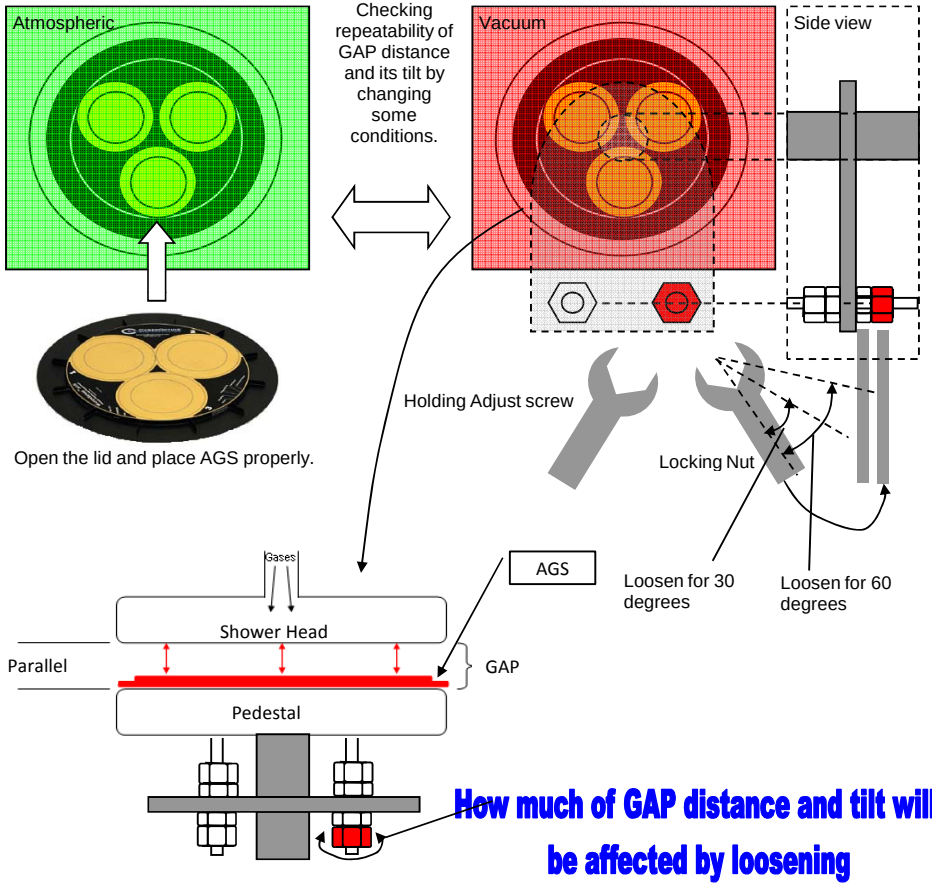
CyberOptics Semiconductor Inc. Tech column No.034

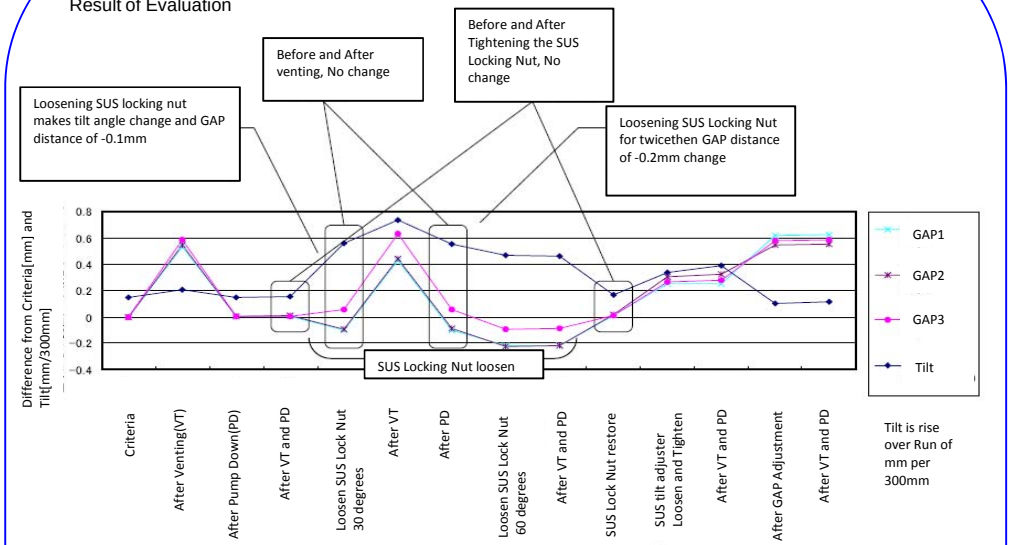
GAP measurement with Repeat Test

Pedestal leveling of single wafer chamber of PECVD uses Double But for locking screw for fixing the adjustment. This data shows change of distance between shower head to pedestal and its Tilt per diameter of the wafer by rotating the Susceptor Locking Nut made by with WaferSense AGS. This is a real report from Device manufacturer who is a user of AGS.



Caution: The diagram above is expressing the mechanical structure of the Locking nut, Measurement method and Test conditions, and not exactly same as the real structure.

Result of Evaluation



Summary

1. Maximum 10 microns difference in distance by Before and After of Lid Open/Close and Pump Down/Venting.

2. Loosening Sasceptor Locking Nut makes change in Tilt angle and GAP Distance. But Loosen status is still having less difference before and after Pump Down /Venting. And the status of GAP distance returned after tightening screw.

3. Tilt Adjuster of Susceptor is gving influence on GAP distance by its tightening Angle. Before and After Loosening, there are 0.2mm difference in GAP distance.

4. Adjustment with WaferSense AGS which is Vacuum compatible and Non-Contact Capasitance measurement method) was possible to adjust the GAP within 30microns.

5. WaferSense AGS made the GAP adjust and measurement to 1 hour from 2 to 3 hours(50 to 67% reduction), and the dangerous work became safer with AGS measurement application of GAP Check.

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