

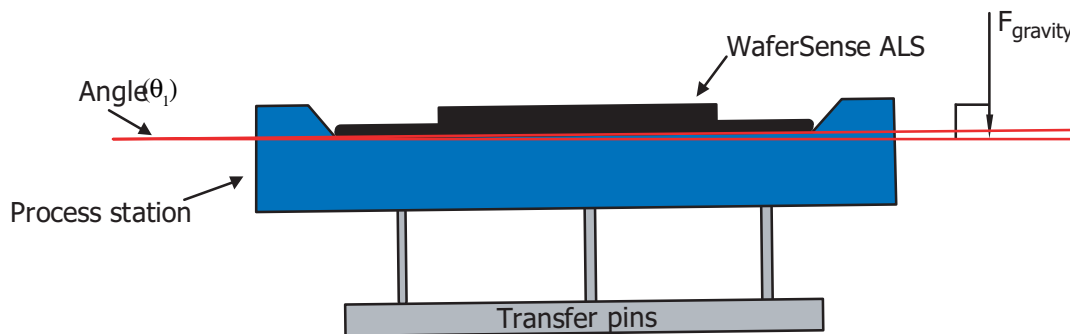
WaferSense™ Auto Leveling System Theory of Operation

WaferSense ALS and ALSR can be used to measure absolute level (to a plane perpendicular to earth's gravitational force) or can be used to measure parallelism between surfaces.

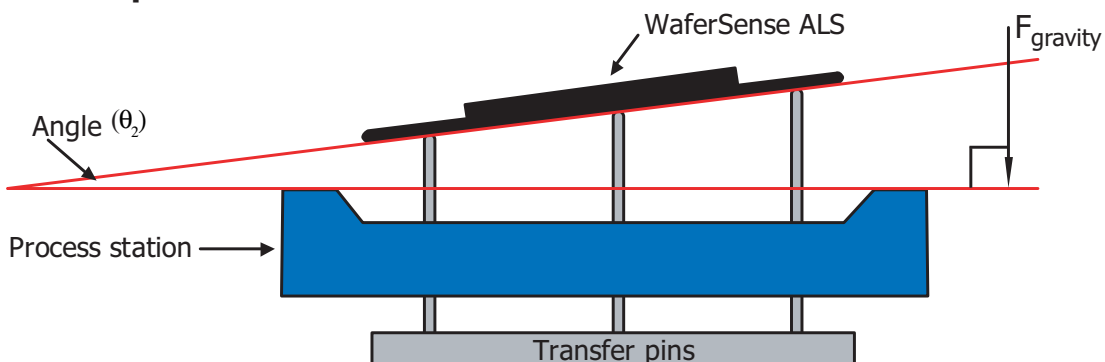
Through their design (wafer or reticle), the leveling devices can be handled with existing automation and placed on any tool station. Therefore, transfer and process stations such as FOUPs, prealigners, robot end effectors, load locks, process chambers and reticle stockers can easily have their level measured and adjusted.

A typical application for WaferSense ALS would measure the inclination of a process station and the coplanarity of the lift pins.

WaferSense Auto Leveling System as used to measure absolute level of a process station:



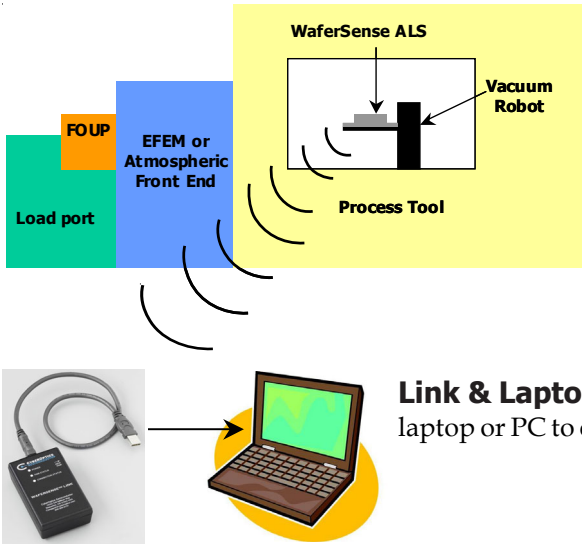
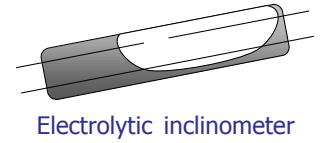
WaferSense Auto Leveling System as used to measure the coplanarity of transfer pins referenced to a process station:



How WaferSense Auto Leveling System Works ...

