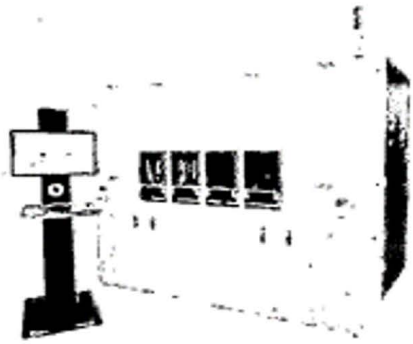
MOOV

EVG850TB Automated Temporary Bonding System
(up to 200 mm, automated handling)
Wafer Processing System for Coating, Bake and Bonding of Wafers up to 200 mm
Tooled for bonding of 150 mm Device Wafers to 155,6 mm Carrier Wafer



1 1 **Basic Unit**
- Platform enabling fully automated operation with handling system and process modules
- PC controlled Microsoft Windows® based operating environment
- Solid state drive and hard drive for high availability and reliability
- LAN connection for remote connection and diagnostics
- Data backup to USB and/or DVD
- Prepared for installation of filter-fan units
- Interlocked safety doors, signal light tower
- EC Declaration of Conformity (certification done by EVG)

2 1 **Handling Unit**
- Four (4) axis industrial robot for substrate handling

3 1 **Facility connections through machine bottom side**
- Requires a cleanroom with raised floor / sub floor of more than **50 cm**

4 1 **Software - *EVG CIM Framework***
- Graphical User Interface (GUI) according to SEMI E95
- Flexible process flow definition
- Easy drag and drop recipe programming
- Parallel processing of multiple jobs
- Automated recording of process and machine parameters
- Integrated analysis features for process and machine parameters
- Throughput optimized handling sequence
- Advanced maintenance functionality
- Password protected access levels

5 1 **Modular Machine Platform**
- For automated operation of up to four (4) process modules

6 1 **Ionizer Bar for Handling Area T-Frame**
- Ionization nozzles with power supply for ESD save environment
- Ionizer bars mounted in cleanroom environment or under Minienvironment
- Ionizer bars prepared for purge function with N2 or CDA
- Optimized utilization due to process triggered activation of purge and ion generation (all ionizer bars in a system will be controlled simultaneously)
- Includes maintenance set for Ionizer (charge plate monitor and charge plate not included)

7 1 **Charge Plate Monitor**
- Charge plate monitor with F5054R universal adapter, without plate
- Carrying case for this tool included

8 1 **Charge Plate**
- Charge plate with static dissipative Delrin (6" x 6")

9 1 **User Interface**
- Graphical User Interface (GUI) for automated processing
- User interface including keyboard and monitor
- Effective operation and control of the machine
- Feedback from the machine
- Stand alone unit

CASSETTE STATIONS

10 2 **Fully Automated Ergo Load Cassette Station**
- Cassette present sensor
- Adjustable for different semi standard wafer cassette sizes
- Cassette not included
- Tilt mechanism for wafer cassette according to SEMI S2 and S8

11 2 **Material Mapping Unit (MMU)**
- To detect missing or cross slotted substrates in send cassettes
- to be installed right in front of the Fully Automated Ergo Load Cassette Station

ROBOT UNIT / WAFER AND CARRIER HANDLING

12 2 **Endeffector for 150/155 mm wafer**
- For backside handling of wafer
- Vacuum fixture of wafer / substrate
- Load/unload temperature of wafer < 350 °C

13 1 **Automatic Rotating Endeffector Capability**
- Rotating robot endeffector capability

14 1 **Standard Pre-Aligner**
- Non-contact, optical pre-aligner
- Including wafer chuck for specified wafer size
- For pre-alignment of standard, round substrates
- With flat/notch detection
- Material selection (opaque, transparent) via software recipe
- Scan area 3" - 8"

15 1 **Buffer / Cooling station**
- For cooling of wafer after bond process
- Storage station for up to four (4) wafers
- For automated loading / unloading with robot
- Contactless wafer detection

Spin Coat Module

16 1 **Spin Coat Module**
- **For fully-automated systems**
- PTFE spinner chamber
- Programmable drive unit for up to 10000 rpm (maximum rpm in process is dependent of actual configuration and substrate parameters)
- Programmable dispense arm for center, edge and area dispense
- For use with up to four (4) different resist lines (more resist lines available on request)
- Programmable bowl wash possible in case solvent lines are equipped

17 1 **Cover for Coat Module**
- For one coat module
- For best uniformity with high viscosity resist
- Automatically operated chamber cover
- Software for fully programmable cover position in process

18 1 **Splash Protection Ring**
- OD 150/160 mm
- Two-parts setup
- Easy exchange

19 1 **Spinner Chuck for 150 mm - 200 mm Wafer**
- Vacuum handling from bottom side
- Supports standard wafer thickness from 0.3 mm – 1 mm (> 0.3 mm for 150 mm, > 0.4 mm for 200 mm)
- Quick exchange design without screws
- 10 µm lapped wafer contact surface

