

Proven Qualified

40 Years



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AW-105R Plasma Asher Descum Clean Equipment



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Giant Fabs/Labs



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AW-105R Plasma Asher Descum Clean Equipment



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Production

For

Compound Materials

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AW-105R Plasma Asher Descum Clean Equipment



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Originated From

The Dominant

**Plasma Asher Descum Clean
of 2-6" Single Wafer in 80's,90's**

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AW-105R Plasma Asher Descum Clean Equipment



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AW-105R Plasma Asher Descum Clean Equipment



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**Designed with
III-V Production
in mind**



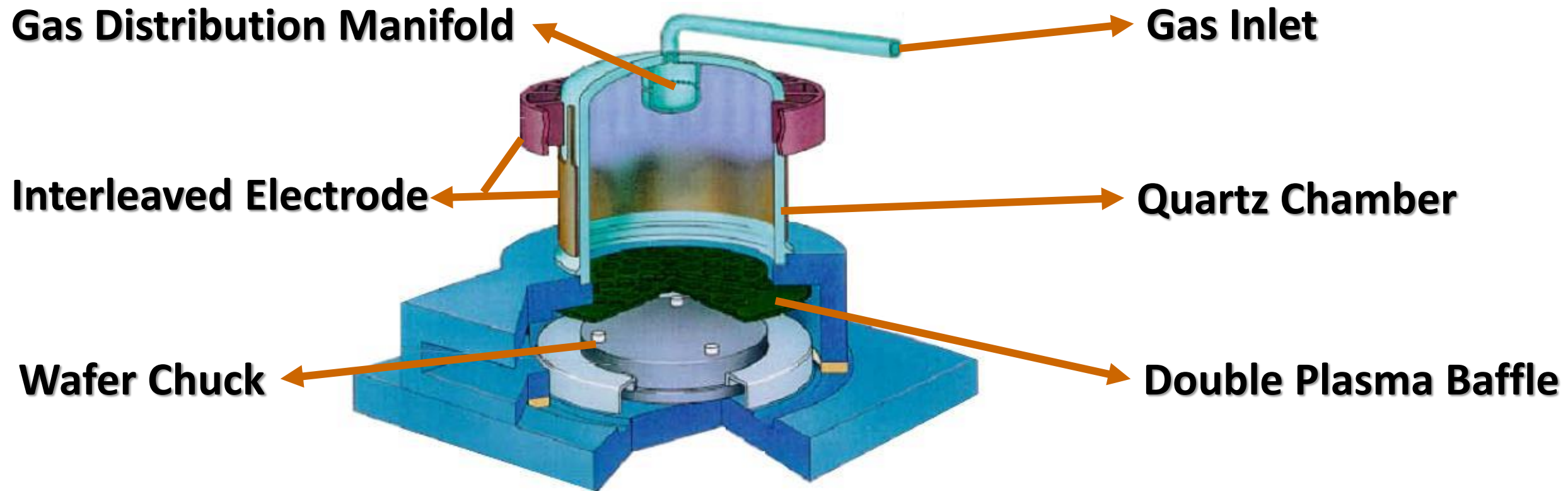
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Downstream Single Wafer Process Design



