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(71) Applicant *(for all designated States except US)*: **LAM RESEARCH CORPORATION** [US/US]; 4650 Cushing Parkway, Fremont, CA 94538-6470 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **WONG, Scott** [US/US]; 1013 Fuller Terrace, Sunnyvale, CA 94086 (US). **LIN, Jeffrey**; No. 19, R & D Road III, Science Park, Hsinchu (TW). **BAILEY, Andrew, D., III** [US/US]; 3363 Sagewood Court, Pleasanton, CA 94588 (US). **CHEN, Jack** [US/US]; 297 Goldenrain Avenue, Fremont, CA 94539 (US). **MOORING, Benjamin, W.** [US/US]; 3005 Kenai Drive, Cedar Park, TX 78613 (US). **HUANG, Chung, Ho** [US/US]; 3562 Cour De Charles, San Jose, CA 95148 (US).

(74) Agent: **NUNEZ, Jose, M.**; 710 Lakeway Drive, Suite 200, Sunnyvale, CA 94085 (US).

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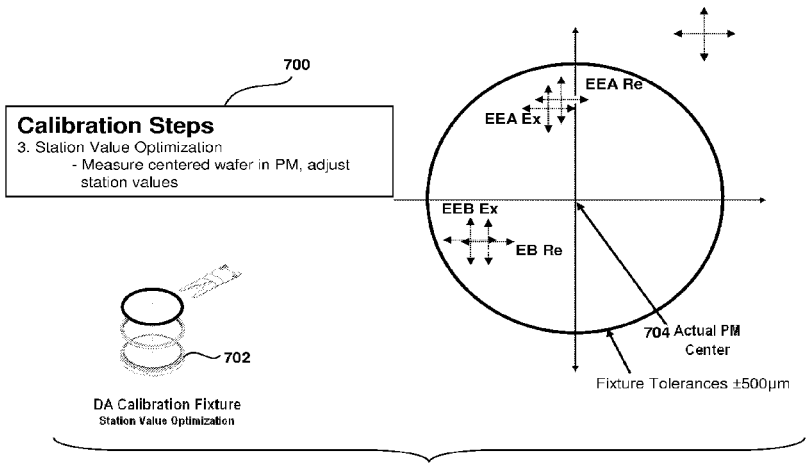


Fig. 7A

(57) Abstract: Methods and systems to optimize wafer placement repeatability in semiconductor manufacturing equipment using a controlled series of wafer movements are provided. In one embodiment, a preliminary station calibration is performed to teach a robot position for each station interfaced to facets of a vacuum transfer module used in semiconductor manufacturing. The method also calibrates the system to obtain compensation parameters that take into account the station where the wafer is to be placed, position of sensors in each facet, and offsets derived from performing extend and retract operations of a robot arm. In another embodiment where the robot includes two arms, the method calibrates the system to compensate for differences derived from using one arm or the other. During manufacturing, the wafers are placed in the different stations using the compensation parameters.

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