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13/009,685 19 January 2011 (19.01.2011) US(71) Applicant (for all designated States except US): **TOKYO ELECTRON LIMITED** [JP/JP]; Akasaka Biz Tower, 3-1 Akasaka 5-chome, Minato-ku, Tokyo 107-6325 (JP).

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(54) Title: IMPROVING TOOL PERFORMANCE BY LINKING SPECTROSCOPIC INFORMATION WITH TOOL OPERATIONAL PARAMETERS AND MATERIAL MEASUREMENTS

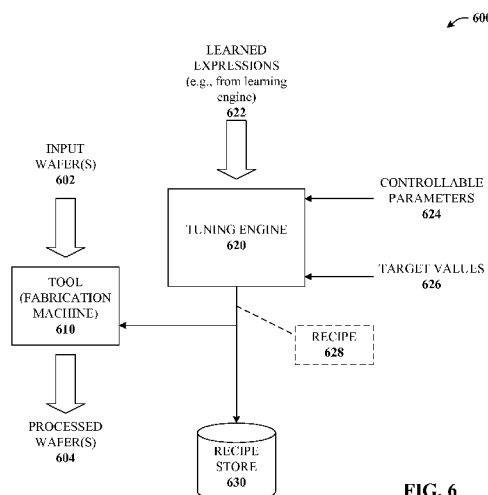


FIG. 6

(57) Abstract: System(s) and method(s) are provided for adjustment and analysis of performance of a tool through integration of tool operational data and spectroscopic data related to the tool. Such integration results in consolidated data that enable, in part, learning at least one relationship amongst selected portions of the consolidated data. Learning is performed autonomously without human intervention. Adjustment of performance of the tool relies at least in part on a learned relationship and includes generation of process recipe parameter(s) that can adjust a manufacturing process in order to produce a satisfactory tool performance in response to implementation of the manufacturing process. A process recipe parameter can be generated by solving an inverse problem based on the learned relationship. Analysis of performance of the tool can include assessment of synthetic performance scenarios, identification of spectroscopic condition(s) that affect performance, and extraction of endpoints based at least on time dependence spectroscopic data.

