PTW ASIA PTE LTD

ASM International A412 Doped Poly Vertical LPCVD Furnace	
Manufacturer	ASM
Model	A412
Product Description	Vertical LPCVD Furnace
Year of Manufacture	TBD
Serial Number	30271
Wafer Size	300mm
Software version	6.80C
Heater Type	MRL
Loader configuration, 4 or 5 loader - 4	
Quartzware Configuration	
Outer tube	Quartz
Inner tube	Quartz
Boat	SiC boat
Boat fix ring/Cap quartz	Quartz
Adiabatic plate quantity	6
Back N2, Qty	N/A
BCl3, Qty & Type (L-type, Straight, Diffuser, Shower)	N/A
SiH4, Qty & Type (L-type, Straight, Diffuser, Shower)	Multihole (1) U/D/L
O2, Qty & Type (L-type, Straight, Diffuser, Shower)	Multihole (1) E
PH3, Qty & Type (L-type, Straight, Diffuser, Shower)	Multihole (1) U/D/L
ClF3, Qty & Type (L-type, Straight, Diffuser, Shower)	N/A
Vacuum Line configuration	
Design	original config
10 Torr Baratron model	MKS
10 Torr Baratron full scale setting	10(F/S)
1000 Torr Baratron model	MKS

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1000 Torr Baratron full scale setting	1000(F/S)
ATM sensor model	MKS
Vent Valve 1 (VV1) normally closed/open,plunger, diaphragm	Normally open,plunger Check valve model
Check valve model	Fujikin
Check valve resistance pressure	2.26 Kpa
Mainvalve type, Kitz or CKD	MKS
Slow valve, incorporated with mainvalve or separate(AV72,AV77)	Separate (PV003)
Slow valve orifice size	2.0mm (PV003)
Pressure range of vacuum gauge(Inficon Pirani gauge)	10T
Control Table	
Alarm Watch/Table setting	
Temp (Low Alarm Limit(deg)/High Alarm Limit(deg)/Check Time(min))	
U	0.7/0.7/30S
CU	0.7/0.7/30S
C	0.7/0.7/30S
CL	0.7/0.7/30S
L	0.7/0.7/30S
Pressure (Low Alarm Limit(Torr)/High Alarm Limit(Torr)/Check Time(S))	0.02/0.02/30S
MFC (Low Alarm Limit(%)/High Alarm Limit(%)/Check Time(S))	
MFC1	N2: 2%/2%/10sec
MFC2	N2: 2%/2%/10sec
MFC3	N2: 2%/2%/10sec
MFC4	N2: 2%/2%/10sec
MFC5	SiH4: 2%/2%/10sec
MFC6	SiH4: 2%/2%/10sec
MFC7	SiH4: 2%/2%/10sec
MFC8	1%O2/Ar: 1%/1%/10sec
MFC9	5%PH3/N2: 2%/2%/10sec
MFC10	5%PH3/N2: 2%/2%/10sec
MFC11	5%PH3/N2: 2%/2%/10sec
MFC12	ClF3: 10%/10%/10sec
MFC13	N/A
MFC14	N/A
MFC15	N/A
MFC16	N/A
MFC17	N/A

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MFC18	N/A
MFC19	N/A
MFC20	N/A
MFC21	N/A
APC Valve Action (High (%), Low (%), Time(s))	N/A
Transfer Table	
Wafer Charge command (charge/discharge)	
Side Dummy	Upper:5 / Lower:10
Product	100
Monitor	5
Product & Monitor	105
Time	
2nd charge time(min)	0
wafer cool time(min)	20min
Leak Rate Table	
Base pressure low Limit(Torr)	1%
Base pressure High Limit(Torr)	1%
Leak Check check time(s)	60s
Leak Check delay time(s)	N/A
Leak limit(Torr)	1%
Retry Limit(count)	2
Loadlock Settings	
Loadlock configuration	
O2 analyser model, NGK or Toray	PBI3.1 / PBI4.0
Process	
L/A Keep Value (ppm)	10ppm
N2 Flow max (L)	1300L
N2 Flow min (L)	300L
Check Stability Time(s)	N/A
Ready	
L/A Keep Value (ppm)	10ppm
N2 Flow max (L)	1300L
N2 Flow min (L)	300L
Check Stability Time(s)	N/A
Idle	
L/A Keep Value (ppm)	10ppm
N2 Flow max (L)	1300L
N2 Flow min (L)	300L
Check Stability Time(s)	N/A
L/A O2 check time (min)	N/A

