# Company Introduction and Main Products

# ALLLWIN21 CORP.

## Allwin21 Overview

***Allwin21 Corp.*** is the exclusive licensed manufacturer of **AG Associates Heatpulse 610** Rapid Thermal Process tool. We are manufacturing the new AccuThermo AW Series Atmospheric and Vacuum Rapid Thermal Processors. Compared with traditional RTP systems, Allwin21's AccuThermo AW RTPs have innovative software and more advanced real time temperature control technologies to achieve the BEST rapid thermal processing performance (repeatability, uniformity, and stability) with decades of research directly applicable to ours.

We focus on extending product lifecycle, providing solutions, and engineering enhancements to many production proven semiconductor process equipment most directly related to III-V processing. These semiconductor equipment have been used in production and R&D since the 1990's. They have proven processes and research. Allwin21 Corp. can customize these systems with Allwin21's comparable integrated process control system with PC, solid robotic wafer transfer system, and new critical components. This is to achieve the goal of giving our customers a production edge, with right cost, and without having to worry about obsolete parts.

Allwin21 Corp. was formed in 2000 with a focus on professionally providing **Rapid Thermal Process**, **Plasma Asher Strip / Descum**, **Plasma Etch/RIE**, **Sputter Deposition** and **Metal Film Metrology** high-tech semiconductor equipment, services and technical support in Semiconductor III-V, MEMS, Biomedical, Nanotechnology, Solar, Battery & LED industries. We endeavor to be a leader in our product lines. To achieve this, we have been providing unique innovative and cost-effective technical solutions, high quality equipment, and on time spare parts delivery worldwide. We have maintained a global presence that has grown and expanded into the major high-tech manufacturing areas of the world. We pride ourselves on developing and continuing lasting customer relationships.

We understand that a timely responsive support and service are critical elements in semiconductor industries. Allwin21's experienced engineer team is the best guarantee for high quality service and support. We provide on-site installation, training, maintenance, system optimization, retrofits, and/or customized upgrades

## What sets us apart from the competition...

1) Exclusive licensed manufacturer of Heatpulse 610 of AG Associates.
2) Advanced Allwin21 Real Time PC Control Technology.
3) Focus on Production-Proven process technology.
4) Integrated 3-axis solid robotic wafer transfer technology.
5) Experienced local engineer support.
6) Products made in U.S.A

1) **Rapid Thermal Process**
   - **AccuThermo AW 610M**
   - AccuThermo AW 820M
   - AccuThermo AW 820V
   - **AccuThermo AW820R**

2) **Sputter Deposition**
   - **AccuSputter AW 4450**

3) **Plasma Asher Descum**
   - **AW-105R**
   - AW-1008
   - AW-B3000

4) **Plasma Etch/RIE**
   - AW-901eR
   - AW-903eR
   - AW-2001R

5) **Upgraded Kit for:**
   - Heatpulse® 210,310,410,610
   - Matrix® X0X
   - Tegal® 90Xe
   - Gasonics® Aura 1000/2000LL/3000/3010
   - Gasonics® AE 2001/2000LL
   - Gasonics® L3510/L3500
   - Perkin-Elmer 24XX,4XXX Sputter
   - MRC 6XX, 9XX Sputer
   - TES 6XX,9XX Sputter
   - Branson/IPC® 3000/2000/4000
   - Lam AutoEtch® 490/590/69
   - Lam Rainbow® 4XXX Series

6) **Sheet Resistance Measurement**
   - AWgage-150
   - AWgage-200

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# Plasma Etcher/RIE

# ALLWIN21 CORP.

## Introduction

Allwin21 Corp. has been focusing on providing solutions and enhancements to plasma Etch RIE semiconductor process equipment. These OEM Etch RIE semiconductor equipment have been used in productions and R&D since 1990's. They have been Process-Proven. Allwin21 Corp. can customize these OEM systems with Allwin21's comparable integrated process control system with PC, solid 3-axis robotic wafer transfer system, and new critical components to achieve the goal of giving our customers a production edge.