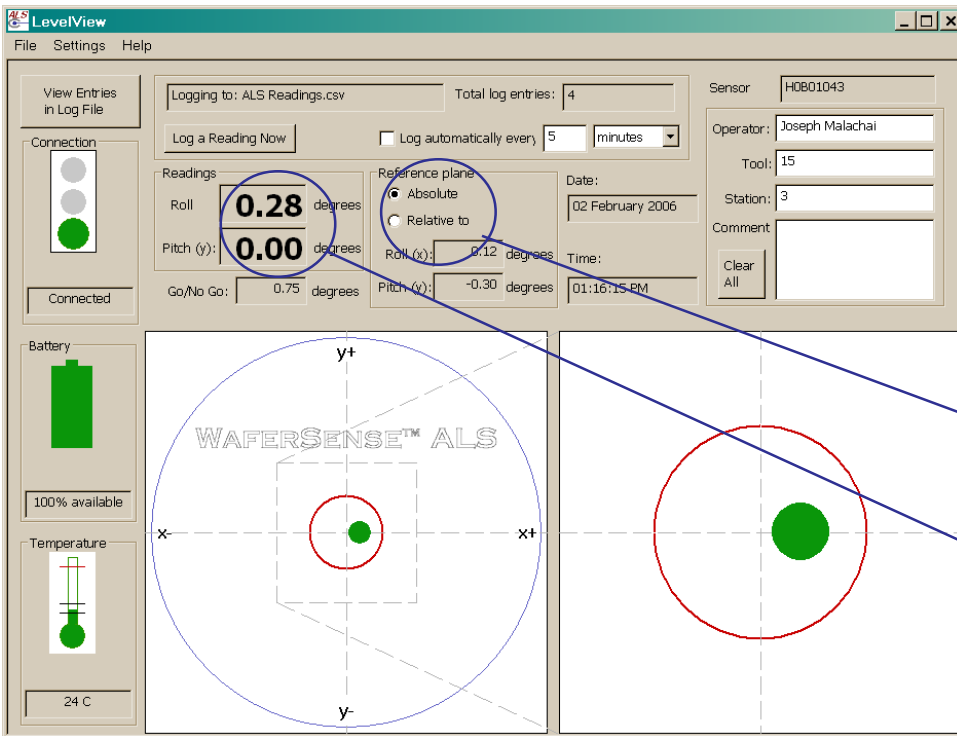


Leveling wafer or reticle: An electrolytic inclinometer senses angle by measuring the relative resistance of two columns of electrolyte. As the bubble moves under the influence of gravity the resistance of one column will increase while the other column's resistance will decrease. A proprietary technology is used to accurately convert these resistances to inclination. An analog to digital converter translates the analog inclination data so that it may be interpreted by a PC.



Wireless communication: WaferSense ALS uses 2.4GHz RF (Bluetooth®) wireless communication between the sensor and the link that is connected to a PC. WaferSense ALS uses a Class 1 Bluetooth device, rated for unimpeded communication up to 100 meters.

Link & Laptop: The link is a compact USB 1.1 compliant device that connects to a laptop or PC to enable wireless communication with the sensor.



LevelView™ Software

Application: LevelView displays discrete pitch and roll measurements and an intuitive "level bubble" in real-time. LevelView may be used to define Go/No Go regions and log data and notes for future reference. Parametric readouts for battery life, sensor temperature and connection status are also displayed.

- Set reference plane to absolute gravity or relative to another surface.
- Numeric results provide ability for accurate, repeatable leveling adjustment.



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