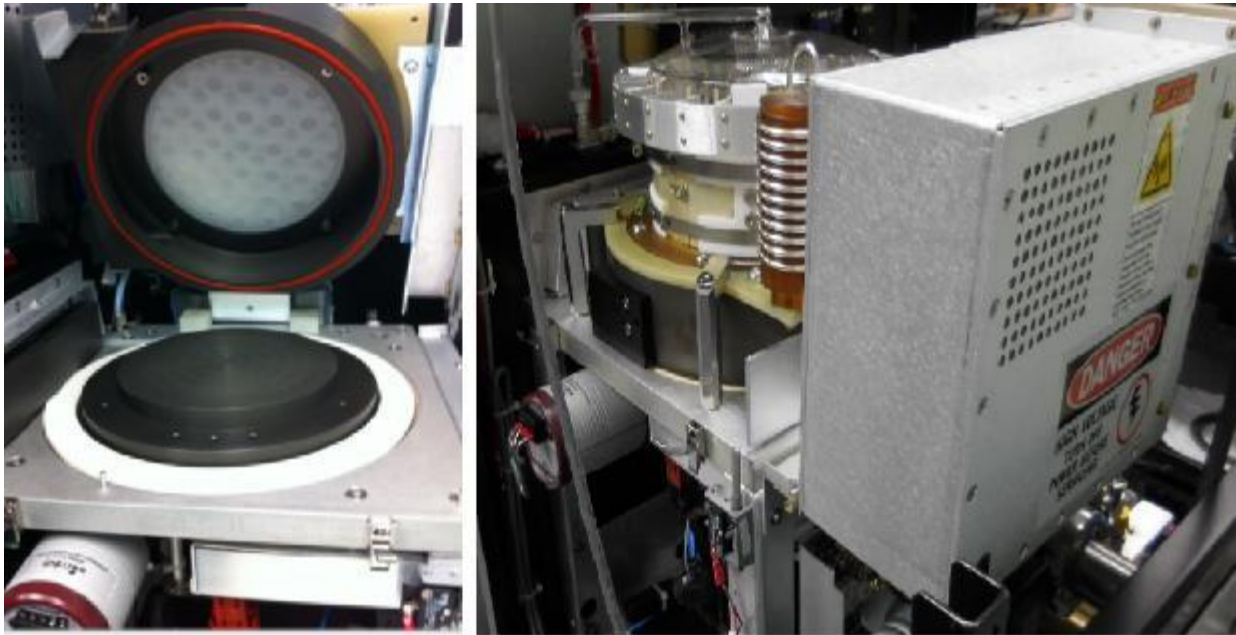
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Downstream Single Wafer Process Design



Damage: CV:<0.1V from control; Mobile Ion:
<1-2 E10 ; Vt :0% total shift on 98%of points
tested no shift >5% .

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3-axis Integrated Solid Robotic Wafer Transfer



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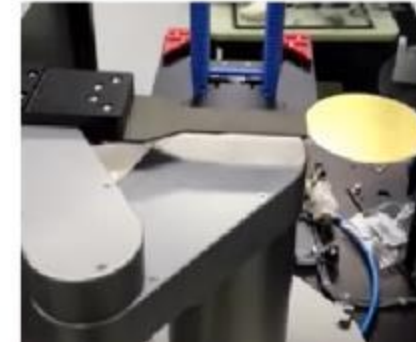
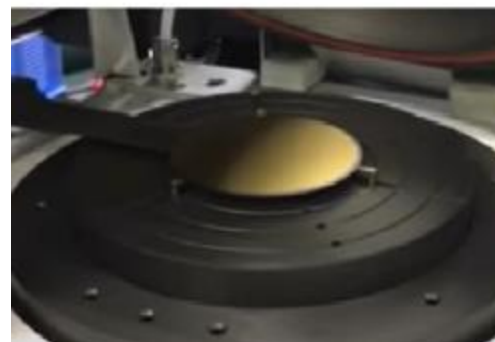
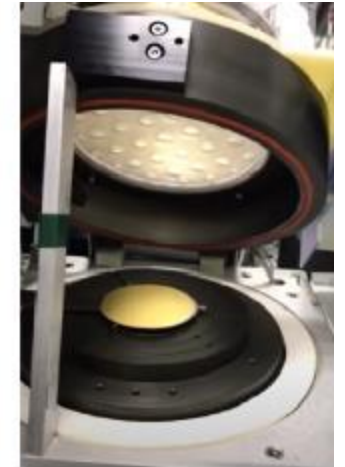
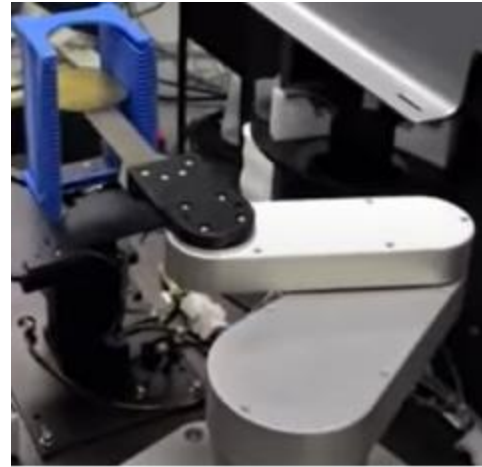
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Wafer Thickness:

