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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

[Continued on next page]

(54) Title: ONLINE MODULAR PARAMETERIZATION AND SUCCESSIVE LINEAR PROGRAMMING FOR IMPROVING MANUFACTURING PLANT OPERATIONS

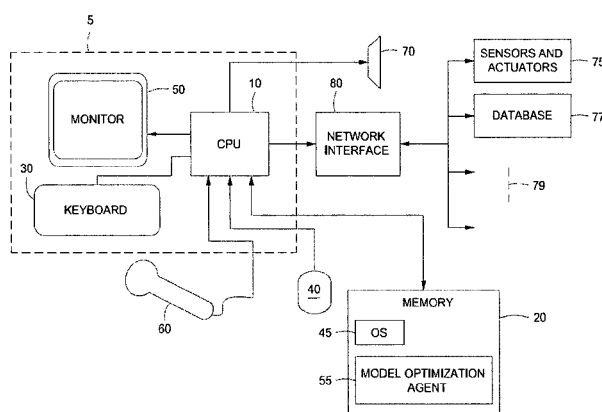


FIG. 1

(57) **Abstract:** Methods and systems for substantially optimizing plant operations within a manufacturing environment. The method can include separating the manufacturing environment into two or more individual modules, wherein each individual module contains a fundamental principles-based model, and wherein the totality of the individual modules represents the entire manufacturing environment. Each individual module can be independently parameterized upon said module reaching steady state, wherein inter-module data flow can be provided to at least one of the individual modules during parameterization, and wherein an output of the parameterization comprises an individual, calibrated steady-state model of each individual module. A reduced order model can be derived from each parameterized module, and the reduced order models can be assembled to provide a facility reduced order model. The facility reduced order model can then be solved to provide improved or new operating conditions or operating condition targets.

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