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(54) **RUN-TO-RUN CONTROLLER FOR USE IN MICROELECTRONIC FABRICATION**

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(51) **Int. Cl.**[7] **G06F 19/00**
(52) **U.S. Cl.** **700/121**; 700/7; 700/17; 700/45; 700/95; 700/29; 700/30; 700/31; 438/5; 438/14; 438/17; 714/51
(58) **Field of Search** 700/29, 30, 31, 700/121, 95, 7, 17, 45; 438/5, 14, 17; 714/51

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(57) **ABSTRACT**

A automated run-to-run controller for controlling manufacturing processes comprises set of processing tools, a set of metrology tools for taking metrology measurements from the processing tools, and a supervising station for managing and controlling the processing tools. The supervising station comprises an interface for receiving metrology data from the metrology tools and a number of variable parameter tables, one for each of the processing tools, collectively associated with a manufacturing process recipe. The supervising station also includes one or more internal models which relate received metrology data to one or more variables for a processing tool, and which can modify variables stored in the variable parameter table to control the process tools using feedback and/or feed-forward control algorithms. Feed-forward control algorithms may, in certain embodiments, be used to adjust process targets for closed loop feedback control. The supervising station may have a user interface by which different feedback or feed-forward model formats (single or multi-variate) may be interactively selected based upon experimental or predicted behavior of the system, and may also permit users to utilize their own models for run-to-run control.

