

NON-COMPREHENSIVE ANNUAL MAINTENANCE SERVICE CONTRACT FOR WET PROCESSING EQUIPMENT AND RELATED SYSTEMS

1. Scope of Contract:

The scope of the non-comprehensive annual maintenance service contract is to carry out preventive and breakdown maintenance of Wet processing equipment and related systems listed in annexure-1.

2. Period of contract:

This non-comprehensive annual service maintenance service contract is valid for two years (24 months). It may be extended for one more year based on the satisfactory service performance of the vendor with mutual consent.

3. Maintenance schedule:

- 3.1. Preventive maintenance shall be carried out quarterly (once in three months). Total four preventive maintenance services per annum.
- 3.2. Unlimited number of breakdowns calls during the period of contract.

4. Details of preventive maintenance:

- 4.1. The Scope of contract includes maintenance of electrical, mechanical and plumbing aspects of all the systems listed in the Annexure-1.
- 4.2. Vendor should be manufacturer of wet processing equipment used in PCB industries like Etching system, developing system, Stripping system, Brushing system etc. Proof of same should be provided.
- 4.3. The vendor should follow recommended procedure for preventative and breakdown maintenance.
- 4.4. The vendor should have at least greater than 3 years' experience in manufacture, repair / maintenance of PCB wet processing equipment.
- 4.5. The vendor should have all the necessary tools, jigs and welding guns required to carry out maintenance of wet processing systems.
- 4.6. The maintenance program should also include the following:
 - Checking and rectifying for any mechanical related issues.
 - Checking and rectifying for any software malfunctioning.
 - Checking and rectifying for any electrical related issues.
 - Checking and rectifying for any plumbing related issues.
 - Cleaning the entire machine.
 - Lubricating the equipment.
 - Cleaning all the filters.
 - Checking and rectifying for any software malfunctioning.
- 4.7. The service engineer should demonstrate the machine performance after maintenance in the presence of the PCF engineer.
- 4.8. The vendor should plan and foresee the spares and maintenance kit required for repair and servicing of the machine.

- 4.9. Vendor should provide a list of recommended spares for trouble-free operation and recommended spares will be provided by PCHF.
- 4.10. The vendor should be able to modify / alter the subsystem of the equipment's in case of non-availability of original spares / parts.

5. Terms & Conditions:

- 5.1. Payment Terms: The payment shall be released quarterly on prorated basis after completion of satisfactory service and on presentation of bills along with original service reports duly certified by PCF engineer and approved by Manager, PCHF.
- 5.2. In case, if any breakdown calls are not attended within 48 hours of lodging the complaint, down time compensation at the rate of 0.5% of the service charges applicable to the equipment per day shall be recovered from the vendor.
- 5.3. URSC reserves the right to terminate the contract any time without giving any reasons, if the vendor/contractor fails to meet the schedules as per or if not attending the breakdown calls for the equipment's.

List of Equipment

1. IS Solder mask developing system, Model No: DEVMASTER, S/N: 0737662
2. Semi-Automatic Electroless PTH Process Line Model No: NAPKO/OMRON
3. Argus Solder Mask Tack Drying Unit Model No: PC-9624 S/N: 1001370
4. Wise Scrubstar Scrubbing System Model No: Scrubstar S/N: CA107002
5. Hot Air Ovens, Qty: 04 Nos.
6. PID Controllers and Heaters, Qty: 03 Nos.
7. Cedal Dry Film Laminator, Model No: S/L: 15.130.004.1
8. Wise Chemstar Pre-Cleaner Model No: CHEMSTAR S/N: PPB118014 and Fluxstar Post Cleaner System Model No: FLUXSTAR S/N: FSA118015
9. Wise Stripstar Dry Film Photo Resist Stripping System Model No: S/N: SSI118013
10. Wise Planarizer System, Model No :S/N:FLD111042
11. Wise Chemstar Black Oxide System, Model No: S/N: MSB118012
12. LAIF HASL System and Fluxer System.

