Overview

COMPANY     SEMES CO., LTD.
FOUNDED     4th. January. 1993
LOCATION     Cheonan Industrial Complex, Chungnam, South Korea
PRODUCTS     Semiconductor Equipment
              Display / LED Equipment

History

2013    The three companies are consolidated into one. (SEMES, SECRON, GES)
2011    Announced the 8G Ink-jet Printing System, Z PRINTING
        Announced the MOCVD System for LED Manufacturing, EPILED
2010    Announced the Single Wafer Wet Cleaning/Etching System for High Temp.
        SPM process, BLUEICE SPM
        Announced the Plasma Radical Oxidation process equipment
        Announced AFC (Air Floating Coater) and Ink-jet Printing System
2009    Announced the Photo Track for immersion process, LOZIX-high
        Announced the PE-CVD system for solar cell
2008    Announced 300mm Photo Track LOZIX
2007    Announced and Delivered 200mm Single Wafer Wet Cleaning/Etching System (IRIS8)
        Announced and Delivered 300mm/200mm HDP-CVD
        Announced 300mm Dielectric Etcher
2006    Announced and Delivered 300mm Single Wafer Wet Cleaning/Etching System (IRIS12)
2005    Renamed KDNS to SEMES
2002    Announced SWP 3004
2001    Announced and Delivered 300mm Scrubber, Wet Station, Spinner
1998    Announced 300mm Wet Bench and 200mm Photo Track (K-WET300, K-SPN8)
        KDNS America established at Austin, Texas in U.S.A
1993    KDNS established as 1st semiconductor and FPD Equipment manufacturer in Korea
Service Networks

Product Overview

TOTAL SOLUTION

LED Equipment

Display Equipment

Continuous Equipment Improvement

Semiconductor Equipment
Ultra Clean Chamber Technology
• Chemical process and Rinse/Dry zone can be separated by NIC (New Isolation Clean) Bowl.
• EBP (Exhaust Buffer Plate) for reducing upper air vortex in process chamber.
• A separate ‘Final Rinse Nozzle’ for preventing contamination.
• Increase in Exhaust efficiency (17% ↑)
  (exhaust size enlargement and design optimization)

Equipment Easy System
• Minimizing flow variation and ‘AFC (Auto Flow Control) unit’ installation in each process chamber.
• There’s an ‘Automatic Damper’ in chamber exhaust line. It’s possible to automatic control according to changing exhaust rate.
• ‘In-line Mixing system’ materialization. It’s able to supply ‘fresh chemical’.

FEATURE
• 300mm single wafer process equipment of frontside SPM strip and a Wet batch replacement easily configured to match the customer requirement.
• Minimized Fab space usage with Dual stack layer design and optimized wafer handling scheduler.
• Multi-Recipe process by changing SPM ratio. (H2SO4 : H2O2)
• H2SO4 capacity reduction with the recycle system.

Dual Stack Chamber
• Implementation of a 2 story structure design to reduce footprint and improved chemical recycling to reduce overall C.o.O.
SEMES high speed transfer robot system and wafer handling scheduler increases production up to 370WPH

Equipment Easy System
• Multi process chamber unit with 2 chemical nozzles plus 3 optional nozzles for added versatility.
• Configurable Sonic, Aerosol, Backside, Bevel Etching, IPA etc.
  optional nozzle for < 45nm process.

FEATURE
• 300mm single wafer process equipment of front side and rear side organic strip and a Wet batch replacement easily configured to match the customer requirement.
• Minimized Fab space usage with Dual stack layer design and optimized wafer handling scheduler.
• Stability in various organic chemical usage.
• Minimized costs with recycle system and the most suitable chemical consumption.
High throughput with smallest footprint
• Rapid throughput of over 220 WPH with the optimum wafer path and the load dispersion system.
• Compact size with new concepted module design.

Stabilized environment control system
• Realize the most efficiency and reliability by whole process environment control system.
• Available to control the Temp. offset in detail with specialized Multi Zone Hot Plate.
• Upgraded detergent for minute pattern by control positioning of wafer with recipe control ability.

RAMs for C.o.O
(Re liability Availability Maintainability for Cost of Ownership)
• Archive the best efficiency by improved design.
• Maximized C.o.O by precision vent control for PR and other chemical with SDS/UV/ES DUVENCE SYSTEM.
• Enhanced MTBF by wide displacement and improved air current.