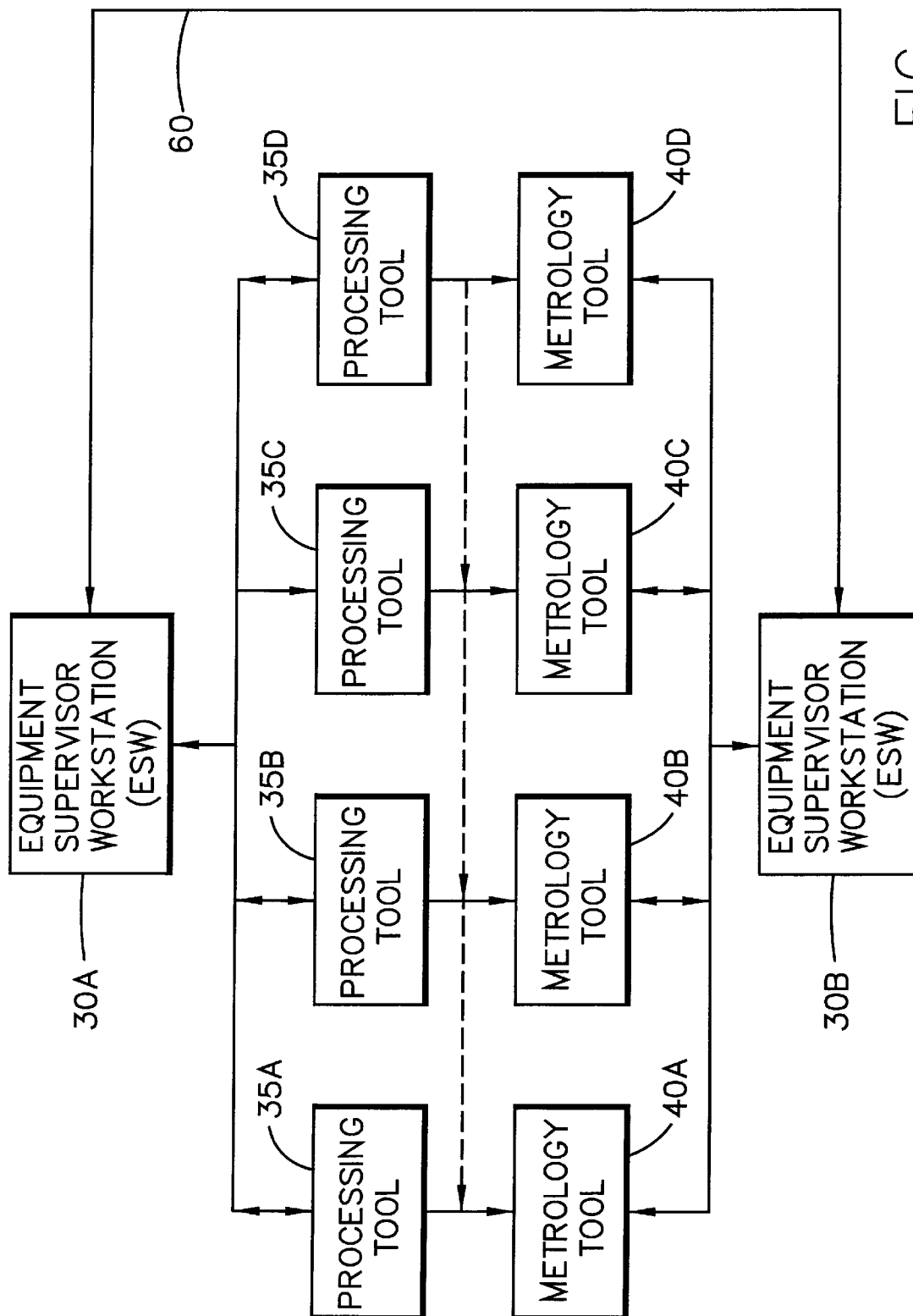**56 Claims, 10 Drawing Sheets**

FIG. 1A

FIG. 1B

FIG. 2

FIG. 3

DOCKET ALARM
