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Corwet

The Corwet Single Wafer Cleaners are stand-alone tools with horizontal wafer processing for 2" up to 300mm wafers featuring simultaneous treatment of top and bottom side of wafers.

Corwet® 300 – for 200mm & 300mm wafers
Corwet® 200 - for 100mm, 150mm & 200mm wafers
Corwet® 100 - for 2", 3" & 100mm wafers

Applications

- Post-CMP Wafer Clean
- Backside and Bevel Clean
- Prime Wafer Clean
- Glass Clean
- Post Etch Wafer Clean
- Wafer Level Packaging Clean
- Pre-diffusion Wafer Clean
- Pre-Bond Wafer Clean
- Reclaim Wafer Clean
- Post Deposition Wafer Clean
- Post Ash Wafer Clean

Systems available for

- Automatic wafer handling
- Manual wafer handling
- Integration into cluster tools

Tool Concept

The Corwet® systems are state-of-the-art wafer cleaners for designed for future requirements of advanced sub-micron technology in IC fabrication. The systems can operate with all different techniques used in wafer cleaning, such as

- Double-sided brush cleaning
- Megasonic cleaning
- Patented Jet-Steam cleaning
- High pressure cleaning
- Chemical supported cleaning
- spin drying w. IPA/N2 support

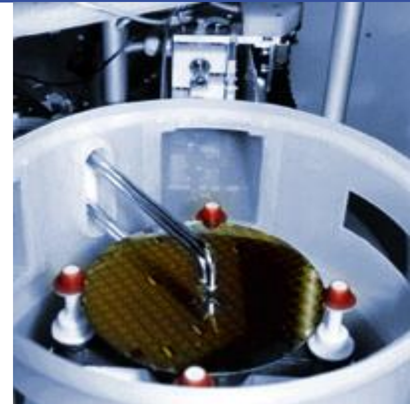
All the different processes can be performed in one process chamber featuring separation of the cleaning and drying process, thus preventing cross contamination.

A patented spin chuck assembly with integrated wafer rotation system allows simultaneous front- and backside processing of the wafers with all different cleaning techniques to be used simultaneously or in sequence.

Two independent robots or one robot with dual end-effector are available for cassette-to-cassette operation with separate sender and receiver stations, i.e. wet or dry sender station with standard open cassettes, SMIF pots and FOUP. The robots also can transfer the wafers between adjacent processors for other applications.

A high degree in process flexibility together with computer supported parameter optimization guarantee continuously excellent process results with highest yield. Together with a small footprint and low media consumption, as well as with an outstanding reliability, the Corwet cleaners ensure lowest cost of ownership.

Multi-Position Process Chamber



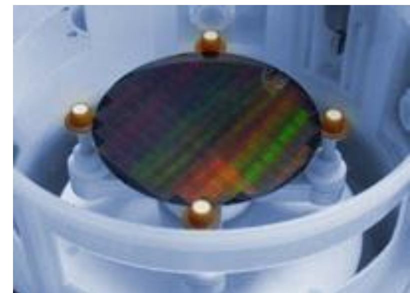
The process chamber has been specially designed for cleaning the wafers with all the available techniques. To prevent any cross-contamination, the wafers can be processed in programmable height levels of the chamber, i.e.

- Pre-cleaning and final cleaning in the lower section
- Drying in the upper section

For loading and unloading of the wafers the chamber is moved into a transfer position assuring safe and accurate positioning of the wafers. Aerodynamic design of the process chamber provides smooth laminar air flow avoiding any air turbulence and back-slashes, resulting in excellent process results.

Anti-static material is used throughout the process chamber to prevent ion charging. The process chamber is made of polypropylene and is compatible with all different cleaning processes including chemical supported cleaning such as ammonium hydroxide or citric and oxalic acids. The unique multi-position process chamber accommodates all the different cleaning systems to be used simultaneously or in sequence. All the different methods can be used for front- and backside cleaning of the wafers.

Dual Rotation Spin Chuck Assembly



A patented chuck system with integrated wafer rotation allows simultaneous cleaning of front- and backside of wafers with different process parameters and various cleaning methods. This unique chuck design features the following advantages

For cleaning, the chuck assembly is fixed and the wafer is driven by 4 rotating wheels (or 6 for wafers with flats) holding the wafer on the edge. This unique design allows simultaneous use of brushes and all the other cleaning methods for front- and backside cleaning.

For spin drying, the complete wafer chuck assembly is rotating. In addition, the wafer can be rotated independently driven by the rotating wheels, thus preventing possible drying spots on the wafer edges.

This unique chuck design provides a high degree in process flexibility and allows the use of all the different techniques for front-and backside cleaning of the wafer achieving best process results.

Low speed rotation during cleaning and a very gentle holding of the wafer on the rotating wheels by gravity only, prevent any stress and damage to the wafer even during spin drying at high spin speed.