Improved function for Immersion process
• Maximized particle removing ability and CD Uniformity on back side of wafer by a specialized back side cleaning unit.

Process Performance
• 1x design rule critical etch as metal contact, 3D Nand & logic application
• Low particle clean process with VH/AL plasma
• wafer very edge etch control
• various profile control knobs
• CD control on individual wafer zone
• Industry highest etch rate/mask selectivity

Productivity / Hardware
• Easy Maintenance In-Line TM (Max 6 Chambers) and Cluster TM (Max 4 Chambers)
• Radial uniformity control HV: Gas, Temperature, RF
• Low C.o.O Long MTBF
• RF sync pulsing capability

High Throughput and Small Footprint
• The H-SOH 2story operation allows for faster transfer rates by the wafer carrier and maximized productivity Single Body Frame for minimal use of space.

RAMs for C.o.O
(Re liability Availability Maintainability for Cost of Ownership)
• Archive the best efficiency by improved design.
• Maximized C.o.O by precise dispense control
• Improve MTBF by high volume exhaust and air flow control

Ultra Hot bake plate (400°C)
• Precise temperature control realized during process by specialized Multi-Zone Hot Plate

LOZIX high

MICHELAN OX (Dielectric Etcher)

PRO (CVD)

SEMICONDUCTOR EQUIPMENT
PHOTO

PLASMA

SEMICONDUCTOR EQUIPMENT

SEMICONDUCTOR EQUIPMENT
**SEMHWALK** (Saw and Sorter)

**HIGH PERFORMANCE**
- Applicable PKG: FBGA, CSP, MCF, FLIP CHIP, QFN
- High productivity: Handler Speed 20,000ea, 35,000ea (Option)
- Productivity maximization for dual chuck cutting jig saw machine docking
- Realization speed / Productivity improvement by compound equipment for moving good tray
- Process: From dead bug (Ball up cut) to live bug
- Using high definition camera: Orientation, ball, mark, PKG align, side vision (Option)
- Tray placement rate: 100%
- RCFM function: Chip picker position compensation
- Easy conversion and maintenance

**TEST HANDLER** (STH-5600)

**Material handling capacity**
- BOC (Capable of EML PKG), MCF, TSOP, TBGA, LGA, WLB

**High productivity**: @ 1bin, 256p, 40,000UPH
- Double device Detect function
- The application of high speed multi pick & place (84 Picker)
- Realization of C-tray automation
- Temperature: -20°C ~ +125°C
- Vertical head docking system
- Interface with various testers
  (Advanced, Teradyne, Verigy, Yokogawa...)

**WINAS** (Probe Station)

**FEATURE**
- Contact accuracy: ± 1um (Advanced motion control technology)
- Improvement of loading accuracy
  (Wafer change & align time reduction)
- Stiffness Z axis: 420Kgf
- The application of auto leveling, securing the stability of contact (10um)
- User friendly (SACC): Side semi auto card change function

**SDB-1000M** (Die bonder)

**FEATURE**
- Cycle time: 320ms
- Bonding X, Y accuracy: ± 25um
- Applicable PKG: MCF, PBGA, FBGA, QFP, TISDP...
- Applicable chip size: Min. 0.8x0.8 size ~ 25x25 (USER SPEC)
- Bonding method: DAF Tape, Epoxy
- Rotation: ± 0.5°
- Bond force: 50 ~ 5000g
- Force control: Air method (50g ~ 3Kgf ±5%)
- System dimension: 1850(W)x1450(D)x1600(H)

**IP-300H** (Probe Station)

**FEATURE**
- Applicable for wafer size: 8 Inch ~ 12 Inch
- The Application of precise linear motor
- The realization of control for contact accuracy (±1um)
- Loading accuracy & wafer change & align time reduction
- Realization of high speed index
- The Application of high pin force, stiffness Z-axis (250Kgf)
- The Application of auto leveling, securing the stability of contact (10um)
- User friendly (IP Net, Net work function)
**DISPLAY EQUIPMENT**

### Z PRINTING (Ink-jet Printing System)

**Various Applications**
- Various Display Capabilities: LCD/OLED

**Outstanding Advantage**
- Easy Maintainable Head Assembly
- Highly Accurate Temperature Control System: ± 0.1℃
- Integrated MPC (Meniscus Pressure Control): Smaller size & higher control accuracy
- Low C.a.O (Minimizing Ink Consumption/Easy Maintenance)