## Plasma Etcher/RIE Key Features

- Production-proven plasma etching system.
- Frontside and backside isotropic and anisotropic etch.
- 75mm-150mm wafer capability.
- Integrated solid robotic wafer handling. Single wafer process. Fixed
- Cassette station and wafer aligner/cooling station.
- Can handle 50um thickness wafer.
- PC controller with Advanced Allwin21 Software.
- Up to 4 gas lines with MFC's.
- Touch screen GUI.
- EMO, Interlocks, and Watchdog function.
- GEM/SECS II (Optional)
- Small Footprint
- Made in U.S.A.

*Production-proven Reactor*

## Applications

- Polysilicon Etch
- Nitride Etch
- Silicon Nitride Etch
- Silicides Etch
- Silicon Dioxide Etch
- Polyimide Etch
- Polyimide ILD Etch
- LDD Spacer Etch
- BCB Etch
- Zero Layer Etch
- Backside Etch
- Pad Etch
- Passivation Etch
- Oxide/Contact/Via Etch (Down to 0.8um)
- Titanium/Tantalum Alloy
- Resist/SOG Planarization
- Descum

AW-901eR AW 903eR

AW-2001R

| Models | Plasma Power | Wafer Size | Etch Material | Process Type |
|---|---|---|---|---|
| AW- 901eR | 13.56Mhz RF | 3",4",5"6" | Poly Si, Nitride | Single wafer |
| AW-903eR | 13.56Mhz RF | 3",4",5"6" | Oxide | Single wafer |
| AW-901eR TTW | 13.56Mhz RF | 3",4",5"6" | Poly Si, Nitride | Single wafer |
| AW-903e TTW | 13.56Mhz RF | 3",4",5"6" | Oxide | Single wafer |
| AW-2001R* | 2.45GHz Microwave | 3",4",5"6" | Poly Si, Nitride, Oxide | Single wafer |

## Plasma Etcher/RIE Software Key Features

- Real time graphics display, process data acquisition, and analysis.
- Closed-loop process parameters control.
- Precise parameters profiles tailored to suit specific process requirements.
- Programmable comprehensive calibration of all subsystems from within the software. This allows faster, easier calibration, leading to enhanced process results.
- Recipe creation to ensure process repeatability. It features a recipe editor to create and edit recipes to fully automate the processing of wafers inside the process chamber.
- Validation of the recipe so improper control sequences will be revealed.
- Storage of multiple recipes, process data, and calibration files so that process & calibration results can be maintained or compared over time.
- Passwords provide security for the system, recipe editing, diagnostics, calibration, and setup functions.
- Simple and easy to use menu screen which allow a process cycle to be easily defined and executed.
- Troubleshooting features which allows engineers and service personnel to activate individual subassemblies and functions. More I/O and AD/DA "exposure".
- DB-25F parallel (printer) port. The computer interfaces to the Allwin21 system with only one cable: the control interface cable.
- The control board inside the machine that translates the computer commands to control the machine has a watchdog timer. If this board loses communication with the control software, it will shut down all processes and halt the system until communication is restored.
- GEM/SECS II function (Optional).
- Advanced Allwin21 End of Process (EOP) function (Optional)

## Typical Processes

| AW-901eR | | |
|---|---|---|
| Material Etched | Polysilicon | Nitride |
| Main Etchant Gas(es): | SF6, O2 | SF6,O2 |
| Other Gases | CHClF2 | None |
| Typical Process Pressure mTorr | 200-450 | 250-350 |
| Typical RF Power Level, Watts | 100-250 | 200-300 |
| Typical Temperature | 30° C | 30° C |

| AW- 903eR | |
|---|---|
| Material Etched | Oxide, SOG, PECVD Nitride (topside) |
| Main Etchant Gas(es): | CHF3, SF6, Helium |
| Other Gases | None |
| Typical Process Pressure | 1600-3000 mTorr |
| Typical RF Power Level | 400-600 watts |
| Typical Temperature | 23° C |

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# Plasma Etcher/RIE

## ALLWIN21 CORP.

**RFQ for Fast Free Quotation**

# AW-901eR & AW-903eR

## Introduction

The AW-901eR & AW-903eR single-wafer dry etchers are automated tools designed as a flexible 13.56MHz RF Parallel Plate plasma etching systems for high-volume wafer fabrication. AW-901eR & AW-903eR are in direct response to manufacturer's concerns for wafer breakage, Uniformity, Uptime, Reliability, and Production-Proven technology.

