

FLX 2320-L

Automated Thin Film Stress Analysis System

Automated FLX Standard Features

- Fully Automated / High Throughput Cassette load / Robotic Wafer Handling Production Tool
- User-programmable Automatic wafer scanning system
- Automatic stage rotation to enable rapid 3D stress measurements
- Patented Dual Wavelength laser scanning for challenging films
- Proprietary WinFLX Analysis Software displays any combination of stress, time, surface deflection, or reflected light intensity measurements
- Software Analysis Features include:
 - Calculation of biaxial modulus of elasticity
 - Linear expansion coefficient
 - Stress uniformity, and file subtraction
 - Trend plotting for Statistical Process Control (SPC)
 - Calculation of water diffusion coefficient in dielectric films
 - Automatic recalculation of stress when variables are changed
 - 2-D and 3-D views of wafer topography (3D software included)
 - Plotting of the measured stress-temperature curve



Specifications

| | |
|-----------------|---|
| Accommodation | 2 wafer configurations 6" & 8" model or 4" 5" 6" model |
| Material | Reflective, Transparent, Translucent (non-patterned / non textured) |
| Cassette Port | Single port / SEMI E1.7 standard – 25 slot cassette system |
| Wafer Handling | Single Hand Robotic backside vacuum (ceramic Teflon coated) |
| Wafer Alignment | Backside Vacuum (PPS – Polyphenylene sulfide) |
| Stage 3-point | Polyetheretherketone (PEEK) |
| HEPA Filtration | Standard built-in to roof of system |

Performance

| | |
|-----------------|----------------------------|
| Stress | 1 - 4000 MPa * |
| Reproducibility | 1.3 MPa (1 σ) * |
| Minimum Radius | 2.0m (scan length of 80mm) |
| Maximum Bow | 1mm approximately |
| Throughput | 25 WPH |

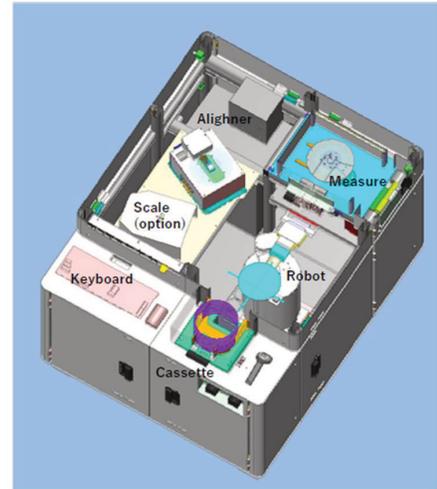
*(Results for a 10,000 Å film on a 675µm on a silicon substrate)

Options

- Uninterrupted Power Supply system 60 minutes
- Signal Tower - 3 color with audio alarm
- Built in seismic system
- Bar-code ID Reader: Manual reader for open cassette
- Ionizer / ESD control system
- Wafer Scaler
- ULPA Filter

Safety & Compliance

| | |
|-----------------|--------------------------------------|
| Laser | CDRH compliant |
| Laser system | Interlocks installed |
| Panel / Doors | Interlocks installed |
| Clean Spec | Recommended for class 1000 or better |
| CE | TBD |
| Semi S2 S8 | TBD |
| NRTL | TBD |
| Seismic system: | Optional |

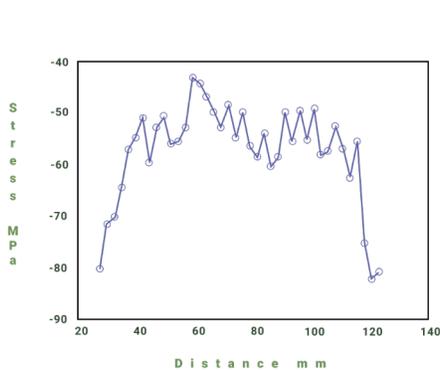


Utilities & Dimensions

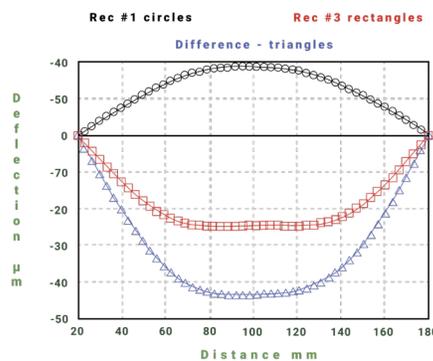
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|--------------------|--|
| Power | AC 200V, 50/60Hz, 6.7KVA consumption |
| Gas | CDA 0.5MPa, 50L/min, 1/4 inch Swagelok |
| Vacuum | -80Kpa, 40L/min, 1/4 inch Swagelok |
| Dimensions | W 3.9' x 4.7' x H 6' |
| Weight | 1763 lbs. |
| Space Requirements | 3' clearance on all sides |

Applications Troubleshooting

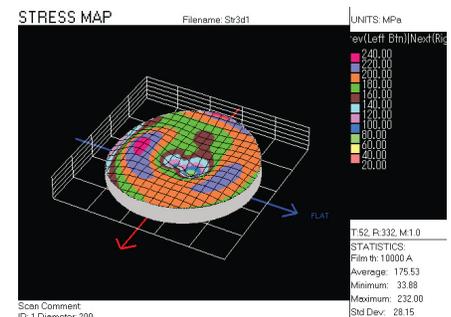
- Aluminum stress-induced voids
- Passivation cracking (nitride/oxide)
- Stress-induced dislocations in silicon
- Tungsten disilicide cracking
- Stress increase in oxides during temperature cycling
- Matching metallization expansion on GaAs
- Silicon cracking due to high film stress



Stress Uniformity Graph



Deflection Graph



3D Stress Map