**High Performance**
- Optimized Meniscus Pressure Control / Target Uniformity: ≤ ±1% Pa
- Drop Volume Uniformity: ≤ 0.3~3%
- Drop Position Accuracy: ± 25~50㎛

### Inline Etcher/Stripper Cleaner

**Various Applications**
- For 1~8 Generation model development / mass production
- U & I Type line (Slope/Horizon/DIP)
- Dealing with various displays: LCD/OLED/FLEXIBLE

**Outstanding Advantage**
- Chemical Fume, Particle free (Magnetic Type Transfer Mechanism)
- Improvement of C.a.O (Cascade System, The slope and transmission system of the self-return system has been optimized for panel transport)

**High Performance**
- Etch Rate Uniformity: ≤ 5%}
- CD Bias Uniformity: ≤ 0.5㎛
- Tact Time: 40sec. (HW: 35sec)

### Coater Full Line

**Coater Full Line System**
- Cleaner + Coater + VCD + Bake + Developer
- Coater Full Line Operation Technology
- Minimizing footprint

**Outstanding Advantage**
- Linear Coater/Filter Floating Coater
- Micro Bubble Free
- User Friendly GUI

**High Performance**
- Uniformity: ≤ 1.0% / 15mm
- Reproducibility: ≤ 300 Å
- Recycling System for Low C.a.O

### Cleaner

**Various Applications**
- 1~8 Generation model development / mass production
- One/Two Way (Slope/Horizon/DIP)
- Various Display Capabilities: LCD/OLED/FLEXIBLE

**Outstanding Advantage**
- Free of Chemical Fumes, and Particles (Magnetic Transfer Mechanism)
- Better cleaning performance by integration of CVD/Sputter

**High Performance**
- Over Particles: 1㎛, 60ea (Residual)
- Tact Time: 40sec. (HW: 35sec)
**EPILED** (Large Scale MOCVD System)

**Strategy**
- Lower Cost of ownership by increasing Capacity & wafer size (up to 8 inches) and improving uniformity (Within Wafer and W2W)
- Enable Wide growth windows with novel reactor design (Gas distribution, Exhaust etc.)

**Approach**
- Adopt the largest chamber (8"x7 wafers)
- with Horizontal type Reactor
- Use Specialized “Cooling Gas Injection module” to increase uniform region up to 8inch wafer and to enable wide growth windows with a variety of growth conditions.
- Use appropriate design of the exhaust line and the pump capacity for very high flow rate

**High Performance**
- Capacity: 6"x10 wafers, 8"x7 wafers
- Max Temp.: up to 1250℃
- Process Gas Flow: Total Flow Rate ~ 350 slm

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**Phosphor auto mixer**

**Features**
- High accuracy: ±0.3mg (Phosphor), ±0.5mg (Silicon)
- High productivity: Cycle time aver. 180 Sec
- No. of phosphor: Max. 8 Kinds
- Barcode auto labeling available
- Mixing cup + Syringes available
- Auto rework function
- Cost saver: Phosphor, Silicon, Manpower, Area

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**SDB-1000L PLUS** (Die Bonder)

**Features**
- Multiple function: Epoxy, Eutectic, MCP, Flip chip
- High productivity: UPH 18,000ea
- Placement Accuracy XY direction: ±25㎛, Ø8mm
- ±15㎛, Ø8mm (with undervision)
- Theta rotation: ±1°, Ø8mm
- Flexible width adjustment: 25~105mm
- Wafer handling area: Max. 8 inch
- One disc & Two head stamp system
- Wafer auto change system (Option)
- XY2 Linear attach head system
- Tool change one-touch change: stamp pin, collets
- XY multi working (dotting, bonding)
- Missing & wrong chip Rework function
- Pre & post inspection
- Multi Chip Imagine coordinate & Display & Position Auto compensation
- Powerful communications: SECS/GEM, RFID, MES PC, ETC.
- High efficiency IN-LINE function

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**STH-2000L** (Test handler)

**Features**
- High productivity: Cycle time 0.8sec / High power 20X20)
- Various PKG (High power 10X10 ~ 30~30)
- Simple device conversion
Total solution provider as one