

PVD – SPUTTER APPLICATION ENGINEER

Lee Aerospace:

Based in Wichita, Kansas. An industry leader in the manufacturing of aircraft transparencies.

Position Summary/Objective:

The Sputter Application Engineer is responsible for developing processes for the application of ITO/TO onto transparent glass surfaces to innovate solutions for aircraft heated windshields. This person shall be tasked with the challenge of developing, optimizing, and sustaining sputter processes to achieve coatings for optimum conductive resistivity and transparency required for aircraft heated windshields. Applicants require specific experience with the application of ITO/TO onto transparent glass for the purpose of heated windshields/windows, and should have a technical understanding of the following:

Vacuum Technology:

- Understand effect from cross-over pressure and control of cryo-pump purge frequency based on cross-over pressure.
- Understand the fundamentals of cryo-pump operation.
- Understand the process of leak detection for large and small leaks. Experience using a helium leak detector.

DC Magnetron Cathode:

- Understand the processes needed to generate plasma and the added advantage of using magnetron cathodes.
- Understand the causes of arcing and how can arcing is minimized.
- Understand the gas flow rate and uniformity over the target surface and how to optimize the gas flow and concentration.
- Understand how an anode affects the plasma process.

Gas Flow / Partial Pressure:

- Understand gas flow rate and pressure and the effect of inlet flow rate versus outlet flow rate on the mass flow controllers and the sputtering process.
- Understand the effect of the cryo-pump high vacuum valve position.
- Understand and calculate partial pressure and typical flow rates for a high-vacuum sputter deposition process.

Glass Substrate:

- Understand glass substrate composition and its influence on the coating process.
- Understand glass substrate preparation/cleaning.
- Understand how substrate temperature affects the coating process, coating adhesion, and consistency.

Resistive Transparent Oxide Coating

- Understand the fundamental characteristic of conductive coatings used for glass transparencies.
- Understand the advantages/disadvantages of ITO vs TO and respective process comparisons.
- Understand the advantages/disadvantages of ceramic vs allow target composition and effect from target wear characteristics.
- Understand resultant crystalline structure of coatings.

Conductive Coating Thermal Performance:

- Understand the heating characteristics of a resistive coating, including thermal performance and power density.
- Understand how heater geometry affects uniformity.
- Understand the usage of gradient coating application to control uniformity.

Vacuum Sputter Chamber

- Understand schematic and functional requirements of a vacuum sputter chamber including gas control and power supply control.
- Understand monitoring systems and associated automated input/output controls.