1. IS SOLDER MASK DEVELOPING SYSTEM

Equipment Name: IS SOLDER MASK DEVELOPING SYSTEM		Model: DEVMASTER, S/N: 0737662	Date:
S/N	Control / check	Observation	Check
1)	Clean all the lash points to free from carbonate deposits in the input and output conveyor module.		
2)	Examine all rollers free rotation and end brushings in place. Clean and replace if required.		
3)	Check spray bar of nozzle for full spray: remove the Spray nozzle and clean if required.		
4)	Remove the filters in the tank and clean. Examine the pressure gauge and hydrometer for proper function. If any malfunction of gauges observed change/repair.		
5)	Check coupling setscrews and tighten as required.		
6)	Examine pumps for excessive pump noise vibration and any abnormality replace impeller/bearings.		
7)	Top and Bottom pump performance. Check for plumbing leakage and repair.		
8)	Check and adjust drive chain tension on brush mechanism and conveyor drive mechanism.		
9)	Clean outside surfaces with appropriate chemicals or water as well as Clean inside all auxiliary rinse modules.		

10)	Inspection dome/cover seals for compacting replaces as required.		
11)	Remove electrical covers and inspect for all leaks or corrosion. Repair as required clean and reseal.		
12)	Check and tighten drive motor coupling sets screws including sprocket.		
13)	Check sludge level and clean as required of outlet valve.		
14)	Check drives motors gear box for oil, never over fill. Fill only to gear head.		
15)	Check proper machine exhaust, any problem with filter clean the same.		

2. SEMIAUTOMATIC ELECTROLESS PTH PROCESS LINE

Equipment Name: SEMIAUTOMATIC ELECTROLESS PTH PROCESS LINE		Model: NAPKO/OMRON	Date:
S/N	Control / check	Observation	Check
1)	Check the transporters for its free movement. Any noise/vibration check for bearings and guides.		
2)	Check all plumbing works for any leakages/breakages.		
3)	Check leakages of all 27 tanks and repair to be carried out if any leakage observed.		
4)	Check the gearbox of the agitation motor for noise and lubricate. Check the CAM for proper rotation and adjust if any loosening is observed.		
5)	Check electrical, control systems for loose contact /malfunctioning, and repair the same.		
6)	Periodical checking of electrical connections to the vibrators for better contact and repair the same.		
7)	Check and position of transport jig position number should match the control panel display number, if not rectify.		
8)	Check and clean all water filters.		
9)	Check for PLC Battery, program and other electrical relays/contactors. If battery low indication changes the same as per procedure.		
10)	Check for rail agitation throughout the line.		
11)	Check the mounting screw in the electrical vibrator for loose contact and tighten if required.		
12)	Periodic checking of the impeller in the pump in Electro-less bath, clean, and assemble.		

3. ARGUS AIR SPRAY SOLDER MASK COATING AND TRACK DRY SYSTEM

Equipment Name: ARGUS AIR SPRAY SOLDER MASK COATING AND TRACK DRY SYSTEM		Model: PC-9624 S/N: 1001370	Date:
S/N	Control / check	Observation	Check
1)	Clean the chain throughout the length to remove the solder mask material.		
2)	Clean the track dry chamber.		
3)	Clean the air filter.		
4)	Clean the compressed air filter.		
5)	Maintenance of the exhaust blower, check for the noise/vibration, if any problem repair/rectify by changing the bearings/fans.		
6)	Changing of filter in spray module after verification whether the same is clogged.		
7)	Verification of PLC battery and complete electronics, interface with touch screen. If any malfunction is observed, rectify/repair the same.		
8)	Verification and validation of the gun temperature and track dry all the 3 zones temperature.		

4. WISE SCRUBSTAR SCRUBBING SYSTEM

Equipment Name: WISE SCRUBSTAR SCRUBBING SYSTEM		Model: Scrubstar S/N: CA107002	Date:
S/N	Control / check	Observation	Check
1)	Check the degree of wear of the scrubbing brushes, if any abnormality/problem observed replace with new brushes.		
2)	Clean the machine externally avoiding using abrasive materials (or) objects.		
3)	Each week check the wear status of the nozzles efficiency. If necessary, provide cleaning (or) placement.		
4)	Each week check the wear status of the spongy Squeeze roller in the drying section Replace if dirty of worm.		
5)	Remove all copper and abrasives residue from Scrubbing section of the machine, helping the action of the water hose with a long handled brush.		
6)	Check the rollers and conveyor systems.		
7)	Brushes: Visually check the status of the Scrubbing brushes, which should appear regularly cylindrical. Replace them if necessary.		
8)	Check water inlet and outlet value.		
9)	Check the status seals of the cover, doors and filters.		
10)	Check the efficiency status of the flexible connection tubes between pumps		

	and various utilities. Replace, if necessary.		
11)	Check the conditions of the air filters. Replace if necessary.		
12)	Check nozzles, brush, and rinsing chambers.		
13)	Remove and clean manifolds and nozzles.		
14)	Check rubber rollers of wear, if any wear out of rollers observed, replace with the new ones.		
15)	Check gears transport system for any noise / vibrations. If any problem observed, rectify the same.		
16)	Lubricate moving parts		
17)	Check rubber rollers of wear, if any wear out of rollers observed, replace with the new ones.		
18)	Check gears transport system for any noise / vibrations. If any problem observed, rectify the same.		
19)	Lubricate moving parts.		