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L/A O2 limit (ppm)	10ppm
POD opener O2 limit (ppm)	N/A
POD O2 check time(min)	N/A
POD check retry	N/A
Missing/Damaged Parts List: **None report, please inspect tool to reconfirm**	

Micron FAB11 AUDPBC0500(LPDG204 30271)

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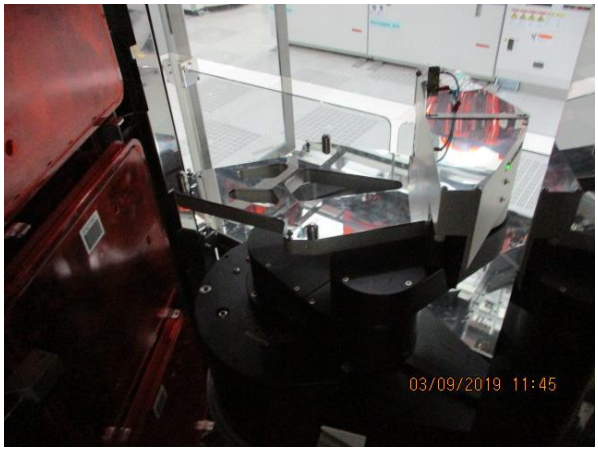
Tool Status

R1 SCS

R2 SCS

Robot Status

CHR



WHR

Power Supply Brake

R1

R2

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TCP/ECP

R1

R2

Supply Gas Status

Gas Flow Panel Status

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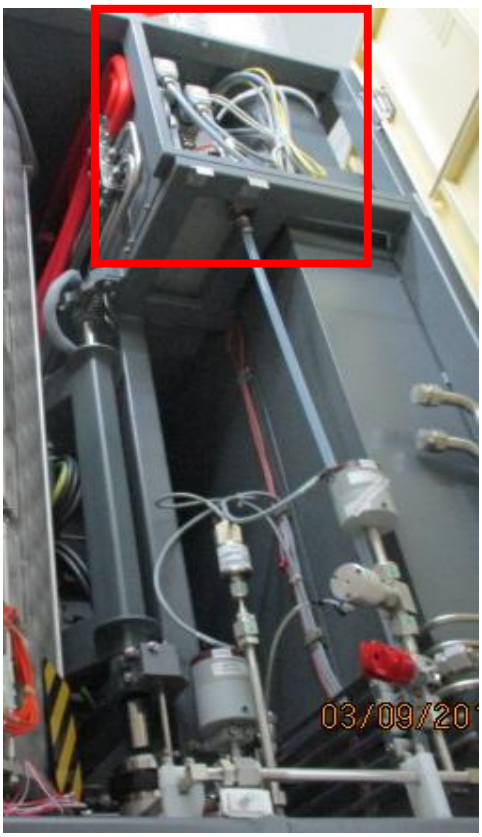
Heater Status