- **50um-1000um**
- **Customized**



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Industrial Grade Computer with Large Hard Disk Driver



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Touch Screen GUI



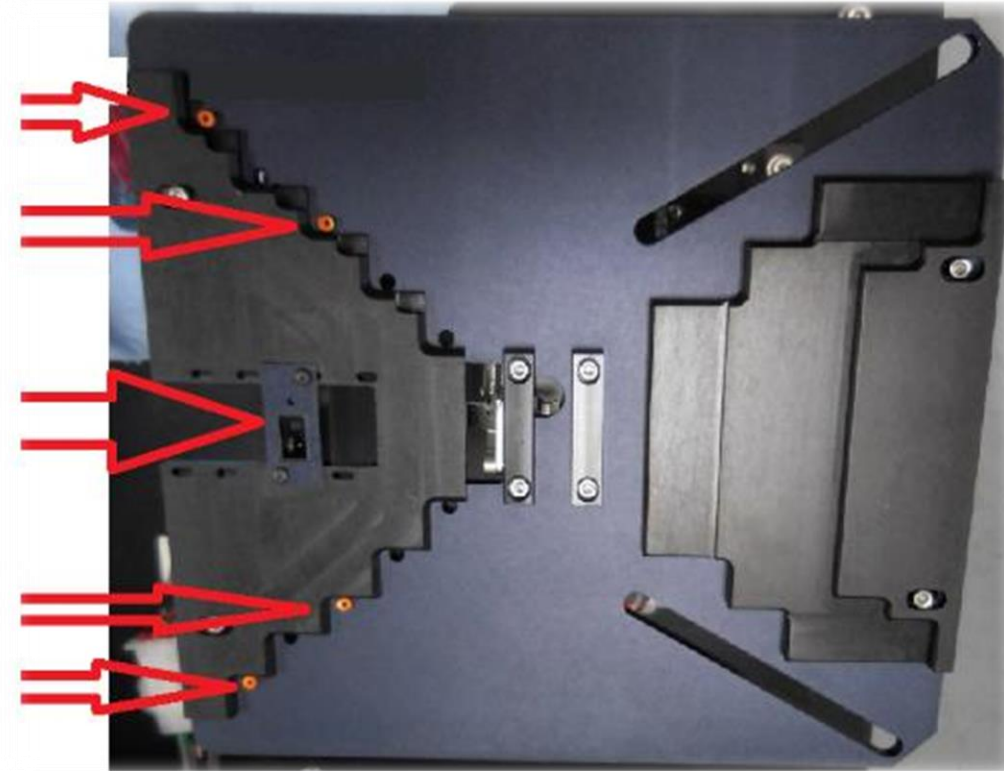
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Cassette Station with Sensors (Optional)

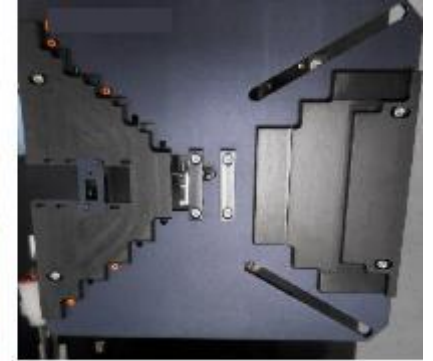
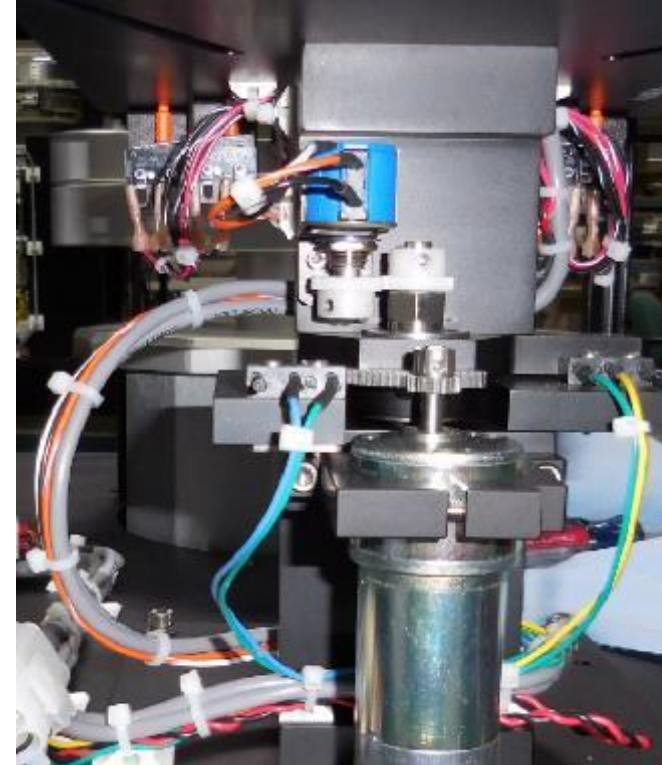


