Why Choose a Rotary Cathode System?

Cost

Lower initial capital investment: The initial capital investment for rotaries is less than than typical planar cathodes for 1.5 m systems and larger. Furthermore, when using temperature-sensitive materials, fewer rotary cathodes are needed to coat the same area.

Higher target utilization: Rotary cathode target utilization is characteristically between 70-85 percent versus 25-40 percent with planar targets. This is because the target moves through the stationary plasma and is eroded all around its circumference.

Quality

Less arcing and particle generation: The smaller redeposition zone surface area on rotary cathodes reduces 1) the probability of particle generation that can end up on the surface of the substrate, and 2) the probability of arcing when sputtering dielectric films.

Reduced nodules with TCOs: Lower target temperatures and more efficient cooling of the target allow rotary cathodes to run at higher power densities than planar cathodes without forming nodules when depositing TCOs such as ITO.

Less process drift: With some target materials, there is less process drift and better films due to lower impedance. Lower impedance is the result of much narrower and stronger magnetic field designs compared to the wider, weaker planar magnetron magnetic fields.

Time

Longer campaign times: Campaign times are longer because most rotary targets have three to four times the sputter material available due to the geometry of the target, Targets life is longer due to higher utilization.

Faster target changes: Changing targets is much faster than with planar systems, especially with most Sputtering Components configurations because all utilities are introduced on one end block. The other end is a simple support.

Shorter burn-in time: Target burn-in time is reduced as there is much less material redeposition onto the rotary cathodes. Although rotary targets are sometimes ‘burned in’ at the start of a run, planar cathode ‘burn in’ often interrupts production.

Higher deposition rate: For some processes, primarily with materials that are temperature-sensitive, deposition rate is increased because lower impedance and better target cooling allow stronger electrical power.

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