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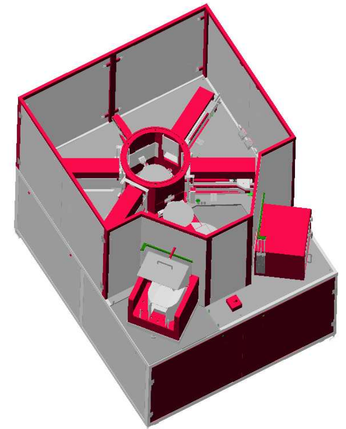
Corwet

Corwet Single Wafer Cleaner - horizontal wafer processing for 2" up to 300mm wafers featuring simultaneous cleaning of wafer front and back side



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

Applications

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

Tool Concept

The Corwet is a state-of-the-art wafer cleaner designed for highest flexibility in operation at low cost of ownership. It combines small footprint with all available techniques used in wafer cleaning, such as

- Double-sided brush cleaning
- Megasonic cleaning
- High pressure cleaning
- Chemical supported cleaning
- Spin drying with op. IR support
- Clean room class-1 compatible

All 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.

The Corwet system features a handling robot with dual end-effector for fully-automatic cassette-to-cassette operation with separate sender and receiver stations, i.e. wet or dry sender station with standard open cassettes. The robot may also be used to transfer the wafers between adjacent processors for other applications.

A high degree in process flexibility combined with a wide range of recipe parameters 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.

Systems available for

- Automatic wafer handling
- Manual wafer handling
- Integration into cluster tools
- Substrate sizes from 2" up to 300mm
- Silicon, Tungsten, Sapphire, GaAs and various other materials

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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.

- 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 the different cleaning systems to be used simultaneously or in sequence. All 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 rotating wheels holding the wafer on the edge. This unique design allows simultaneous use of brushes and also non-contact cleaning methods for front- and backside cleaning with the wafer rotating during process.

- 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.

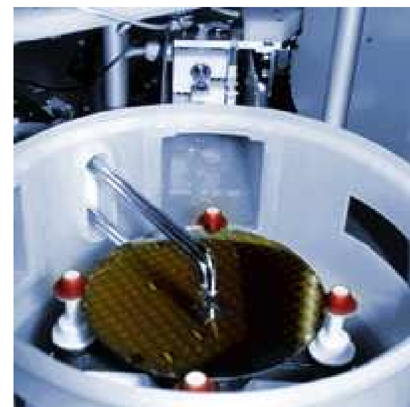
- Low speed rotation during cleaning and a very gentle holding of the wafer on the rotating wheels prevent stress and damage to the wafer even during spin drying at high spin speeds.

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
- Maximized lifetime of the brushes guaranteed by bringing DI water or ammonia through the brush core in conjunction with a uniform dispensing of process media on the wafer surface
- Each brush unit is driven by a separate stepper motor, the recipe generator allows different directions and speeds for pre- and final cleaning
- Horizontal brush oscillation providing optimized 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 to avoid 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 thin wafers
- Fan spray nozzles or solid stream nozzles mounted on a stepper motor controlled dispense arm
- A high pressure pump provides controlled media pressure up to 200 bar
- A 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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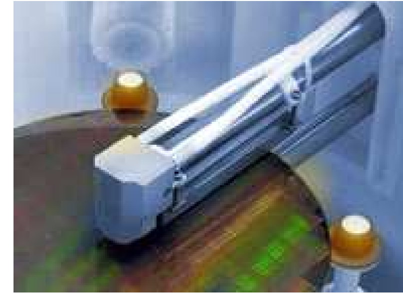
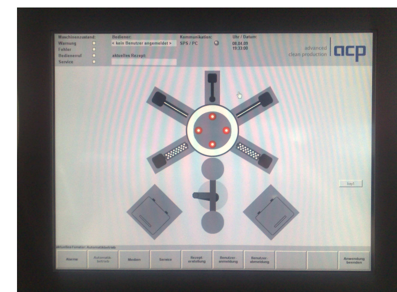
Megasonic Cleaning



Megasonic nozzle and bar transducer systems for non-contact single wafer cleaning 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.

- Different megasonic frequencies from 1to 3 MHz and combinations of different frequencies available to ensure an efficient cleaning of most sensitive surfaces from particle of sizes down to 0.1µm and smaller
- highly efficient transfer of the megasonic power to wafer surface providing a broad area coverage for a fast and effective cleaning
- The unique chuck design allows simultaneous cleaning of top and bottom side megasonic cleaning of the wafer
- During megasonic process different cleaning chemicals, e.g. ammonium hydroxide, citric or oxalic acid can be dispensed to support the cleaning process

Graphical User Interface



The Corwet features a touch-screen operated graphical user interface for controlling and monitoring all tool functions and parameters.

- 15" touch-screen operator panel with integrated controller hardware mounted on swivel mount arm for convenient operation
- Soft-plc based tool operation with high-resolution graphical user interface meeting highest industry standards in usability, reliability and tool control
- recipe generator allows for creating and storing up to 9999 process recipes with up to 20 process steps each
- different operator levels (Operator, Service, Engineer) with different access levels to tool functions
- message and error logging
- optional recipe export and import and process log export functions for external use of process data and remote recipe editing

acp - advanced clean production GmbH

Tel +49 - (0)7041 9600 - 0
Fax +49 - (0)7041 9600 – 27

mail@acp-micron.com
www.acp-micron.com