CLAIMS

What is claimed is:

1. An automated semiconductor device placement improvement method comprising:

automatically executing, by a processor of a pick and place apparatus, a previous plurality of shift measurements for offsets from an original placement of a previous plurality of semiconductor dies of a previous plurality of semiconductor wafers for processing;

retrieving, by said processor, a previous plurality of shift measurement values associated with said previous plurality of shift measurements;

storing, by said processor in a database, said previous plurality of shift measurement values;

automatically executing, after the storing the said previous plurality of shift measurement values, by said processor of said pick and place apparatus, a shift measurement associated with an offset from an original placement of a plurality of semiconductor dies of a semiconductor wafer for processing;

retrieving, by said processor, a shift measurement value associated with said shift measurement;

storing, by said processor in ~~a~~ the database, said shift measurement value;

executing, by said processor, specified models with respect to said shift measurement value and said retrieved previous plurality of shift measurement values;

determining, by said processor based on results of said executing, a predicted shift measurement value associated with a future offset for a new plurality of semiconductor dies on a new semiconductor wafer for processing; and

automatically placing, by said processor, placement hardware of said pick and place apparatus in multiple positions for generating said new plurality of semiconductor dies on said new semiconductor wafer is accordance with said predicted shift measurement value.

2. The method of claim 1, wherein said specified models comprise mathematical models.

3. The method of claim 2, wherein said mathematical models comprise one dimensional models selected from the group consisting of polynomial models, transcendental models, piecewise models, and manual input models.

4. The method of claim 2, wherein said mathematical models comprise multiple dimensional models selected from the group consisting of multivariable polynomial models, thin plate spline models, and manual input models.

5. The method of claim 1, further comprising:

generating, by said processor executing said placement hardware in response to said automatically placing, said new plurality of semiconductor dies within said new semiconductor wafer is accordance with said predicted shift measurement value.

6. The method of claim 1, further comprising:

automatically shifting, by said processor, said new semiconductor wafer in a plurality of new positions in accordance with said predicted shift measurement value.

7. The method of claim 1, further comprising:

presenting, by said processor via a specialized graphical user interface (GUI), a virtual image of said new plurality of semiconductor dies on said new semiconductor wafer is accordance with said predicted shift measurement value.

8. A computer program product, comprising a computer readable hardware storage device storing a computer readable program code, said computer readable program code comprising an algorithm that when executed by a processor of a pick and place apparatus implements an automated semiconductor device placement improvement method, said method comprising:

automatically executing, by said processor of said pick and place apparatus, a previous plurality of shift measurements for offsets from an original placement of a previous plurality of semiconductor dies of a previous plurality of semiconductor wafers for processing;

retrieving, by said processor, a previous plurality of shift measurement values associated with said previous plurality of shift measurements;

storing, by said processor in a database, said previous plurality of shift measurement values;

automatically executing, after the storing the said previous plurality of shift measurement values, by said processor, a shift measurement associated with an offset from an original placement of a plurality of semiconductor dies of a semiconductor wafer for processing;

retrieving, by said processor, a shift measurement value associated with said shift measurement;

storing, by said processor in ~~a~~ the database, said shift measurement value;

executing, by said processor, specified models with respect to said shift measurement value and said retrieved previous plurality of shift measurement values;

determining, by said processor based on results of said executing, a predicted shift measurement value associated with a future offset for a new plurality of semiconductor dies on a new semiconductor wafer for processing; and

automatically placing, by said processor, placement hardware of said pick and place apparatus in multiple positions for generating said new plurality of semiconductor dies on said new semiconductor wafer is accordance with said predicted shift measurement value.

9. The computer program product of claim 8, wherein said specified models comprise mathematical models.

10. The computer program product of claim 9, wherein said mathematical models comprise one dimensional models selected from the group consisting of polynomial models, transcendental models,

piecewise models, and manual input models.

11. The computer program product of claim 9, wherein said mathematical models comprise multiple dimensional models selected from the group consisting of multivariable polynomial models, TPS models, and manual input models.

12. The computer program product of claim 8, wherein said method further comprises:

generating, by said processor executing said placement hardware in response to said automatically placing, said new plurality of semiconductors dies within said new semiconductor wafer is accordance with said predicted shift measurement value.

13. The computer program product of claim 8, wherein said method further comprises:

automatically shifting, by said processor, said new semiconductor wafer in a plurality of new positions in accordance with said predicted shift measurement value.

14. The computer program product of claim 8, wherein said method further comprises:

presenting, by said processor via a specialized graphical user interface (GUI), a virtual image of said new plurality of semiconductor dies on said new semiconductor wafer is accordance with said predicted shift measurement value.

15. A pick and place apparatus comprising a processor coupled to a computer-readable memory unit, said memory unit comprising instructions that when executed by the computer processor implements an automated semiconductor device placement improvement method comprising:

automatically executing, by said processor, a previous plurality of shift measurements for offsets from an original placement of a previous plurality of semiconductor dies of a previous plurality of semiconductor wafers for processing;

retrieving, by said processor, a previous plurality of shift measurement values associated with said previous plurality of shift measurements;

storing, by said processor in a database, said previous plurality of shift measurement values;

automatically executing, after the storing the said previous plurality of shift measurement values, by said processor, a shift measurement associated with an offset from an original placement of a plurality of semiconductor dies of a semiconductor wafer for processing;

retrieving, by said processor, a shift measurement value associated with said shift measurement;

storing, by said processor in ~~a~~ the database, said shift measurement value;

executing, by said processor, specified models with respect to said shift measurement value and said retrieved previous plurality of shift measurement values;

determining, by said processor based on results of said executing, a predicted shift measurement value associated with a future offset for a new plurality of semiconductor dies on a new semiconductor

wafer for processing; and

automatically placing, by said processor, placement hardware of said pick and place apparatus in multiple positions for generating said new plurality of semiconductor dies on said new semiconductor wafer is accordance with said predicted shift measurement value.

16. The pick and place apparatus of claim 15, wherein said specified models comprise mathematical models.

17. The pick and place apparatus of claim 16, wherein said mathematical models comprise one dimensional models selected from the group consisting of polynomial models, transcendental models, piecewise models, and manual input models.

18. The pick and place apparatus of claim 16, wherein said mathematical models comprise multiple dimensional models selected from the group consisting of multivariable polynomial models, thin plate spline models, and manual input models.

19. The pick and place apparatus of claim 15, wherein said method further comprises:

generating, by said processor executing said placement hardware in response to said automatically placing, said new plurality of semiconductor dies within said new semiconductor wafer is accordance with said predicted shift measurement value.

20. The pick and place apparatus of claim 15, wherein said method further comprises:

automatically shifting, by said processor, said new semiconductor wafer in a plurality of new positions in accordance with said predicted shift measurement value.