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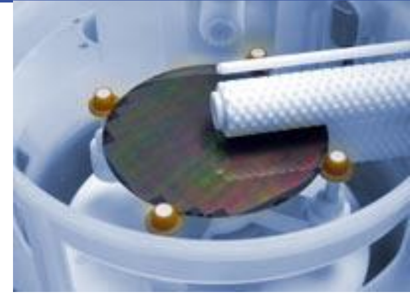
Brush Cleaning



Double-sided brush cleaning with additive chemicals has been established as the standard process for post CMP cleaning or post polish cleaning. Therefore, a new brush cleaning module has been developed featuring the following advantages

- Simultaneous cleaning of front- and backside with independent programmable parameter settings for each brush
- Two separate double-sided brush systems to be used in sequence for pre- and final cleaning in the same process chamber
- Extreme long lifetime of the brushes guaranteed by bringing DI water or ammonia through the brush core in conjunction with a uniform dispensing of the media on the wafer
- Each brushes is directly driven by a separate stepper motor allowing different directions and speed for front and backside cleaning
- Horizontal brush oscillation providing optimum cleaning across the wafer
- Electronically set-up and controlled brush pressure regulation guarantees highly reproducible process conditions
- High grade plastic materials and titanium are used which are resistant to chemicals such as ammonium hydroxide and citric and oxalic acid thus minimizing any metal-ion contamination

High Pressure Cleaning

High pressure cleaning is extremely effective in particle removal around small features, including trench cleaning. DI- water or aqueous chemistry can be used for non-contact cleaning or solvent spray for stripping.

- Simultaneous high pressure cleaning of top- and backside also for thinner wafers
- Fan spray nozzles or solid stream nozzles mounted on a stepper motor controlled dispense arm
- A high pressure pump provides controlled media up to 200 bar
- An efficient CO_2 re-ionization unit is used for elimination of electrostatic discharge
- Point-of-use heaters with controlled temperature up to the boiling point of aqueous solutions or up to the flash point of the chemistries are available

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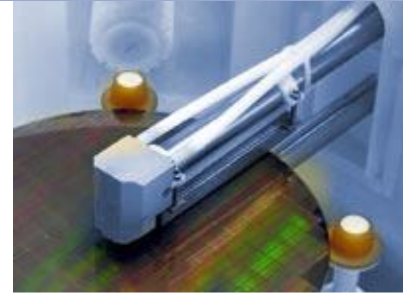
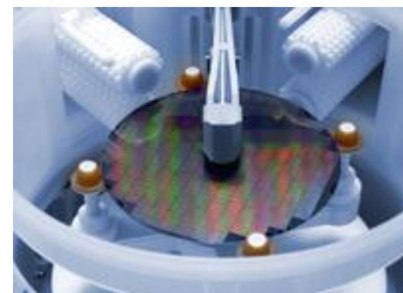
Megasonic Cleaning



A new megasonic bar transducer has been developed for non-contact single wafer cleaning technique used for post-CMP, post-polish, and other cleaning applications. This high frequency 1 MHz megasonic transducer guarantees an efficient cleaning of most sensitive surfaces from particle of sizes down to 0.1µm.

- The transducer dimensions guarantee a highly efficient transfer of the megasonic power to the surface of the wafer providing a broad area coverage for a fast and thorough cleaning
- The unique chuck design allows simultaneous cleaning of top and bottom side megasonic cleaning of the wafer
- During the process different cleaning chemicals, e.g. ammonium hydroxide, citric or oxalic acid can be dispensed to support the cleaning process
- The used materials are compatible with all common cleaning chemicals

Jet-Steam Cleaning



Jet-Steam cleaning is a patented non-contact single wafer cleaning technique for post-CMP, post-polish etc

Super-heated steam is directed onto the wafer surface which is continuously covered by a thin layer of DI-water. The steam bubbles implode within the DI-water film, and as a consequence of the volume reduction of 1400:1 from the gaseous phase to the liquid phase non-contact energy is released. This condensation energy removes the particles and debris from the wafer surface very effective. The pressure of the incoming steam further supports the removal of the loosened particles which are then transported to the edges and off the wafer by the centrifugal forces of the wafer rotation. This Jet-Steam cleaning technique has the following advantages:

- Non-contact cleaning without any stress on the wafer
- High cleaning efficiency for all types of particles and debris
- No use of expensive brushes or other consumables required
- No chemicals used, only DI-water required
- Environmentally friendly

The required steam for the Jet-Steam cleaning is produced by a special designed steam generator. The steam generator SG102 T pays particular attention to all process-related aspects such as low particle density, low ion contamination, as well as to various safety related regulations of the industry. This allows the Jet-Steam process module operating with excellent cleaning performance and highest MTBF under the most stringent safety requirements of the industry.

The Jet-Steam Generator SG 102 T is a self-contained module, that may be placed as a stand-alone unit aside the tool or separate in an adjacent area. The Jet-Steam process module together with the steam generator is also available as OEM product.

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