



SEMICONDUCTOR INDUSTRY

WAFER HEAT AND COOL STATIONS



Wafer pin lift mechanisms are integrated to both hot and cold platens.

The module can be integrated either standalone or via BOLTS compliant interface and the control interface is either ethernet or serial.



As backside contamination has become more critical with the introduction of 300 mm polished substrates, cost effective pre-heating and cooling wafers without introducing contamination is extremely difficult. Owens Design has developed a 300 mm wafer pre-heat and cool station that provides excellent uniformity and industry leading backside contamination.

Our cost effective module uses resistive heating elements that achieve better than 2 degree

uniformity and up to 450 deg C heating in less than 15 seconds.

Critical to 300 mm wafer production, the module also has extremely low metals and backside particulate contamination.

A water cooled cooling platen can be integrated in the same footprint to provide a very compact and easily interfaced unit. Process gases can be introduced into both the hot and cold process chambers as an extra option.



WAFER HEAT AND COOL STATIONS (CONT'D)

Typical Specifications

- Temperature Uniformity < 2°C up to 450°C across a 300mm wafer
- Heating: 25°C to 450°C in <15 sec
- Cooling: 400°C to 50°C in <26 sec
- Wafer Repeatability < 70 µm between each lift pin up/down cycle

Cleanliness

- Front side: < 1 @ 0.1 µm, PWP
- Backside: < 1,400 @ 0.2 µm, PWP
- Metals: Ca, Cr, Fe, K, Mn, Na, Ni, Pb, Zn, Cu, Co, Mo, Ti, W and Al < 1E10/cm²
- Metals: Fe < 5E09/cm²
- Airborne: No degradation to ISO Class 2 environment

Reliability

- Production worthy with 10 fielded units in SEMI production fabs
- Wafer breakage < 10,000 wafers handled
- MTBF: >20,000hrs
- MTTR: < 2hrs
- Uptime: 98%

Interface

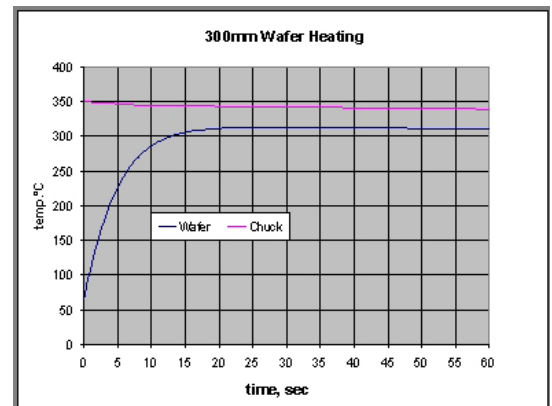
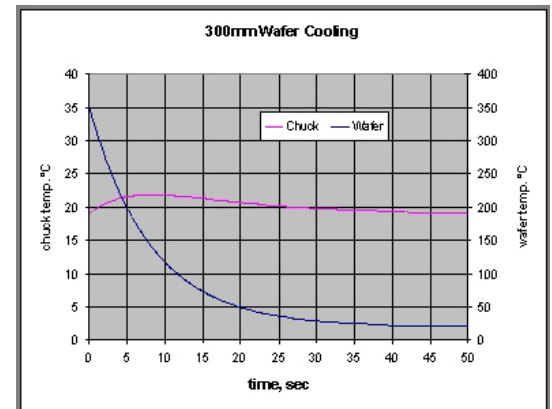
- Standard hardware BOLTS interface.
- Custom hardware interfaces available.
- Communications: Ethernet or serial (custom interfaces available)
- Communication protocol and command set can be defined to meet customer requirements

Serviceability

- Modular design for fast troubleshooting and low cost FRU.
- All components accessed from front (for BOLTS configuration).
- Other than periodic cleaning, no maintenance is required for the system

Regulatory Compliance

- All custom designs are compliant with SEMI S2/S8, CE, and local jurisdictional requirements



Facilities:

- Power: 208VAC, 20A
- Chiller Fluid: 20°C @ > 1.7 GPM, 60 PSIG
- Vacuum: 17 in-Hg min @ 1.5 SCFM
- CDA: 60-90 PSIG, 1 SCFM