

Active Anode

An essential accessory for control of plasma processes with rotatable magnetrons

- Controls heat on the substrate
- Provides positive plasma bombardment of the growing film
- Avoids process and uniformity drifts
- Combines with an oxygen plasma and carbon targets as a means for plasma pre-treatment

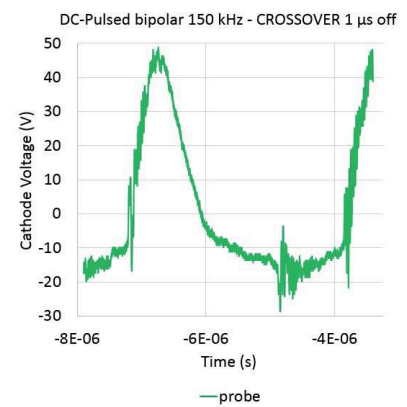
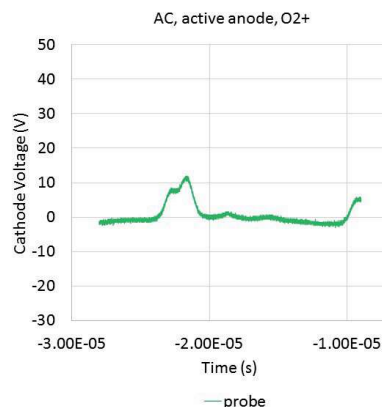
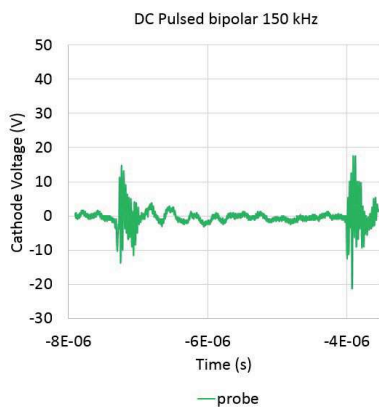
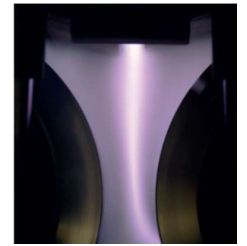
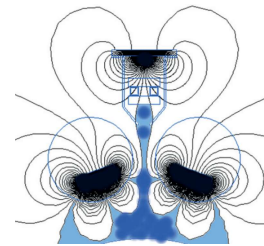
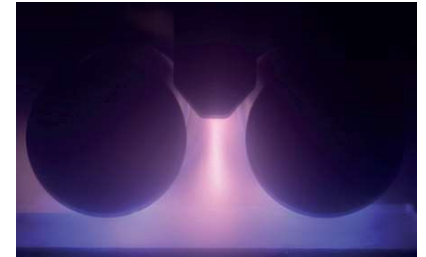
Active Anode

Gencoa's Active Anode is a method to provide an effective anode to collect the electrons escaping the rotatable magnetron plasma (low impedance plasma patent 9028660, filed August 14, 2008). A plasma is an electrical circuit and directing electrons into an anode therefore provides multiple benefits.

The magnetic field from a single or double magnetron (shown) combined with the magnetic field of the anode forms a closed trap for the electrons to guide them to the anode – electrons do not possess sufficient energy pass the field lines and escape the trap.

For DC type plasmas the anode is electrically floating and connected to the positive of the power supply. For AC or switching bipolar power modes, the anode is electrically earthed.

The basic function of the anode is to provide long term stability to the process, and prevent uniformity shifts with time. By driving the electrons away from the substrates, excess heating is avoided, leading to higher deposition rates being possible on temperature sensitive substrates.



If the sputter target switches to a positive voltage, as the electrons are diverted to the anode, there is a strong positive ion bombardment of the film. This enhances hardness and density.

This positive bombardment effect can be used as a plasma pre-treatment source. Carbon targets in the presence of oxygen will form CO₂, and no deposition will result whilst the substrates are bombarded.

Two versions of Active Anodes are available: electrically floating or earthed. The anodes have high flow water cooling and highly uniform gas delivery. A variety of mounting options are available.

For further product information, contact sales@gencoa.com