TCF Status



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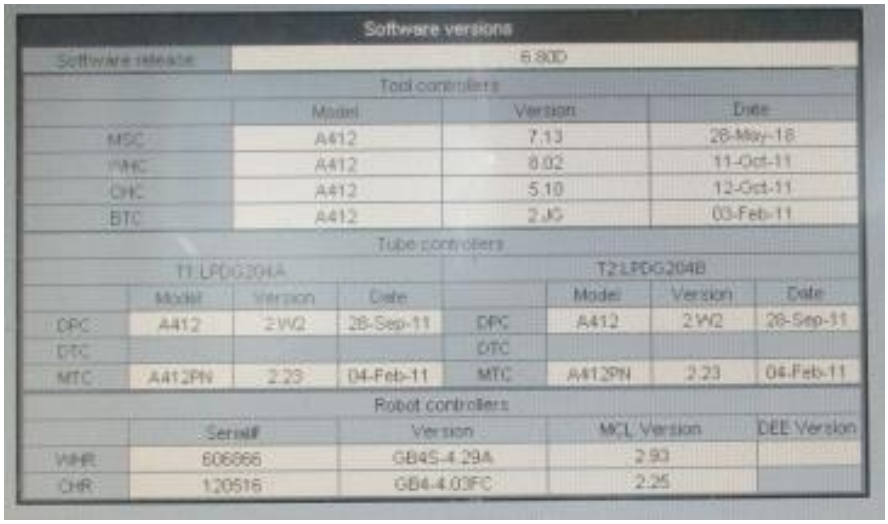
N2 Purge Source Line

Software Versions



Software versions

Software release	6.80D		
Tool controllers			
	Model	Version	Date
MSC	A412	7.13	28-May-18
VHC	A412	8.02	11-Oct-11
CHC	A412	5.10	12-Oct-11
BTC	A412	2.JO	03-Feb-11

Tube controllers

	T1:LPDG204A				T2:LPDG204B		
	Model	Version	Date		Model	Version	Date
DPC	A412	2W2	28-Sep-11	DPC	A412	2W2	28-Sep-11
DTC				DTC			
MTC	A412PN	2.23	04-Feb-11	MTC	A412PN	2.23	04-Feb-11

Robot controllers

	Serial#	Version	MCL Version	DEE Version
WHR	606866	GB4S-4.29A	2.93	
CHR	120516	GB4-4.03FC	2.25	

Digital I/O R1

Recipe status

Recipe STDB_PR7 StepNr 4

Digital Inputs

Nr	Name	Status	Nr	Name	Status
1	N2-Press	OK	17	PmpWarn	OK
2	CA-Press	OK	18	PmpAlarm	OK
3	ExhGasC	OK	19		
4	ReacPrs	>12TORR	20	MaintMod	AUTOMATIC
5	PmpPrs	OK	21	CntrlRem	AUTOMATIC
6			22		
7	ProcIntlk	PROCINTK	23		
8	CabDoors	CLOSED	24		
9	FlngTmp	OK	25		
10	ExhReact	OK	26		
11	TubeDoor	CLOSED	27	FPmpSens	CLOSED
12	OverHeat	OK	28		
13	H2O-Reac	OK	29	ElevIntlk	NOT ACTV
14			30	ScrbFail	OK
15			31	GasAlarm	OK
16	Tube-ATM	VACUUM	32	GasWarn	OK

Digital Outputs

Nr	Name	Status	Nr	Name	Status
1	SiH4-D	CLOSED	17	PresCntr	LOW
2	SiH4-L	CLOSED	18	FastPump	CLOSED
3	SiH4-U	CLOSED	19	SlowPump	OPEN
4	PH3-D	CLOSED	20	Ev-SiPH	CLOSED
5	PH3-L	CLOSED	21	PH3-LM	LOW
6	PH3-U	CLOSED	22	SiH4-Src	CLOSED
7	O2	CLOSED	23	O2-M	CLOSED
8	FlgTmpLw	HIGH	24	Prg-CIF3	CLOSED
9	N2-D	CLOSED	25	Prg-SiH4	CLOSED
10	N2-L	CLOSED	26	PH3-Prg	CLOSED
11	N2-U	CLOSED	27	PH3-LHor	CLOSED
12	SiH4-D-M	CLOSED	28	Evc-CIF3	CLOSED
13	SiH4L/UM	CLOSED	29	N2-D/E-M	OPEN
14	N2-E	CLOSED	30	CIF3-M	CLOSED
15	CIF3	CLOSED	31	PH3-M	OPEN
16	N2-LU-M	CLOSED	32		