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- **Fixed Cassette Station**
- **Rotated Cassette Station(Optional)**



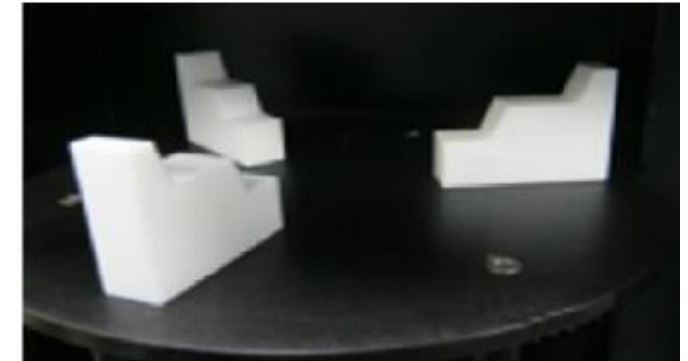
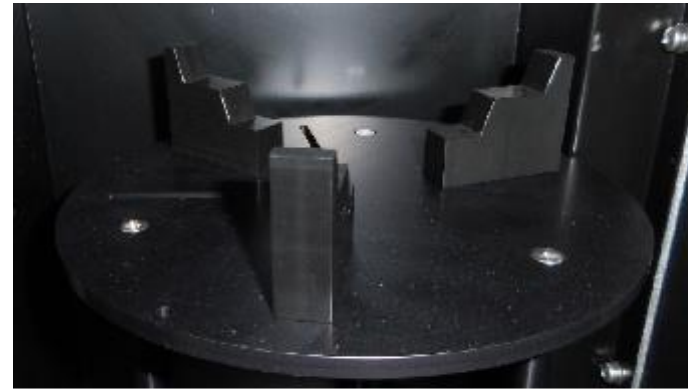
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Center Aligner Function



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Modern Electronic Components



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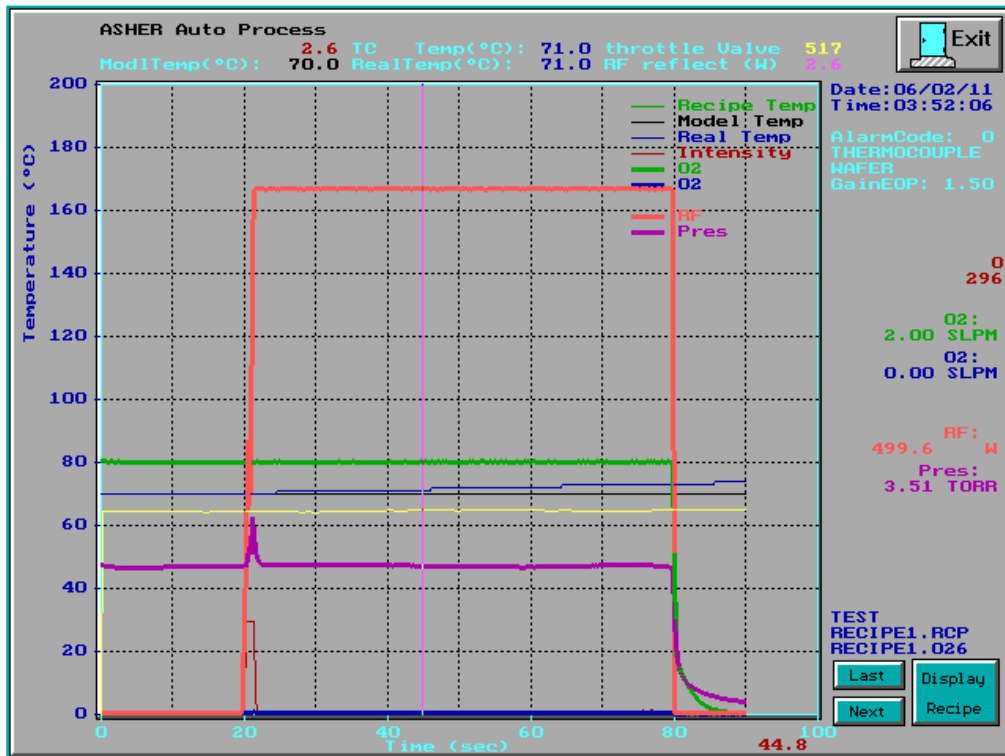
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Process Monitor



