paragraphs [0023]-[0024]; claim 1; and figure 1.	1-2,6-8,12-13 3-5,9-11
A	JP 2004-192543 A (YAMATAKE CORP.) 08 July 2004 See the abstract; paragraph [0011];claim 1; and figures 8-9.	1-13
A	JP 06-242169 A (TOSHIBA CORP.) 02 September 1994 See the abstract; claims 1-2; and figure 3.	1-13

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

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"&amp;" document member of the same patent family

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2005-0062598 A1	24.03.2005	JP 2005-084774 A JP 4314463 B2 US 7345580 B2	31.03.2005 29.05.2009 18.03.2008
KR 10-2010-0043507 A	29.04.2010	None	
JP 2004-192543 A	08.07.2004	None	
JP 06-242169 A	02.09.1994	None	