Title: A MULTI-LEVEL MULTI-VARIABLE CONTROL PROCESS PROGRAM EXECUTION SCHEME FOR DISTRIBUTED PROCESS CONTROL SYSTEMS

Abstract: A method and control processor are disclosed for executing a set of control tasks defining dynamic model-based interactive control of an industrial process wherein two sets of executable program code are executed according to a multi-tiered program execution priority scheme. The control processor (102) includes an embedded control task (138) that is periodically executed to carry out computations in accordance with a process control model (104). The output of the computations include setpoint values that are distributed to relevant control blocks (130, 132) executed in the control processor (102). The embedded control task (138) is performed at a relatively low execution priority status within the control processor (102). The control processor (102) also includes a set of control blocks (130, 132). The set of control blocks are (130, 132) executed at a relatively high execution priority status within the control processor (102). The set of control blocks (130, 132) include, for example, a set of regulatory control blocks that are responsible for transmitting control signals to controlled elements of the industrial process and for receiving industrial process status data from process variable transmitters that sense particular process operation parameters (e.g., temperature, pressure, mass flow, etc.). The set of control blocks, in a particular embodiment of the invention also include supervisory control blocks that are responsible for providing setpoints and performing support tasks with regard to the operation of the control process including managing the transfer of data between the control processor (102) and a communicatively linked workstation.
Date of publication of the international search report: 2 May 2002

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.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : G06F 9/00, 3/00
US CL : 709/102, 103; 710/52
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. : 709/102, 103; 710/52

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
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<tbody>
<tr>
<td>Y</td>
<td>US 4,796,178 A (JENNINGS et al.) 03 January 1989 (03.01.1989), col.4-col.11.</td>
<td>1-26</td>
</tr>
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☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search
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