semWPS

Semiautomated Wet Process Station
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SINGULUS TECHNOLOGIES – Innovations for New Technologies

SINGULUS TECHNOLOGIES develops and assembles innovative machines and systems for efficient and resource-saving production processes, which are used worldwide in the solar, semiconductor, medical technology, consumer goods and data storage.

The company's core competencies include various processes of coating technology, surface treatment and wet-chemical and thermal production processes.

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**Semiautomated Wet Process Station semWPS**

*Batch Processing with Carrier Transfer System*

- High reliability
- Guaranteed process stability and reproducibility
- Modular design & optimized footprint
- Easy operation

**Applications**

IC manufacturing in Si, III/V materials, compound semiconductors:
- MEMS
- CMOS
- Sensor
- Wafering
- R&D PV technology

Product customization available

**Processes**

Cleaning-, etching-, solvent- and photoresist processes:
- RCA cleaning
- Nitride etch
- Resist strip
- Metal etch
- Polymer removal

**Specification and Benefits**

- Safe, process stable and reproducible processing of semiconductor applications
- Automatic carrier transfer (process tank to rinse) by rotation handling system
- Fast transfer times to avoid overetching
- Closed and interlocked process area ensure a maximum of operator safety
- Easy maintenance access from grey area side
- PLC controlled operation
- HMI operation, based on intuitive software with following main-features:
  - Process bath and chemical dosage management
  - Online monitoring (bath status)
  - Recipe management
  - On board data logging (event and alarm monitoring and storage)
  - Compliant with all major design standards (CE, UL, SEMI)

**Optional**

- FM 4910 proofed material
- Internal supply and disposal system with/without carboy
- Process data logging system
- Chemical recirculation-/filtration system
- Ultrasonic or megasonic enhancement
- Internal chemical management system (feed-/and bleed)
- Chemical solution concentration monitor system

**SEMIAUTOMATED WET PROCESS STATION**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wafer size</td>
<td>3” - 6”</td>
</tr>
<tr>
<td>Wafer type</td>
<td>Lithium niobate, lithium tantalite, crystal and hetero bonded wafers</td>
</tr>
<tr>
<td>Batch size</td>
<td>max. 2 x 8” [50 wafers]</td>
</tr>
<tr>
<td>Wafer thickness</td>
<td>0.15 mm - 0.05 mm</td>
</tr>
<tr>
<td>Wafer breakage</td>
<td>&lt; 1/100,000,000</td>
</tr>
<tr>
<td>Organic material detection</td>
<td>contact angle CA ≤ 10°</td>
</tr>
<tr>
<td>Particle removal rate (Post removal)</td>
<td>(1) Particle ≤ 0.12 µm number</td>
</tr>
<tr>
<td></td>
<td>&lt; 100 µm 100 mm wafer</td>
</tr>
<tr>
<td></td>
<td>(2) Particle ≤ 90 nm number</td>
</tr>
<tr>
<td></td>
<td>≤ 200 nm 100 mm wafer</td>
</tr>
<tr>
<td>Temperature control</td>
<td>RT - 150 °C accuracy ± 1 °C</td>
</tr>
<tr>
<td>Particle removal rate</td>
<td>≥ 90 nm ≥ 95 %</td>
</tr>
<tr>
<td>Wafer on robot transfer without failure</td>
<td>&gt; 500</td>
</tr>
<tr>
<td>Max. temp.</td>
<td>100 °C</td>
</tr>
<tr>
<td>Working temp.</td>
<td>30 °C ~ 60 °C</td>
</tr>
<tr>
<td>Particle removal rate</td>
<td>Particle bigger than 0.3 um removal rate ≥ 95 %</td>
</tr>
<tr>
<td>Temp. control accuracy</td>
<td>± 1K</td>
</tr>
<tr>
<td>Uptime</td>
<td>&gt; 95 %</td>
</tr>
<tr>
<td>Available process tank</td>
<td>PP/PVDF/PTFE/PFA, Quartz or Stainless Steel</td>
</tr>
<tr>
<td>Rinse tank</td>
<td>Quick-Dump-Rinser</td>
</tr>
<tr>
<td>With ultrasonic and mega sonic function</td>
<td></td>
</tr>
<tr>
<td>Process cell has chemical circulation, chuck stroke, N2 bubble, level control function</td>
<td>PLC control</td>
</tr>
</tbody>
</table>

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**Thin Film Deposition**
**Surface Engineering**
**Thermal Processing**
**Wet Chemical**