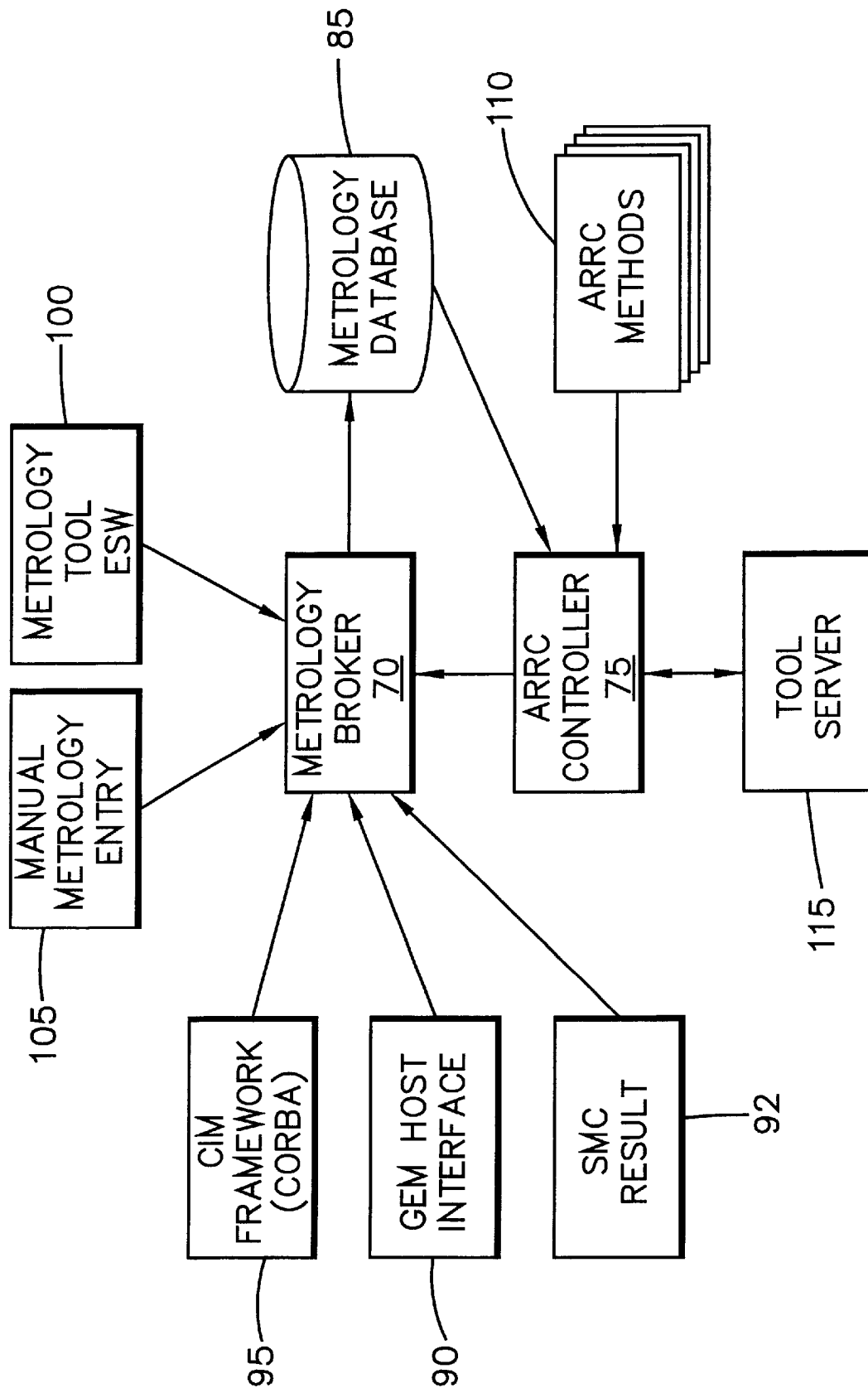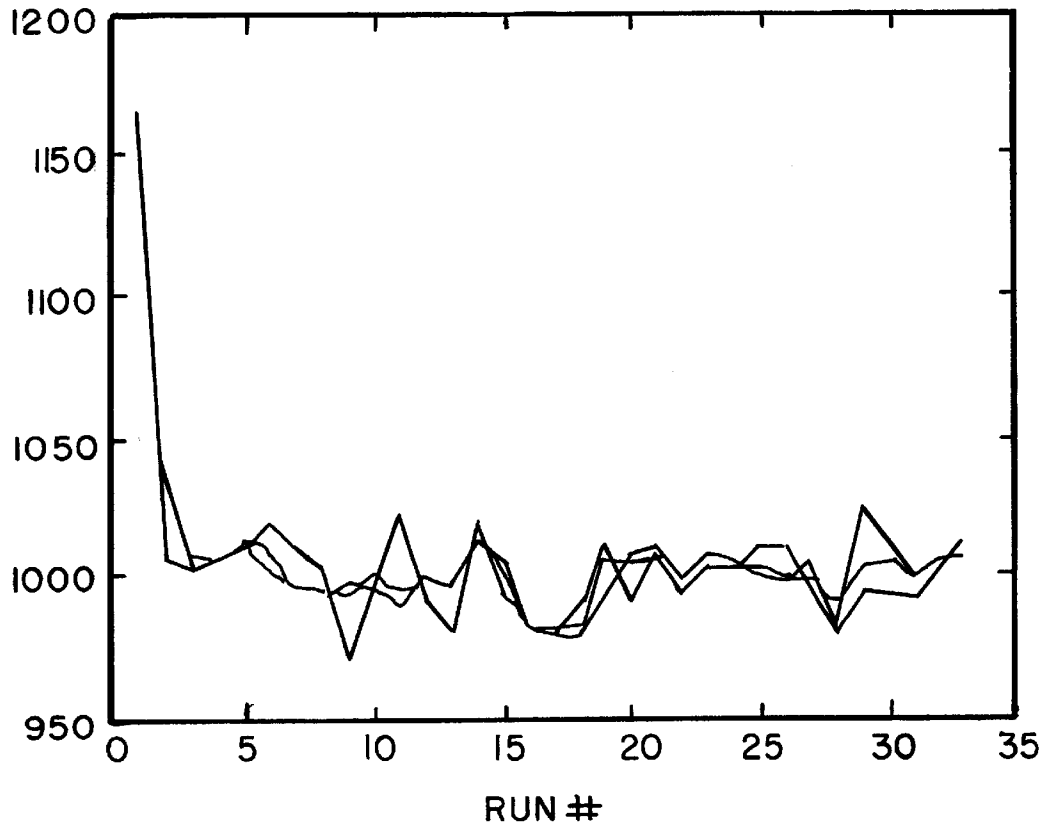
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