5. HOT AIR OVENS

Equipment Name: HOT AIR OVENS		Qty: 4	Date:
S/N	Control / check	Observation	Check
1)	Checking of Electrical connections for any loose contacts / bur out of wires. Rectify / repair the same.		
2)	Calibration/validation of temperature & PIDs with standard source.		
3)	Checking and maintenance of Fan motors for proper functioning. Any problem observed rectify /repair the same.		
4)	Checking of all safety interlocks for proper functioning. If any problem / malfunctioning observed, rectify /repair the same		

6. PID CONTROLLERS AND HEATERS

Equipment Name: HOT AIR OVENS		Qty: 3	Date:
S/N	Control / check	Observation	Check
1)	Checking of Electrical connections for any loose contacts /burn out of wires. Rectify / repair the same.		
2)	Calibration / validation of Temperature & PIDs with standard source (preferably boiling water).		
3)	Checking of Heater and its insulation for operator safety. If found bad replace with new heaters.		
4)	Checking of Solution levels.		

7. Cedal Dry Film Laminator

Equipment Name: Cedal Dry Film Laminator		Model: CEDAL S/L: 15.130.004.1	Date:
S/N	Control / check	Observation	Check
1)	Clean both top and bottom rollers with IPA to ensure that the rollers are free from any photo resist gums.		
2)	Check free movement of conveyors and hot rollers at minimum and maximum speed.		
3)	Loading of photo resist rim without wrinkles, when the photo resist was exhausted.		
4)	Ensure proper contact of both rollers with proper pressure while operating the machine.		
5)	Check for wrinkle free lamination of photo resist on the panel.		
6)	Periodic checking [once in a three months] of roller temperature and sensor working condition.		
7)	Check the hot roller drive motor working in both forward and reverse directions.		
8)	Check the both heaters working conditions and measure the current.		
9)	Cleaning of air suction hoods and sensors		

8. Wise Chemstar Pre-Cleaner and Fluxstar Post Cleaner System

Equipment Name: Wise Chemstar Pre-Cleaner Model No: and Fluxstar Post Cleaner System.		Model: CHEMSTAR S/N: PPB118014 FLUXSTAR S/N: FSA118015	Date:
S/N	Control / check	Observation	Check
1)	Check and adjust the conveyor chain tension adjustment Lubricate outside chains on drive motors.		
2)	Check all the conveyor rollers and gears for proper moments, clean all the rollers and replace if required.		
3)	Check spray bar and nozzles for proper spray, remove and clean the Spray nozzle's and replace if required.		
4)	Remove and clean all the chemical and water filter in pump's and tanks and Examine the pressure gauge and hydrometer for proper function. If any malfunction of gauges observed change/ repair.		
5)	Examine pumps for excessive noise/vibration and any abnormality replace		

	impeller/bearings.		
6)	Check the plumbing leakage and repair the same.		
7)	Check the degree of wear the scrubbing brushes, if any abnormality or problem observed replace with new brushes in post cleaner system.		
8)	Check all the circulation pump, heater, sensor-working function if any problem replace with new one.		
9)	Check the dryer air knives blowers, air hose and air filters if any defect replaced the new one.		
10)	Clean inside all auxiliary modules and check the machine exhaust.		

9. Wise Stripstar Dry Film Photo Resist Stripping System

Equipment Name: Wise Stripstar Dry Film Photo Resist Stripping System		Model: Stripstar S/N: SSI118013	Date:
S/N	Control / check	Observation	Check
1)	Check and adjust the conveyor chain tension adjustment Lubricate outside chains on drive motors.		
2)	Check all the conveyor rollers and gears for proper moments, Clean all the rollers and replace if required.		
3)	Check spray bar and nozzles for proper spray, remove and clean the Spray nozzle's and replace if required.		
4)	Remove and clean all the chemical and water filter in pump's and tanks and Examine the pressure gauge and hydrometer for proper function. If any malfunction of gauges observed change/ repair.		
5)	Examine pumps for excessive noise/vibration and any abnormality replace impeller/bearings.		
6)	Check the plumbing leakage and repair the same.		
7)	Check the degree of wear the scrubbing brushes, if any abnormality or problem observed replace with new brushes in post cleaner system.		
8)	Check all the circulation pump, heater, sensor-working function if any problem replace with new one.		
9)	Check the dryer air knives blowers, air hose and air filters if any defect replaced the new one.		
10)	Clean inside all auxiliary modules and check the machine exhaust.		

