

RF/DC Sputter Deposition System Acceptance Protocol Criteria

RF/DC Sputter Deposition System – Acceptance Protocol Criteria

Equipment: RF/DC Sputter Deposition System

This protocol defines the test and inspection criteria to be evaluated during the Site Acceptance Test (SAT) following the system installation.

1. GENERAL INSTALLATION CHECKS

- Complete delivery and undamaged installation of all system components.
- Proper completion of all electrical, vacuum, water cooling, air, and gas connections.

2. HARDWARE AND SAFETY CHECKS

- Testing of the vacuum systems.
- Verification of operation and leak-tightness of the gas systems, MFCs, and valves.
- Testing of safety systems: overpressure relief valve, emergency stop, and door interlocks.
- Functional verification of all sensors, valves, and pumps (including ionization gauges, Baratron, etc.).

3. PERFORMANCE VERIFICATION TESTS

- Ultimate vacuum level: $\leq 5 \times 10^{-7}$ mbar.
- Film thickness uniformity: better than $\pm 3\%$.
- Calibration and simultaneous measurement test with dual quartz thickness sensors.
- Independent operation and water cooling verification of all 4 magnetron target sources.
- Verification of PID-controlled substrate heating system up to 800°C (accuracy $\pm 1^\circ\text{C}$).
- Substrate rotation and Z-axis shift (25 mm) movement tests (0–30 rpm range).

4. SOFTWARE AND AUTOMATION TESTS

- Verification of PLC control screens.
- Automatic control of vacuum, venting, film thickness monitoring, temperature, pressure, and gas flow.
- User interface verification: recipe creation, data logging, graphical analysis, and CSV export.
- Verification of user levels and password-protected access.
- Delivery of system operation manuals, maintenance procedures, and spare parts documentation.