## AW-901eR, AW-903eR Specifications

- Up to 6 inch Capability
- Throughput: 30-60 WPH, Process Dependent
- Temperature: 6-65ºC (±2 ºC) capability
- Gas Lines: 4 gas lines with MFCs.
- Etcher Rate: AW-901eR: 0-8000A/minute; AW-903eR: 0-4000A/minute, Process Dependent
- Uniformity: Up to ±3%, Process Dependent
- Particulate: <0.05 /cm2 (0.3um or greater)
- Selectivity: 901eR: 2-20:1 ; Dependent AW-903eR: 2-20:1, Process
- MTBF/MTTA/MTTR: 450 Hours/100 Hours/3.5 Hours or Better. 95%uptime

## Options

- EOP Module with PCB
- GEM/SECS II function (Software)
- Lamp tower alarm with buzzer
- Throttle Valve Pressure Control
- Vacuum Pump
- Chiller for chuck and chamber
- Through The Wall

## AW-901eR, AW-903eR Configuration

- Main Frame, Standard
- Pentium Class PC with AW Software
- Keyboard, Mouse, USB with SW backup, and Cab
- Chuck ① 3"; ② 4"; ③ 5"; ④ 6"
- Wafer Aligner/Cooling Station
- 3-Axis Integrated Solid Robot
- ① H-Zero (Standard); ② H1-7X10.5 (TTW)
  Fixed Cassette Station
- Chuck Assembly
  ① 901eR Non-anodized; ② 903eR Anodized /W Flat
  ③ 903eR Anodized /wo Flat ④ 903eR Non-anodized /W Flat
- Reactor Assembly
  ① 901eR Non-anodized; ② 903eR Anodized
  ③ 903eR Non-anodized; ④ 903eR High Performance
  ⑤ Direct Cooling; ⑥ Non-Direct Cooling
- Pins
  ④ Quartz; ② Ceramic; ③ SST
- Centering Ring
  ① Aluminum; ② Quartz; ③ Ceramic
- Main Control Board
- Gas Box /w 4 inline Gas Lines, MFC, filters, and valves
- RF Matching Network with PCB
- 13.56 MHz RF Generator (Air or Water Cooled)
  ① MKS Elite:300HD; ② MKS Elite:600HD
  ② MKS Elite:1000HD; ④ ENI ACG 3; ⑤ ENI ACG 10
- AC/DC Box
- ATM Sensor

*H-Zero*

*H1-7*

- UPC Pressure Control
  ① 225 SCCM,901eR; ② 2000 SCCM, 903eR
- MKS Baratron with Pneumatic Isolation Valve
- Main Vacuum Valves
- Front EMO, Interlocks
- 15-inch Touch Screen or 17 inch LCD,GUI

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# Plasma Etcher

## ALLLWIN21 CORP.

# AW-2001R

**RFQ for Fast Free Quotation**

**2.45GHz Microwave Plasma Etch for low plasma damage**

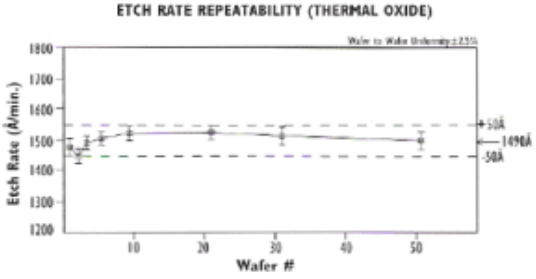
## Introduction

The AW-2001R single-wafer Etcher is an automated tool designed as a flexible downstream Microwave system for high-volume wafer fabrication. AW-2001R is in direct response to manufacturer's concerns for wafer damage, uniformity, uptime, reliability and production-proven technology.