WTM

Select Station

FROM STATION Send Cassette FROM SLOT 1 PICK FROM (Send Cassette) MOVE FROM (Send Cassette)

TO STATION Send Cassette TO SLOT 1 PLACE TO (Send Cassette) TO (Send Cassette)

THROTTLE VALVE CLOSE ANGLE 371

THROTTLE VALVE OPEN O2 (SLPM) 0.00

VACUUM LEAK CHECK O2 (SCCM) 0.00

MAIN VACUUM VALVE N2 (SCCM)

ROBOT STOP Temp(°C) 0.0

ROBOT Init 05/31/11 12:01:34

0x28:00 RF

0x29:00 RF OFF

0x2A:00

TEMP SPT(°C) 50 Chamber Door Open

Pressure(Tr) 0.000 Chamber Door Close

EOP() 0.0 VENT VALVE CLOSE

RF SPT (W) 0.0 SOFT START

RF FWD(W) 0.2 MAIN VACUUM OFF

RF RFL(W) 0.2 RUN PROCESS

Time(sec)

Gain of EOP 1.54 WAFER LOAD

TC : 0 WAFER UNLOAD

Water : ATM

Air : PIN UP

Vacuum: PIN DOWN

Time: Cool: Arm1: Arm2: Z

Exit

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Recipe Edit

Exit | RECIPE NAME: PRESSURE | EXT: RCP | Engineer: | Component: AW-105R

Save | RFL (lb): 100.0 | GasStableTime: 9.00 | Delay (sec): 10.00 | Gain: 260.00

Page Up | STEP TIME: sec | EOP PERCENTAGE: ENABLE | Init. angle: 700.0 | PURGE CYCLES: 2 | PURGE SECS: 3.00

Step No.	Step Function	Step Time (sec)	Temp (°C)	Gas 1 O2 %	Gas 2 N2 %	Gas 3 O2 %	Gas 4 CF4 %	Gas 5 SOCH	RF Power (lb)	Vacuum Pressure (Torr)	EndPoint DETECT	RF
1	Delay	30	30	100	100	0	0	0	0.0	1.200	0.00	OFF
2	Wait	60	27	100	100	0	0	0	0.0	1.200	0.00	OFF
3	Delay	180	30	19	0	0	0	0	0.0	0.380	0.00	OFF
4	Delay	60	30	0	0	0	0	0	0.0	0.090	0.00	OFF
5	Delay	30	30	14	0	0	0	0	0.0	0.280	0.00	OFF
6	Delay	120	30	14	0	0	0	0	0.0	0.280	0.00	OFF
7	Finish	0	0	0	0	0	0	0	0.0	0.000	0.00	OFF
8	Finish	0	0	0	0	0	0	0	0.0	0.000	0.00	OFF
9	Finish	0	0	0	0	0	0	0	0.0	0.000	0.00	OFF
10	Finish	0	0	0	0	0	0	0	0.0	0.000	0.00	OFF

Page Down | Ctrl-Line: INSERT | Ctrl-Delete: LINE DELETE | Ctrl-F7: LINE COPY | Ctrl-F8: LINE PASTE | EOP PARAMETER SET UP | EOP SENSE: NEGATIVE LEVEL | RECIPE VALIDATE: <F10>

Press D,O,S,F or Space Bar to select Delay, OverEtch, SlowPurge, Wait or Finish function.