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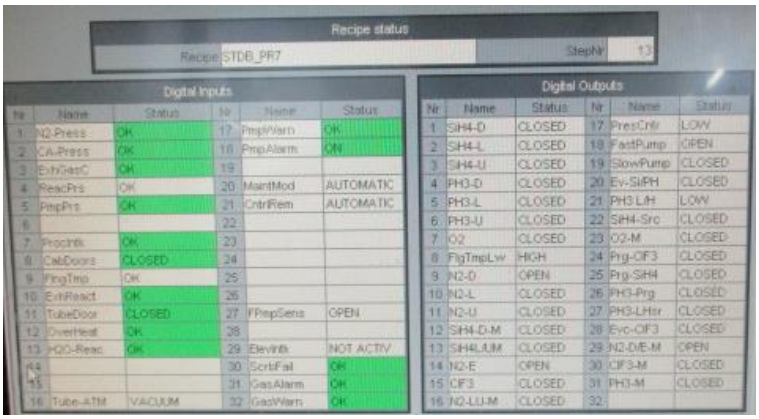
Digital I/O R2



Recipe status

Recipe STDB_PR7 StepNr 13

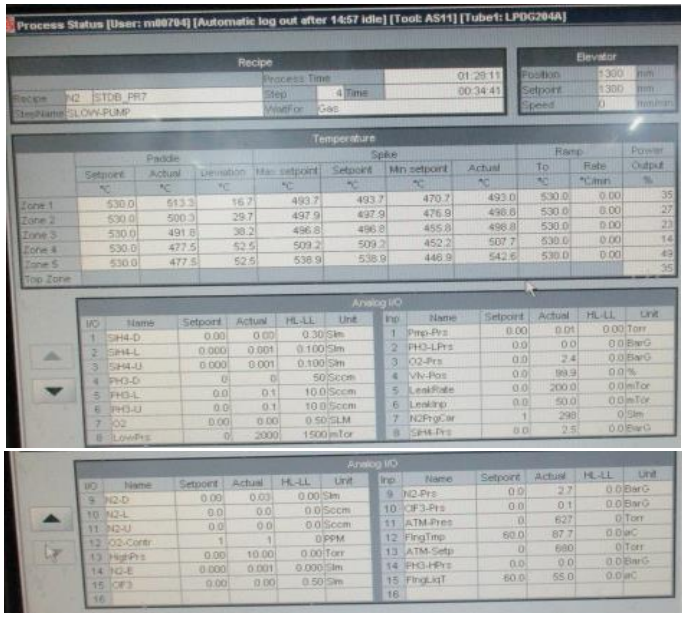
Digital Inputs

Nr	Name	Status	Nr	Name	Status
1	N2-Press	OK	17	PrepWarn	OK
2	CA-Press	OK	18	PrepAlarm	ON
3	EvhSetC	OK	19		
4	ReacPrs	OK	20	MaintMod	AUTOMATIC
5	PrepPrs	OK	21	CntrlRem	AUTOMATIC
6			22		
7	ProcInth	OK	23		
8	CabDoors	CLOSED	24		
9	FlngTmp	OK	25		
10	EvhReact	OK	26		
11	TubeDoor	CLOSED	27	FPrepSens	OPEN
12	OverHeat	OK	28		
13	H2O-Reac	OK	29	ElevInth	NOT ACTIV
14			30	ScrbFail	OK
15			31	GasAlarm	OK
16	Tube-ATM	VACUUM	32	GasWarn	OK