20 1 **Top Side Edge Bead Removal (EBR) System**
- For one coat module
- For up to 200 mm wafers
- Solvent nozzle is mounted on programmable dispense arm
- Software for fully programmable EBR process
- Solvent is dispensed via pressurized bowl wash tank (separate EBR tank optional)
- Bowl wash function carried out via EBR nozzle

21 2 **Back Side Rinse (BSR) System for 200 mm Wafers**
- For BSR on wafer edge
- Software for fully programmable back side rinse process
- BSR system for one rins media
- Rins media to be defined prior PO

22 2 **Back Side Rinse (BSR) Nozzle**
- One nozzle in chamber insert for **150 mm - 200 mm** wafers
- Installation on 2 different radii

23 2 **Support Part for Back Side Rinse Nozzle**
- Enables BSR function for a coat module
- Support part for single nozzle

24 3 **Digital Flow Meter for 1/8" Tubing**
- Based on thermal microsensor technology
- Calibrated for IPA
- For flow rates up to 120 ml / min (IPA)
- Max. flow rates media dependant
- Including software implementation of readout and setpoint evaluation

25 2 **Spare Bowl**
- Bowl, insert and catch ring

26 1 **IDI Model 600 High Viscosity Pump**
- Generation II (HVP II) 3/8" Inlet & Outlet Valves, variable rate dispense up to 20 ml, adjustable suck back, built-in leak detection, mult. recipe select, on-board controls, RS232/RS485 communications. Viscosity range: 500 cp to 30,000* cp. Non-Filtered. CE.
  ** Successfully tested for 50000cp with "Chemistry Cabinet for High Viscosity Resists"*
- Recirculation valve
- Resist bottle adapter and mount with load cell
- Resist bottle next to pump for short loading line
- Dispense line diameter and length optimized for thick resist processing
- Software integration for recipe controlled dispense volume, rate and suck back
- Residual resist volume display in software with program able warning level and empty level

27 1 **Reservoir for Resist Dispense System**
- Intermediate reservoir between resist bottle and pump
- Including filling level detection and SW implementation

28 1 **Chemistry Cabinet for High Viscosity Resists**
- High viscosity (> 3000 cp) adhesive storage next to coat bowl
- Second containment and spill sensor
- Housing with front door access
- Exhaust port
- Capacity for one resist dispense system (pump and bottle)
- Capacity for one syringe dispense system and parking station for one additional syringe

29 1 **Programmable Exhaust Controller**
- Flow control of process exhaust (coat module)
- Range 0 - 300 m^3 / h (actual maximum rate set by cleanroom exhaust)
- Particle filtering, two (2) PP filters included

30 1 **Chemistry Line**
- Consisting of valve, needle valve and software integration
- For use with diluted chemicals, solvents or removers
- Compatibility to other chemicals on request
- To be connected to house chemical supply system (not included) or use options "Pressurized Tank for Diluted Chemistry or Solvents" AND "Chemistry Cabinet"

31 1 **Digital Flow Meter for 1/4" Tubing**
- Based on ultrasonic flow sensor technology
- Calibrated for DI-water
- For flow rates up to 3000 ml / min (H20)
- Max. flow rates media dependant
- Including software implementation of readout and setpoint evaluation

Bake-Chill Module

32 2 **High Solvent Bake Plate 250 °C**

- **With Programmable Proximity Pins**
- For dehydration bake process
- Consists of single hot plate for stacked design
- Dedicated features to avoid condensation of solvents in thick resist coatings:
  - Independent bake chamber temperature control
  - High Solvent Exhaust
- Bottom heater chuck for **up to 250 °C** with proximity pins
- Highest temperature uniformity
- Proximity pins programmable from 0 - 5000 µm in 100 µm steps
- Recipe programmable exhaust purge and purge cycle

33 2 **Bake Plate 250 °C**

- **With Programmable Proximity Pins**
- For dehydration bake process
- Consists of single hot plate for stacked design
- Heater chuck for **up to 250 °C** with proximity pins
- Temperature uniformity ± 0.5 °C at 100 °C
- Proximity pins programmable in 100 µm steps from 0 - 5000 µm
- Recipe programmable exhaust purge and purge cycle

Bond Module up to 200 mm

34 1 **Bond Module for up to 200 mm**

- Up to 350 °C and 10 kN (2250 lb_f) higher bond force option available
- Bottom chuck vacuum to hold substrates in place
- Loading pin units around bottom heater
- Standard bond chamber with top and bottom side heaters
- Three bar absolute pressure
- Separate connections for evacuation and vent
- Independent temperature controllers for top and bottom side heaters
- Electronic pressure regulator for controlled contact force
- **Rapid Cooling:**
  - For **bottom** side heater
  - For **top** side heater
    - For simultaneous top-bottom side cooling
    - Forced water cooling
    - Silent operation
    - Programmable cooling rate
    - Require closed-loop cooling water supply according to EVG specifications.

