# XBS300

## PLATFORM FOR TEMPORARY WAFER BONDING

### TEMPORARY BONDING SOLUTION FOR 3D INTEGRATION PROCESSES FOR LOGIC AND MEMORY APPLICATIONS

SUSS MicroTec’s XBS300 platform for temporary bonding represents the next generation of high volume manufacturing temporary bonder solutions. The 200/300mm wafer bonding platform can be configured low cost of ownership and maximum process flexibility.

The XBS300 supports all key process steps for temporary bonding: release layer formation (coating and / or plasma deposition), adhesive coating, low force wafer bonding, UV curing or thermal curing and cooling. Thanks to its flexible configuration the XBS300 is able to process all commercially available temporary bonding adhesives. Qualified up to now are: Thin Materials (TMAT), Brewer Science® ZoneBOND™ (2) and 3M™ Wafer Support System (WSS).

### INPUT/OUTPUT MODULE (I/O)

Up to two load port modules can directly be attached to the XBS300 machine frame. With a separate EFEM the bonder can be equipped with up to four load ports. The load port modules offer integrated wafer mapping and RF ID reading and can handle standard 300mm FOUPs or FOSBs as well as 200mm wafer and cassette adapters.

### PROCESS FLOW INTEGRATION

The XBS300 wafer handling system is based on an industry proven, high speed and high precision 6-axis robot with integrated wafer flipping capability. Wafer alignment is accomplished by a camera based rotational pre-aligner that can be combined with a wafer ID reader.

### SPIN COATING MODULE

The GYRSET® principle enables highly uniform coatings of 200/300 mm wafers with minimum material consumption. During coating, the rotating closed cover coating process enables a unique turbulence-free atmosphere which effectively prevents backside contamination.

### STACK MODULE FOR BOND CHAMBERS, HOT PLATES AND COOL PLATES

The stack module can be individually configured with up to 4 low force bond chambers or up to 7 hot or cool plate cassettes. Bond chambers, hot plates and cool plates can be combined in the same stack module order to meet process and throughput requirements.

### INTEGRATED METROLOGY

The integrated laser thickness measurement station consist of 2 ultra-high precision laser displacement sensors that sample the wafer / wafer stack top and bottom surface in order to calculate the thickness. Multi-point measurement is accomplished by using the robot to scan across the wafer / wafer stack. Individual numbers of measurement points for device wafer, carrier and bonded stack are software programmable.

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**Table: Your Needs vs XBS300 Solutions**

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<thead>
<tr>
<th>Your Needs</th>
<th>XBS300 Solutions</th>
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<tr>
<td>Process Flexibility</td>
<td>- Universal temporary bonding platform for 200/300mm wafers</td>
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<td>- Supports all commercially available temporary bonding adhesives</td>
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<td>- Process modules include spin coater, PECVD chamber, low force bond chamber, hot / cool plate</td>
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<td>- Process development and production on the same tool</td>
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<td>Production Capability</td>
<td>- Fully automated platform</td>
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<td>- Up to 4 load ports with separate EFEM (equipment front end module)</td>
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<td>- Up to 4 module locations per frame cell and optional frame extension module allow for high volume manufacturing machine configurations. Frame cells can be clustered.</td>
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<td>+ Integrated wafer thickness measurement</td>
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<td>+ Production-proven cluster software with factory automation options</td>
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<td>Low Cost of Ownership</td>
<td>- Small footprint</td>
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<td>- High throughput</td>
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<td>- Excellent temperature &amp; bond force uniformity for maximum yield</td>
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<td>+ Scalable and field-upgradable architecture</td>
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(1) The DuPont HD3007 Process is qualified on the XBC300 equipment platform 
(2) The use of ZoneBOND™ technology requires a separate license agreement between the customer and Brewer Science®
## TECHNICAL DATA

### GENERAL FEATURES
- **Substrate size**: 200 / 300 mm wafers; Compatible with oversized carriers (201 / 301mm)
- **Load Port**: Fully automatic FOUP, FOSB load port with integrated RF-ID reader, 200mm wafer and cassette adapter options
- **Wafer handling**: 6-axis robot with integrated wafer flipping, camera based pre-aligner, optional wafer ID reader
- **User interface**: Windows XP operating system with SUSS MMC software, touch screen and keyboard with pointer device
- **Substrate processing**: Fully programmable cluster tool with factory automation options
- **Certifications**: Semi S2 and S8

### SC300 – SPIN COATER
- **Core Module**: Patented GYRSET® coater module with closed cover chuck
- **Spin Speed Control**: ±1rpm with digital spin motor controller
- **# of dispense lines**: Up to 2 dispense arms
- **Options**: Large selection of pumps and dispense systems

### PL300T – PLASMA DEPOSITION MODULE FOR TMAT PROCESS
- **Core**: Vacuum Chamber for PECVD Process
- **Gases**: TMAT proprietary gas, O₂, Up to 2 Cleaning Gases
- **Gas Controllers**: 4 MFC
- **Plasma Source**: Internal Generator, 13.56 MHz
- **Tuning**: Automatic
- **Chuck Temperature Control**: Chilled Water
- **Chamber Access**: VAT door with N₂ purge

### PLATFORM FOR TEMPORARY WAFER BONDING

## STACK MODULE - BOND CHAMBER, HOT PLATE & COOL PLATE

### BOND CHAMBER
- **Bond Processes**:
  - Setup A: Ultra low force (Silicone based and UV curable adhesives)
  - Setup B: Low force thermocompression bonds
- **LF300 Temperature**: Up to 250°C
- **Base Vacuum Minimum**: < 5mbar
- **Pumpdown**: < 60 sec
- **Bond Force (at 300mm)**:
  - Setup A: 20N - 500N
  - Setup B: 300N - 8kN
- **Process Gas**: N₂ Standard, Optional 1 MFC
- **Bond Alignment**: Center to Center Alignment +/- 50µm
- **Notch Rotation**: 0.1°
- **Number of Chambers**: Up to 4 LF300 chambers per stack module
- **Chamber Type**: N₂ Exhausted and Sealed Chamber

### HOT PLATE
- **Hot plate temperature**: Up to 250°C
- **Option**: Up to 350°C
- **Temperature uniformity**: ± 0.4°C up to 120°C
- **± 1% >120°C**
- **Bake method**: Programmable proximity with fixed minimum proximity

### COOL PLATE
- **Cool plate temperature**: 15 to 30°C
- **Temperature control**: ± 0.2°C
- **Cool method**: Programmable proximity with fixed minimum proximity

### METROLOGY
- **Thickness Measurement**: Laser sensors
- **Measurement Accuracy**: < 0.2µm
- **Number of Measurement Points**: Multi-point, Software Programmable

### OPTIONS
- **Environmental Air Treatment**: Filter Units
- **Ionizer Bars**: Local Cleanroom

### UTILITIES
- **Vacuum**: min. -0.8 bar, +/-5%
- **Compressed Dry Air**: 8 bar, +/-10%
- **Nitrogen**: 8 bar, +/-10%
- **Power**: Configuration dependent

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Visit [www.suss.com/locations](http://www.suss.com/locations) for your nearest representative or call:

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Spiral dispense on GYRSET® coater module for optimum adhesive uniformity