Digital Outputs

Nr	Name	Status	Nr	Name	Status
1	SiH4-D	CLOSED	17	PresCntr	LOW
2	SiH4-L	CLOSED	18	FastPump	OPEN
3	SiH4-U	CLOSED	19	SlowPump	CLOSED
4	PH3-D	CLOSED	20	Ev-SiPH	CLOSED
5	PH3-L	CLOSED	21	PH3 L/H	LOW
6	PH3-U	CLOSED	22	SiH4-Src	CLOSED
7	O2	CLOSED	23	O2-M	CLOSED
8	FlgTmpLw	HIGH	24	Prg-CIF3	CLOSED
9	N2-D	OPEN	25	Prg-SiH4	CLOSED
10	N2-L	CLOSED	26	PH3-Prg	CLOSED
11	N2-U	CLOSED	27	PH3-LHsr	CLOSED
12	SiH4-D-M	CLOSED	28	Evc-CIF3	CLOSED
13	SiH4L/UM	CLOSED	29	N2-DVE-M	OPEN
14	N2-E	OPEN	30	CIF3-M	CLOSED
15	CIF3	CLOSED	31	PH3-M	CLOSED
16	N2-LU-M	CLOSED	32		

Analog I/O R1



Process Status [User: m00704] [Automatic log out after 14:57 idle] [Tool: AS11] [Tube1: LPDG204A]

Recipe

Recipe	N2 STDB_PR7	Process Time	01:29:11		
StepName	SLOW-PUMP	Step	4	Time	00:34:41
		WaitFor	Gas		

Elevator

Position	1300	mm
Setpoint	1300	mm
Speed	0	mm/min

Temperature

	Paddle			Spike				Ramp		Power
	Setpoint °C	Actual °C	Deviation °C	Max setpoint °C	Setpoint °C	Min setpoint °C	Actual °C	To °C	Rate °C/min	Output %
Zone 1	530.0	513.3	16.7	493.7	493.7	470.7	493.0	530.0	0.00	35
Zone 2	530.0	500.3	29.7	497.9	497.9	476.9	498.8	530.0	0.00	27
Zone 3	530.0	491.8	38.2	496.8	496.8	455.8	498.8	530.0	0.00	22
Zone 4	530.0	477.5	52.5	509.2	509.2	452.2	507.7	530.0	0.00	14
Zone 5	530.0	477.5	52.5	538.9	538.9	446.9	542.6	530.0	0.00	49
Top Zone										35

Analog I/O

I/O	Name	Setpoint	Actual	HL-LL	Unit
1	SiH4-D	0.00	0.00	0.30	Slm
2	SiH4-L	0.000	0.001	0.100	Slm
3	SiH4-U	0.000	0.001	0.100	Slm
4	PH3-D	0	0	50	Sccm
5	PH3-L	0.0	0.1	10.0	Sccm
6	PH3-U	0.0	0.1	10.0	Sccm
7	O2	0.00	0.00	0.50	SLM
8	LowPrs	0	2000	1500	mTor

Inp	Name	Setpoint	Actual	HL-LL	Unit
1	Pmp-Prs	0.00	0.01	0.00	Torr
2	PH3-LPrs	0.0	0.0	0.0	BarG
3	O2-Prs	0.0	2.4	0.0	BarG
4	Vlv-Pos	0.0	99.9	0.0	%
5	LeakRate	0.0	200.0	0.0	mTor
6	LeakInp	0.0	50.0	0.0	mTor
7	N2PrgCar	1	298	0	Slm
8	SiH4-Prs	0.0	2.5	0.0	BarG

Analog I/O

I/O	Name	Setpoint	Actual	HL-LL	Unit
9	N2-D	0.00	0.03	0.00	Slm
10	N2-L	0.0	0.0	0.0	Sccm
11	N2-U	0.0	0.0	0.0	Sccm
12	O2-Contr	1	1	0	PPM
13	HighPrs	0.00	10.00	0.00	Torr
14	N2-E	0.000	0.001	0.000	Slm
15	CIF3	0.00	0.00	0.50	Slm
16					