Factory Set Up

Exit | Save | FACTORY LEVEL SET UP | CUSTOMER LEVEL SET UP | PRODUCTION FULL FUNCTION: DISABLE | File Extent: STANDARD

System Name: AW-105R | LEVEL SET UP: ENABLE | VALVE SENSOR: LOGIC 1 | RF Utilized: 10.0 | HARDWARE CHECK: ENABLE

Screen Saver: DISABLE | AS 232 CONFIGURE: ENABLE | RF CTRL: DIGITAL IO | RF TOTAL(hrs): 5.00 | BestTemp CAPRO: 1000 | EOP: ENABLE

Source Code Check: DISABLE | BOMBS CONFIGURE: ENABLE | Throttle: Raw | RF LIND(hrs): 300.00 | ALWAYS DISP EOP SLOPE: DISABLE | Water Num: 781

Gas1 Port: DISABLE | PRESSURE SENSOR TO GHOUSE | VALVE CNTL: AW-105R HAS 203B | RF TIME(hrs): 1.00 | SLOW PUMP VALVE: DISABLE | Water Tot. Num: 555

Data Upload (RS232): DISABLE | TC GHOUSE TYPE: DM-4 Raw | Throttle: Raw | 1430 | SLOWPUMP Delay: 8.0 | TEMPERATURE AVERAGE: NUM 3

SET SECS (I): DISABLE | ReOrder: BMS NAME SEQUENCE: DISABLE | PLC factor: 8 | SLOW VENT VALVE: ENABLE | TEMPERATURE RENDING: ENABLE

MOTOR DELAY: 4 | CLOSE VALVE AFTER VENTING: ENABLE

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Board Test

Exit Help

D/A BOARD

D/A CH0	0.000
D/A CH1	0.000
D/A CH2	0.000
D/A CH3	0.000
D/A CH4	0.000
D/A CH5	0.000
D/A CH6	0.000
D/A CH7	0.000

A/D BOARD

A/D CH0	0.000	A/D CH8	0.000
A/D CH1	0.000	A/D CH9	0.000
A/D CH2	0.000	A/D CH10	0.000
A/D CH3	0.000	A/D CH11	0.000
A/D CH4	0.000	A/D CH12	0.000
A/D CH5	0.000	A/D CH13	0.000
A/D CH6	0.000	A/D CH14	0.000
A/D CH7	0.000	A/D CH15	0.000

DIGITAL I/O

J2-1	0:00	J2-11	0
J2-2	0:01	J2-12	0
J2-3	0:02	J2-13	0
J2-4	0:03	J2-14	0
J2-5	0:04	J2-15	0
J2-6	0:05	J2-16	0
J2-7	0:06	J2-17	0
J2-8	0:07	J2-18	0

PORT1 0x20

PORT2 0x28 0x28: ee

Pressure Calibration

Exit Help CALIBRATION FOR RFL

05/17/17 14:48:29

READING ON COMPUTER FEEDBACK

RECORD 1	RECORD 2	RECORD 3	RECORD 4
FDBK1(W)	FDBK2(W)	FDBK3(W)	FDBK4(W)
1.7	296.8	486.4	789.5

READING FROM RF METER

STD1(W)	STD2(W)	STD3(W)	STD4(W)
0.0	302.0	495.0	775.0

SETPOINT ON THE COMPUTER

SET1(W)	SET2(W)	SET3(W)	SET4(W)
0.0	300.0	500.0	800.0

CALIBRATION FACTORS FOR SETPOINT

UPDATE CALIB FACTORS	calib k1	calib b1
	9.9338E-01	0.0000E+00
	calib k2	calib b2
	1.0363E+00	-1.2953E+01
RESET CALIB FACTORS	calib k3	calib b3
	1.0714E+00	-3.0357E+01