10. WISE FLATSTAR PLANARIZER SYSTEM

Equipment Name: Wise Planarizer System		Model: Flatstar S/N:FLD111042	Date:
S/N	Control / check	Observation	Check
1)	Check the degree of wear of the planarizer brushes, if any abnormality/problem observed, replaces it with new brushes.		
2)	Clean the machine externally avoiding using abrasive materials or objects.		
3)	Each week check the wear status of the brushes efficiency. If necessary, provide cleaning (or) replace with new.		
4)	Each week check the wear status of the spongy Squeeze roller in the drying section replace it if required.		
5)	Remove and clean all the spray bars and nozzle's, replace if required.		
6)	Check all the rollers, conveyors and all gears for proper moments, replace if required.		
7)	Brushes: Visually check the status of the Planarizer brushes, which should appear regularly, Replace them if necessary.		
8)	Check water inlet and outlet value.		
9)	Clean the inside all auxiliary modules and check the machine exhaust.		
10)	Check and adjust drive chain tension and conveyor drive mechanism and lubricate the chain system.		
11)	Check all the motors, circulation pump and HP pumps		
12)	Check all the sensors and limit switch working condition, replace if required.		
13)	Check the dryer module Air knives, blowers, air hose and air filters, if any problem replace with the new one.		
14)	Check rubber rollers of wear, if any wear out of rollers observed, replace with the new ones.		
15)	Check the centering unit and cylinder working conditions.		

11. Wise Chemstar Black Oxide System, Model No: S/N: MSB118012

Equipment Name: Wise Chemstar Black Oxide System		Model: Chemstar S/N: MSB118012	Date:
S/N	Control / check	Observation	Check
1)	Check and clean all the conveyor drive and driven gears, replace if required.		
2)	Remove and clean all the spray bars and nozzle's for proper circulation,		

	replace if required.		
3)	Clean all the internal and external parts of the machine.		
4)	Clean all the chemical and water filters, replace if required.		
5)	Check and adjust drive chain tension and conveyor drive mechanism and lubricate the chain system.		
6)	Check the heater working condition.		
7)	Check all the temperature sensor, lid sensor, level sensor working conditions, replace if required.		
8)	Check all the motors, circulation pumps and working conditions, if any excessive pump noise vibration, check coupling sets screw and tighten as required and abnormal sound, replace if required.		
9)	Check the dryer module Air knives, blowers, air hose and air filters, replace if required.		
10)	Check the rotating band pass filter and clean the filter, replace if required. Check all plumbing and any other leakages, if found replace/rectify the same.		
11)	Check the pressure gauge and hydrometer for proper function. If any malfunction of gauges observed replace or repair the gauge.		

12. LAIF HASL SYSTEM AND FLUXER SYSTEM

Equipment Name: LAIF HASL SYSTEM AND FLUXER SYSTEM		Model:	Date:
S/N	Control / check	Observation	Check
12)	Remove and Clean the air knife assembly both top and bottom, and adjust the angle alignment's and fixed the same.		
13)	Check the level of molten solder in the pot and adjust the level if required by placing tin lead solder bars.		
14)	Check the solder bath solder pump and motor working conditions, check the pulley and belt alignment, adjust or replace if required.		
15)	Check all the heaters working condition replace if required.		
16)	Check all the temperature and limit sensors working conditions, replace if required.		
17)	Check the tank leakages, if any leakages repair the same.		
18)	Remove the carbon and dust in solder tank.		
19)	Check the vertical arm belt tension and motor working condition, if any problem adjusts the tension.		
20)	Check the air heater working condition and air pressure.		
21)	Check the Air supply and leakages, if any leakages repair the same.		

22)	Check the foot paddle and clamp open & close working condition.		
23)	Check all the conveyors, rollers and gears condition for proper moments, replace if required.		
24)	Check the drive motors chain tension, and lubricate the chain system.		
25)	Check the drive motor and flux pump working condition, if any abnormal sound or not working replace or repair the same.		
26)	Check the leakages, if any leakages repair the same.		