Inp	Name	Setpoint	Actual	HL-LL	Unit
9	N2-Prs	0.0	2.7	0.0	BarG
10	CIF3-Prs	0.0	0.1	0.0	BarG
11	ATM-Pres	0	627	0	Torr
12	FlngTmp	60.0	87.7	0.0	oC
13	ATM-Setp	0	680	0	Torr
14	PH3-HPrs	0.0	0.0	0.0	BarG
15	FlngLiqT	60.0	55.0	0.0	oC
16					

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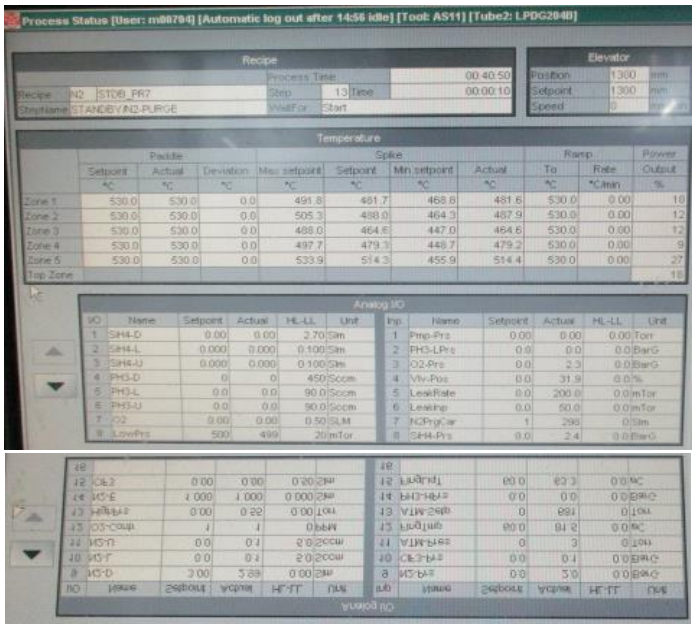
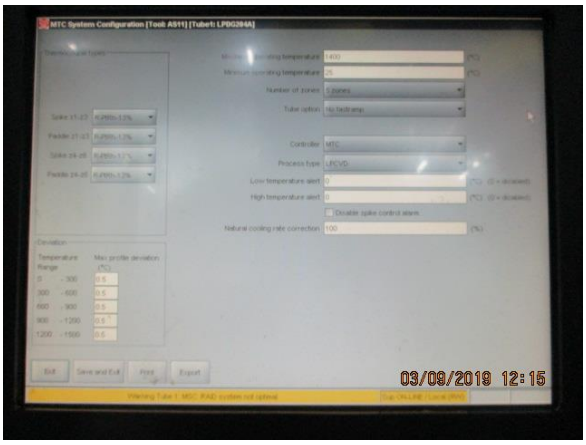
Analog I/O R2