## AW-2001R Specifications*

- Wafer Size: 2, 3, 4, 5, 6 inch Capability.
- Chuck Temperature: 60-110ºC (±2 ºC)
- Gases: NF3 CF4 HE O2
- Uniformity:
  - 100mm : ± 3% (5% 3 sigma) *
  - 150mm : ± 5% (8% 3 sigma) *
  - *max.- min. /2 x average
- Reproducibility (w-t-w): 10% 3 sigma
- Particulate: 0.05p/cm2 > 0.3µm
- NO DAMAGE: ≤0.1 Volt CV-shift

* Contact Allwin21 sales for other applications and specifications




## AW-2001R Configuration

- Main Frame with Breakers, Relays and Wires
- Pentium Class PC with AW Software
- Keyboard, Mouse, USS with SW backup and Cables
- Fixed Cassette Stations:
  1) 1 Two Cassette Stations, or
  2) One Cassette Station / One Centering/Alignment Station
- Door Assembly
- Metal Shower head
- "Extended' Alumina Plasma Tube for better Uniformity.
- Orifice, Gas Cap
- Chamber Body and Top Plate
- Main Control , Distributor PCB and DC
- H1 -7X10.5 Integrated 3-Axls Solid Robot
- Water-Cooled Magnetron and Waveguide
- Water-Cooled 1000W Magnetron/Waveguide with an AGL 2.45GHz Microwave Power Generator
- 4 Isolated Gas Lines with Pneumatic Valves and MFC
- AC Box
- Main & Slow Vacuum Valves
- MKS Baratron
- Throttle Valve
- Front EMO, Interlocks
- 15-rnch Touch Screen GUI

*Integrated Robust Solid Robot*

## Options

- GEM/SECS II function (Software)
- Light Tower
- *Vacuum Pump*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# Plasma **Etch**er

## ALLLWIN21 CORP.


# AW-**303R**

**RFQ for Fast Free Quotation**

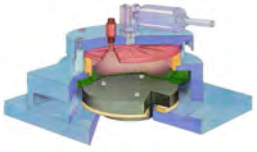
## Introduction

The AW-303R is an electromechanical production system used to etch materials such as nitride, oxide, polysilicon,etc. from the surface of silicon or other substrates. Each wafer is processed individually by means of a chemical reaction induced by a gas plasma.The AW-303R is an automated single wafer tool designed as a flexible 13.56MHz RF downstream plasma etch system for high-volume wafer fabrication. The AW-303R is in direct response to manufacturer's concerns for wafer uniformity, uptime, reliability and production-proven technology.

## AW-**303**R Key Features

- Production-proven plasma etcher system. Integrated solid robotic wafer handling, Single wafer process. High selectivity to PR(> 10: 1 Oxi.de:PR)
- Frontside and backside isotropic removal.
- Consistent wafer-to-wafer process cycle repeatability.
- Temperature control from 20 to 120°C.
- 50mm-150mm wafer capability. Up to 6.25" substrate.
- Up to 4 wafer size capability without hardware change.
- Fixed cassette station and wafer aligner/cooling station.
- Can handle 50um thickness wafer.
- PC controller with Advanced Allwin21 Software.
- Up to 4 gas lines with MFC.
- Air-Cooled 600W MKS 13.56 MHz RF Generator (300W Option).
- Pressure control with Throttle Valve.
- 15-inch Touch screen monitor GUI.
- EMO, Interlocks, and Watchdog function.
- GEM/SECS II (optional).
- Small Footprint: 27"W x 40"D x 59"H (280LBs)
- Made in U.S.A.

