

Comparison between traditional leveling methodologies and leveling with ALS200 on Mattson Steag AST SHS2800 RTP Equipment

Summary: This document describes two methodologies of leveling end effectors on robots used with the Mattson Steag AST SHS2800 RTP platform:

- Leveling with a ruler
- ALS200

Leveling with ALS200 offers time savings and objective and comparable data while employing a ruler to determine inclination and guide adjustments makes the task tedious and imprecise.

Background

An SHS2800 RTP platform outfitted with an Equipe robot was used for this comparison study. The robot uses a quartz end effector for handling wafers and vacuum gripping to insure wafers are safely maneuvered around the tool.

Methodology Comparison

- a) Leveling with a ruler: using the furnace wall as the reference, measurements are taken at 5 points across the surface of the wafer to insure that the plane of the wafer rests completely horizontally with no deviations in inclination. A steel ruler is employed for these measurements. If multiple adjustments are needed, repeating a full set of measurements after each adjustment proves tedious and somewhat imprecise (each user could read the ruler measurement differently).

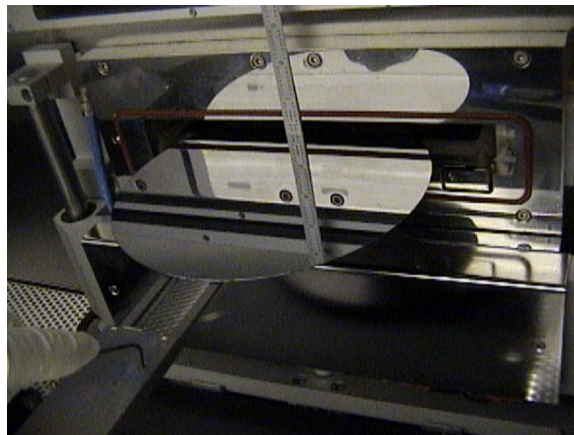


Figure 1: Measuring inclination with a ruler

- b) ALS200: When using the ALS200 verifying inclination is easy because the device rests on the end effector as a wafer would, thus eliminating the need for multiple measurements. LevelView™ offers an objective measure of the pitch and roll of the end effector, which do not vary from user to user. Ultimately, if adjustments are needed, they could be made while the ALS200 rests on the end effector. The device communicates, in real time, the inclination of the end effector as it changes with the adjustments made.

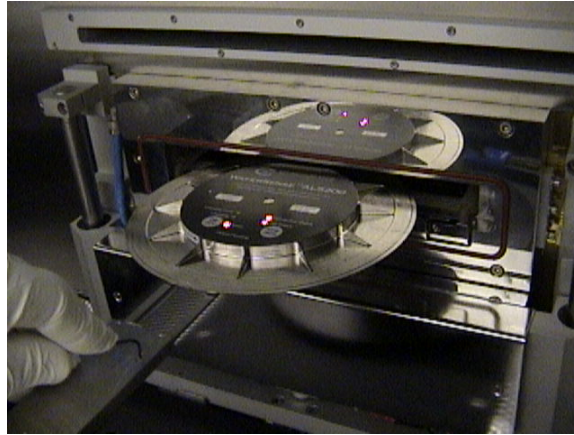


Figure 2: Using ALS200 to verify inclination of Equipe end effector

Conclusion

Using ALS200 to verify and correct the inclination of quartz end effectors on Equipe robots installed with Mattson Steag AST SHS2800 RTP platforms results in objective data useful in specifying level tolerances that improve wafer handling and eliminate wafer damage. AMD Spansion in the USA is successfully using the ALS200 and benefiting from its capabilities.



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