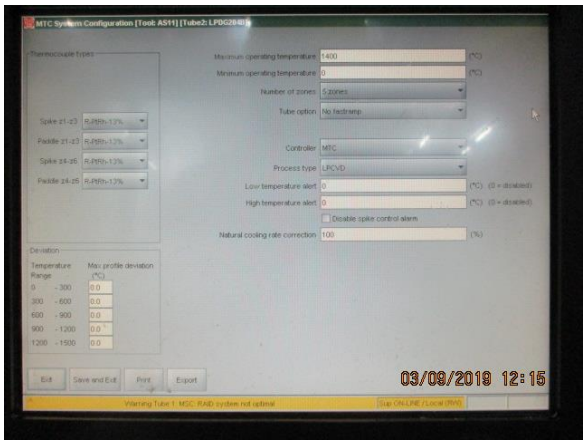


Temprature control system MTC

R1



R2



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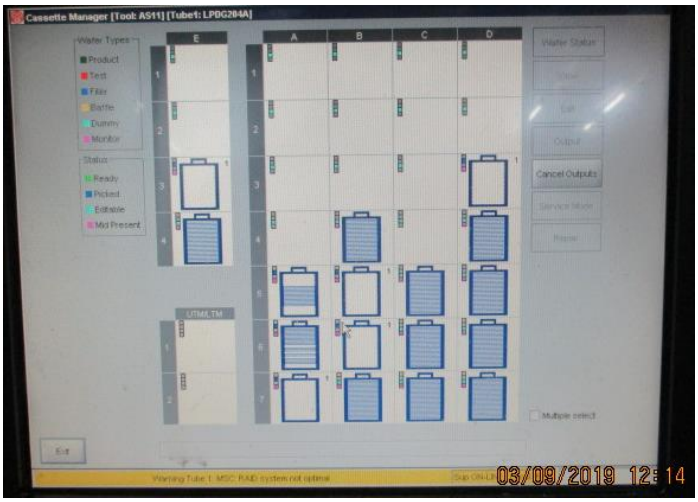
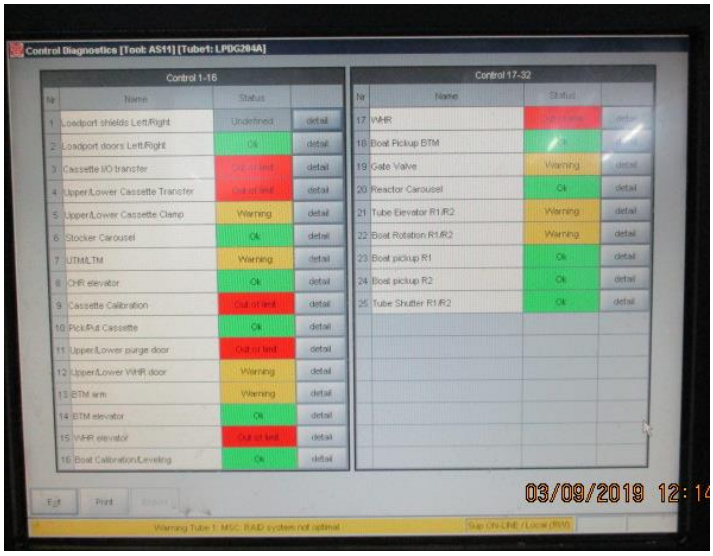
Stoker status

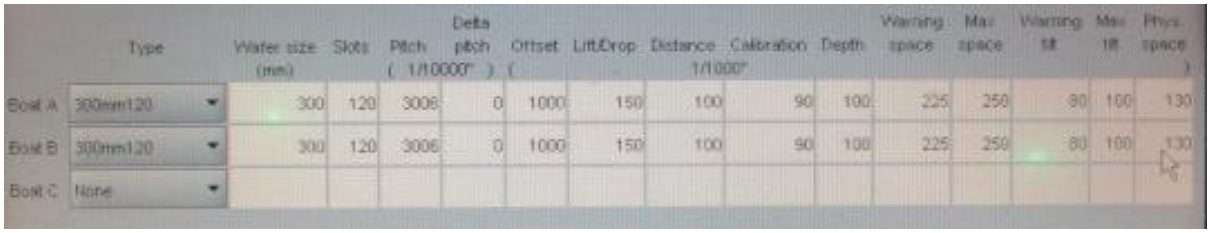


Motion part control status



Boat setting status

R1 Boat wafer slot setting



	Type	Wafer size (mm)	Slots	Pitch (1/10000")	Delta pitch	Offset (	Lift/Drop	Distance 1/1000"	Calibration	Depth	Warning space	Max space	Warning lift	Max lift	Phys. space)
Boat A	300mm120	300	120	3006	0	1000	150	100	90	100	225	250	80	100	130
Boat B	300mm120	300	120	3006	0	1000	150	100	90	100	225	250	80	100	130
Boat C	None														