CALIBRATION FACTORS FOR FEEDBACK

UPDATE CALIB FACTORS	calib k1	calib b1
	1.0232E+00	-1.7200E+00
CALIB NUM	calib k2	calib b2
4	1.0178E+00	-1.1637E-01
RESET CALIB FACTORS	calib k3	calib b3
	9.2391E-01	4.5570E+01

RF ON

RF SPT(W) 0.0

MAIN VACUUM PUMP OFF

RF RFL(W) -1.1

ANGLE 1.430

N2 (C) 0

RF FWD(W) -1.7

THROTTLE VALVE CLOSE

02 (C) 0

Pressure(Tr) 760.360

THROTTLE VALVE OPEN

CF4 (C) 0

Temp(C) 0.0

VENT VALVE CLOSE

(SCCM) 0

EOP(C) -0.00

MAIN VACUUM VALVE

Chamber Door is CLOSE

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Small Footprint

- **Width: 27.5"**
- **Depth: 44"**
- **Height: 62"**



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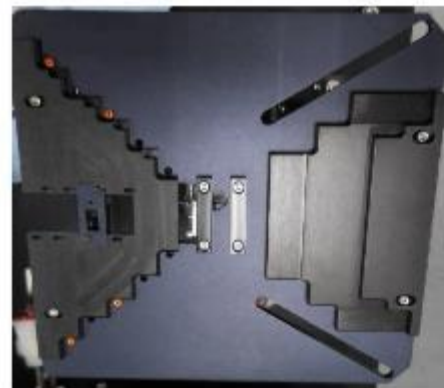
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Configurations and Typical Processes

Substrate Capability:

- 2",3",4",5",6",6.25"
- Round
- Multiple wafer sizes **without hardware change**



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Configurations and Typical Processes

RF Power and RF Matching:

- **13.56 MHz**
- **Air Cooling**
- **300W/600W**
- **NRTL/CE Certificated**



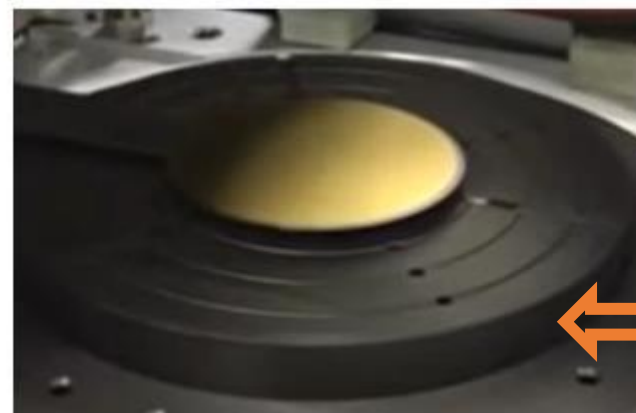
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Configurations and Typical Processes

Temperature:

- 60-200°C
- Customized



- Chiller Cooling
- Element Heating



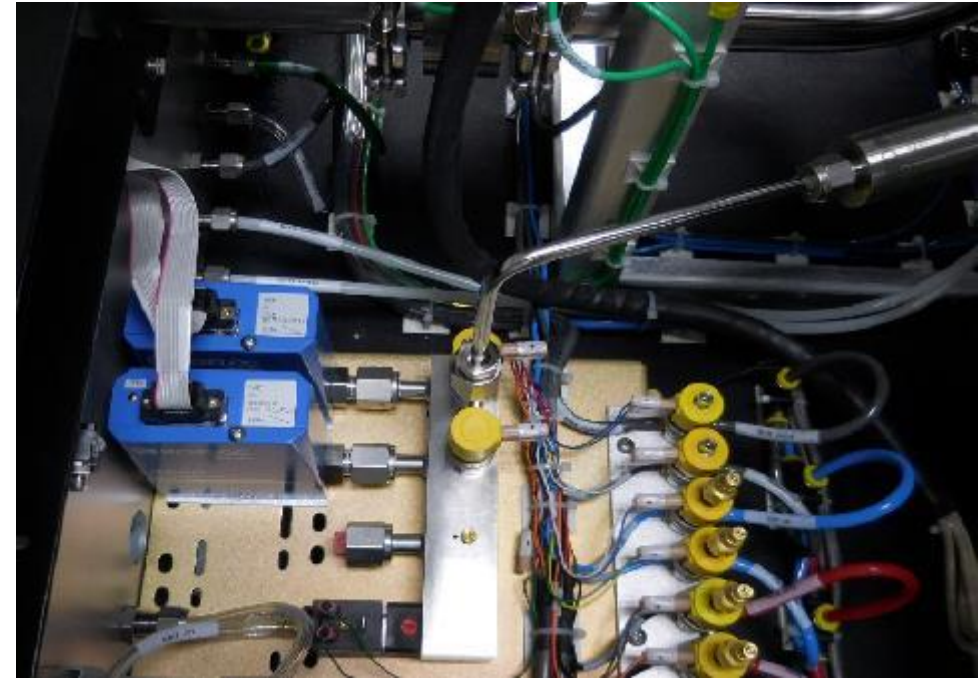
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Configurations and Typical Processes

