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(54) **Title**: PROCESS CONTROL USING PROCESS DATA AND YIELD DATA

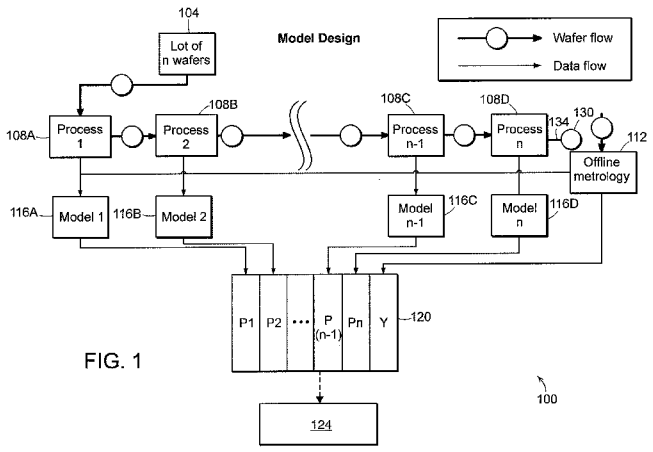


FIG. 1

(57) **Abstract**: A method for monitoring a manufacturing process features acquiring metrology data for semiconductor wafers at the conclusion of a final process step for the manufacturing process ('Step a'). Data is acquired for a plurality of process variables for a first process step for manufacturing semiconductor wafers ('Step b'). A first mathematical model of the first process step is created based on the metrology data and the acquired data for the plurality of process variables for the first process step ('Step c'). Steps b and c are repeated for at least a second process step for manufacturing the semiconductor wafers ('Step d'). An nth mathematical model is created based on the metrology data and the data for the plurality of process variables for each of the n process steps ('Step e'). A top level mathematical model is created based on the metrology data and the models created by steps c, d and e ('Step f ')• The top level mathematical model of Step f is based on those process variables that have a substantial effect on the metrology data.

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