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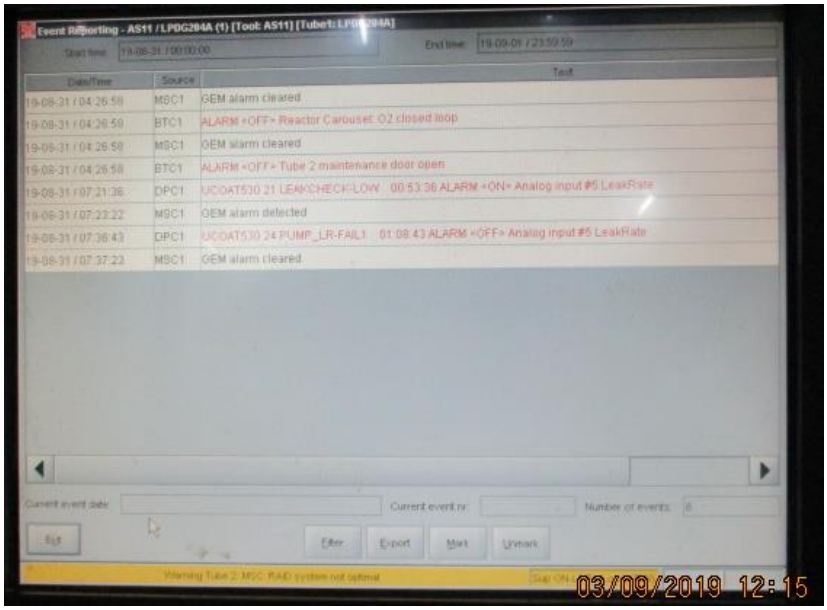
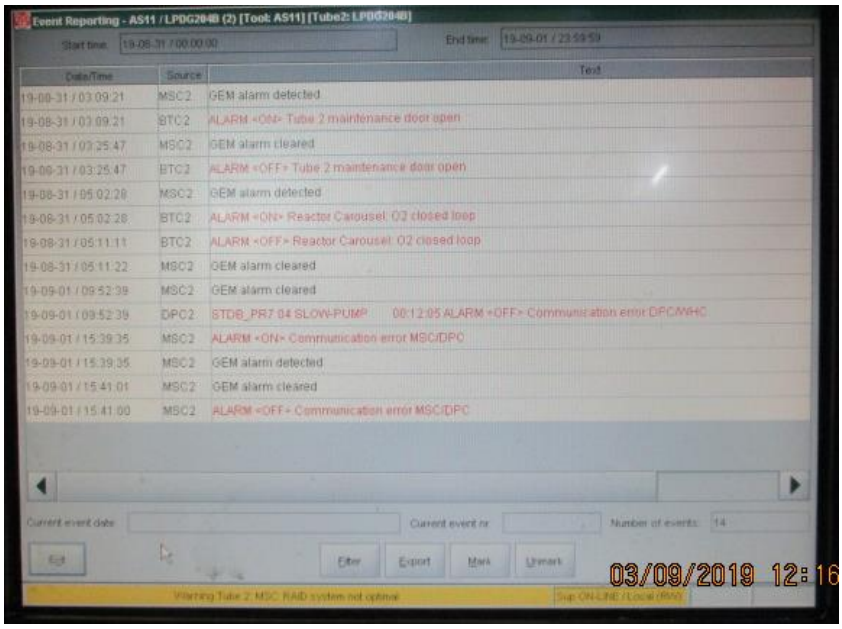
R2 Boat wafer slot setting

	Type	Wafer size (mm)	Slots	Pitch (1/10000")	Delta pitch (	Offset	Lift/Drop	Distance 1/1000"	Calibration	Depth	Warning space	Max space	Warning tilt	Max tilt	Place space)
Boat A	300mm120	300	120	3006	0	1000	150	100	90	100	225	250	60	100	130
Boat B	300mm120	300	120	3006	0	1000	150	100	90	100	225	250	60	10[illegible]	130
Boat C	None														

Alarm log



Alarm log



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All Equipment is offered subject to prior sale. This item will be quoted based upon specific terms and configuration required. Interested parties may contact PTW Asia Pte Ltd at:

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