*Integrated Robust Solid Robot*



*Production-proven Reactor*

## AW-**303R** Applications

- Isotropic Oxide Etch for Contacts and Vias
- Silicon ARC Removal
- Passivation Etch Oxynitride
- Passivation Etch Nitride
- Backside Poly Etch
- Backside Nitride Etch
- LPCVD Nitride Etch (LOCOS)
- ASM Alignment Mark Etch
- SiChrome Etch

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# Plasma Ether

# ALLWIN21 CORP.

## AW-303R Software Key Features

- Real time graphics display, process data acquisition, and analysis.
- Closed-loop process parameters control.
- Precise parameters profiles tailored to suit specific process requirements.
- Programmable comprehensive calibration of all subsystems from within the software. This allows faster, easier calibration, leading to enhanced process results.
- Recipe creation to ensure process repeatability. It features a recipe editor to create and edit recipes to fully automate the processing of wafers inside the process chamber.
- Validation of the recipe so improper control sequences will be revealed.
- Storage of multiple recipes, process data, and calibration files so that process & calibration results can be maintained or compared over time.
- Passwords provide security for the system, recipe editing, diagnostics, calibration, and setup functions.
- Simple and easy to use menu screen which allow a process cycle to be easily defined and executed.
- Troubleshooting features which allows engineers and service personnel to activate individual subassemblies and functions. More I/O and AD/DA "exposure".
- DB-25F parallel (printer) port. The computer interfaces to the Allwin21 system with only one cable: the control interface cable.
- The control board inside the machine that translates the computer commands to control the machine has a watchdog timer. If this board loses communication with the control software, it will shut down all processes and halt the system until communication is restored.
- GEM/SECS II function (Optional).

## AW-303R Configuration

- Main Frame with Circuit Breakers, Solenoid Valves
- Pentium Class PC with AW Software
- Keyboard, Mouse, USB SW backup, and Cables
- Chuck /w Heat, Pump Ring ,Lift Pins
  ① 2-4 inch; ② 2-6 inch; ③ 4-6 inch; ④ 6.125 inch; ⑤ 6.25 inch
- Center Aligner and Cassette Station
  ① Two Dimensions ② Four Dimensions
- Non-Anodized Reactor with Door
- Chamber Base plate with water sensor
- Reactor Ceramic Ring
- Metal buffles
- Upper Electrodes
- Metal showerhead & Diffusion Disk
- Main Control and Distribution PCBs
- 3-axis Integrated Robust Solid Robot RF
- Matching Network with PCBs
- 13.56MHz RF Generator
  ① 300W ② 600W
- MFC /w In-line Filter and Solenoid Isolation Valve
  ① One MFC; ② Two MFCs; ③ Three MFCs; ④ Four MFCs
- AC/DC Box and Temperature Controller
- MKS Baratron with Isolation Valve
- Lamp Tower Alarm w/ Buzzer
- Throttle Valve
- Main Vacuum Valve
- Front EMO, Interlocks
- 15-inch Touch Screen GUI


*Main Menu Screen*

**Options:**

- GEM/SECS II (Software)
- Vacuum Pump
- Chiller for Chamber Base Plate

## AW-303R Specifications*

- Wafer Size: Up to 6.25 inch.
- Temperature: 20-120ºC (±2ºC)
- Gas Lines: Up to four gas lines with MFCs.
- >2000 A/min. Thermo Oxide,>16000A/min.LPCVD Nitride
- Uniformity: <±3~5%
- Particulate: <0.15 /cm2 (0.3um or greater)
- Damage: CV:<0.1V from control; Mobile Ion:<1-2 E10 ; Vt :0% total shift on 98% of points tested no shift >5%
- Selectivity: >10:1(Oxide:PR, SiN:Oxide)
- MTBF/MTTA/MTTR: 450 Hours/100 Hours/3.5 Hours or Better.
- 95% uptime

*Contact Allwin21 sales for other applications and specifications

## AW-303R Facilities

- Plumbed Process Gases
- Cooling water: 1GPM house circulating supply @ <23 ± 2°C
- Facility Exhaust: 100 CFM @ 1" static pressure
- Vacuum supply for Robot: 11.8"Hg(-5.8psi) / 0.1CFM airflow
- Power: 190-240VAC, single phase, 30A, 50/60Hz (NEMA L-6-30P plug supplied)

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