35 1 **Increased Piston Force up to 20 kN (4500 lb_f)**

- Closed loop piston force control system
- Fully integrated in software with graphical display

36 1 **Pressure Disk for 150/155 mm Wafer**

- Material: **titanium**
- Compliant layer set

37 1 **Vacuum Equipment with Roughing Pump:**

- Evacuation with roughing pump
  including connectors and valves for chamber
- Gas backfill time < 10 s from high vacuum to 1 bar
- Including vacuum gauge to display the chamber vacuum
- Wait command for pressure level
- One independent purge connection for process gas
- Oil-free roughing pump with a pumping capacity of 6.2 m³/ h
  ultimate chamber vacuum 0.1 mbar absolute
- Pump down time from ambient to 2 mbar absolute pressure < 60 s

38 1 **Bond Chuck for 150/155 mm wafers**

- For bonding processes up to 350 °C
- Allows wafer contact in vacuum and defined atmosphere with
  configured EVG bonding system
- Chuck with cut-outs for loading pins
- Vacuum grooves
- Chuck made of titanium

Mechanical Align Station up to 200 mm

39 1 **Mechanical Align Station**
- For substrate size up to 200 mm
- For centrically alignment of two (2) round substrates with the same or different diameter
- Fully automated mechanical alignment with positioning units referencing to the edge of the substrates
- Centric wafer-to-wafer alignment within. 50 µm (3 sigma)
- Complete computer control of all mechanical movements
- Automatic extraction of separation flags
- Automatic insertion of separation flags

40 1 **Pre-Bond Function Top**
- Recipe controlled pre-bonding for thermally curable bonding agents
- Elliminates the need for bond chucks
- Top side heater with temperature control for maximum 400 °C pre bond temperature
- Force adjustable
- Time controlled
- Electronics / software implementation

41 1 **Pre-Bond Function Bottom**
- Recipe controlled pre-bonding for thermally curable bonding agents
- Elliminates the need for bond chucks
- Heater with temperature control for maximum 400 °C pre bond temperature
- Time controlled
- Electronics / software implementation

42 1 **Bottom Chuck for 150/155 mm Substrates**
- Vacuum fixing of Wafer
- For up to 400 °C process temperature
- Lapped, hard coated surface
- Positioning pins for first loaded substrate
- For use with pre-bond option

43 **Empty Module Bays prepared for...**
1 Bond Module

44 1 **Chemistry Cabinet for up to Three (3) Chemicals**
- Housing with front door access
- Exhaust port
- Second containment and spill sensor
- For up to three pressurized SS tanks of 20 l / 5 gal volume.
- Degassing module for each chemistry line

45 3 **Tank Refill**
- Connection to cleanroom supply line
- Automated refill if warning level in tank is reached

46 3 **Pressurized Tank for Solvent**
- Stainless steel tank including level sensing system to be stored in external chemistry cabinet
- Valve for vent and pressurizing
- Including level sensing system for display in software
- Can be used for more than one module

Inline Metrology Module

47 1 **Metrology Module for Wafer Inspection**
- Tooled for wafer size as per chucks below
- Fully recipe controlled measurements
- Following measurement methods are available on request:
  Automated void inspection
  Automated thickness measurement
  Automated measurement of TTV
- Motorized top side sensor unit to adjust working distance
- Air bearing rotary stage

48 1 **Chuck for 155.6 mm Wafer**
- Edge handling chuck for 5 mm wafer exclusive zone
- Vacuum fixture recipe controlled

49 1 **Automated Thickness and TTV Measurement 4-300**
- Contactless measurement of IR transparent layer thickness, range 4-300 µm / refractive index
- Contactless measurement of adhesive thickness, range 3-200 µm
- Contactless measurement of si wafer thickness, range 1.2 - 85 µm
- Full wafer surface scan
- Number of detection points on wafer recipe controlled

50 1 **Automated Stack Thickness and TTV Measurement**
- 5 mm wafer edge exclusive zone
- Contactless measurement of stack thickness and TTV
- Number of detection points on wafer recipe controlled

51 1 **3D Data Output**
- 3D data available for selected measurement methods
- 3D plot of void detection
- 3D plot of stack thickness measument (device wafer / adhesive / carrier)
- 3D plot of TTV

52 1 **Language options for GUI and EVG User Manual (Automated System)**
- English

53 5 **Process Support**
- One day on-site support of qualified EVG process engineer or support in EVG's application lab
- Support to develop custom recipes for substrate processing or optimization of the baseline recipe provided with system
- Equipment related knowledge transfer on substrate processing for the specific application. For optimum performance of the system using the "best known recipe" for the application
- Process training
- The customer leads the process development efforts. Process consulting does not include any guarantee to reach results other than specified in acceptance criteria
- Materials (substrates, chemicals etc.) and travel costs not included
- Metrology equipment use as available in EVG's application lab and as provided by customer in case of on-site support

54 1 **Packing - EVG850TB**

No.	Description
1	EVG Upgrade: Upgrade for processing 6" Device Wafer - 90000190 Upgrade for processing 6" device wafer and 6" carrier wafer Tool will be able to handle 6" device and 6" carrier wafer List of included hardware: - Ergo loader - Wafer mapper - Wafer chuck inspection module SW changes included: - There will be two tooling profiles to choose in the SW - 6 inch and 6.125 inch - Configuration