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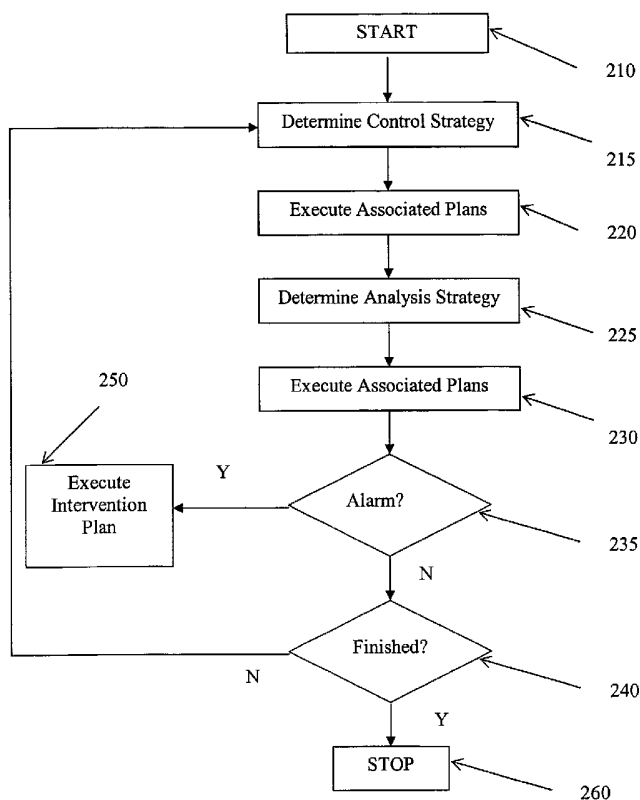
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(54) Title: METHOD AND APPARATUS FOR MONITORING TOOL PERFORMANCE



(57) Abstract: A method and system for monitoring tool performance for processing tools in a semiconductor processing system. The semiconductor processing system includes a number of processing tools, a number of processing modules, a number of sensors, and an alarm management system. A tool health control strategy is executed in which tool health data for the processing tool is collected. A tool health analysis strategy is executed in which the tool health data is analyzed. An intervention manager can pause the processing tool when an alarm has occurred. The intervention manager refrains from pausing the processing tool when an alarm has not occurred.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H01L21/00

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)  
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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)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 150 187 A (APPLIED MATERIALS) 31 October 2001 (2001-10-31) abstract	1-25
X	US 5 657 254 A (SIERK ET AL.) 12 August 1997 (1997-08-12) abstract	1-25
X	US 5 672 230 A (PARK ET AL.) 30 September 1997 (1997-09-30) abstract	1-25
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 04, 30 April 1999 (1999-04-30) -& JP 11 016798 A (SHARP CORP), 22 January 1999 (1999-01-22) abstract	1-25

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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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.
X	<p>PATENT ABSTRACTS OF JAPAN vol. 1996, no. 02, 29 February 1996 (1996-02-29) -&amp; JP 07 282146 A (TOSHIBA CORP), 27 October 1995 (1995-10-27) abstract</p> <p style="text-align: center;">-----</p>	1-25

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 03/16882

Patent document cited in search report	A	Publication date	Patent family member(s)	Publication date
EP 1150187	A	31-10-2001	EP 1150187 A2 JP 2002015969 A TW 473802 B	31-10-2001 18-01-2002 21-01-2002
US 5657254	A	12-08-1997	US 5508947 A US 5220517 A CA 2050247 A1 CA 2165847 A1 CA 2194855 A1 US 5329463 A US 5497316 A	16-04-1996 15-06-1993 01-03-1992 01-03-1992 01-03-1992 12-07-1994 05-03-1996
US 5672230	A	30-09-1997	JP 8306654 A	22-11-1996
JP 11016798	A	22-01-1999	NONE	
JP 07282146	A	27-10-1995	JP 3272143 B2	08-04-2002