Gases:

- **1-3 Gases**
- **MFC**
- **Customized. Typical Gases are O₂, N₂**



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Configurations and Typical Processes

GEM/SEC II Function:

- **Optional**

This screenshot shows the configuration interface for the GEM/SEC II function. It includes sections for 'FILES' (PROCESS PROGRAM DIR, EQUIPMENT CONSTANTS, ALARM CONFIGURATION, Report Configuration), 'Initialize' (Process Program Code, Initial Comm State, Initial Control State), and 'Configuration' (Alarm, Connect, Events, Set W-Bit to 1, SIF2 MODEL, REVISION, MAX POLL DELAY, HOST LINK ID, and GEM SECS II CONSTANT SETUP).

This screenshot displays the status and command interface. It features 'COMMANDS' (ENABLE COMMUNICATION, REMOTE COMMUNICATION, RECIPE DOWNLOAD, RECIPE UPLOAD), 'STATUS' (COMMUNICATION STATE: COMMUNICATING, ENABLED STATE: ENABLED, LOCAL/REMOTE STATE: LOCAL), 'EQUIPMENT MESSAGE' (EQUIPMENT MESSAGE DIALOG), 'HOST MESSAGE', and 'GEM: Statistic Manager' (IN REPAIR, IN PRODUCTION, SCHEDULED DOWNTIME, UNSCHEDULED DOWNTIME, ENGINEERING, STANDBY).

This screenshot shows the test screen interface, which includes buttons for 'Exit', 'Help', 'GEM SECS II TEST SCREEN', 'GEM SECS II MANAGER SCREEN', and 'GEM SECS II GEMSTONE'.

This screenshot displays the GEM LIST screen, featuring a 'SEND EVENT' button, a 'CEID' field with the value '61', and buttons for 'PROCESS DATA SEND', 'SIF13 SEND', 'SIF1 SEND', and 'DATE & TIME REQUEST'. It also includes 'EQUIPMENT MESSAGE' and 'HOST MESSAGE' sections.

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Configurations and Typical Processes

EOP Function:

- Optional

Exit

EOP NORMALIZE DISABLE

EOP PERCENTAGE ENABLE

PLASMAON EOP
0.00

RECIPE NUMBER AW-04
CREATED: 04-26-2017
CHANGED: 04-26-2017

Normalize Start time (sec)
10

Normalize Time (sec)
0

Recipe Normalize k
0.000000

System Normalize k
0.000000

Normalized Usalib
0.00

Percentage Start time (sec)
35

EOP SENSE NEGATIVE LEVEL

SLOPE GAIN FACTOR
1.0

SLOPE AVERAGE NUM
10

Slope check Start time (sec)
10

EOP HARDWARE GAIN
4

EOP HARDWARE OFFSET
2.00

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Configurations and Typical Processes

Asher Rate Capability

- ~600 A/min (Descum)
- ~1.5 $\mu\text{m}/\text{min}$ (Asher)
- Process Support if necessary.



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Configurations and Typical Processes

Uniformity Capability

- $< \pm 5 \sim 8\%$
- Process Dependent
- 6" wafer

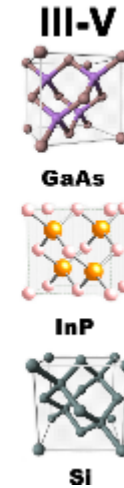


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