



EHV2.5 Ion Beam Source

Many years of R&D and industrial experience allow us create robust budgetary low cost technological End-Hall ion beam source EHV2.5 for a wide spectra of applications in labs and production.

- High ion current with low ion energies (in the range about 30 – 200 eV) provide high effective substrate surface cleaning and activation without ion radiation damage.
- EHV2.5 ion beam source works with Ar, Xe, N₂, O₂, CH₄ and other gases and their mixes.
- Gridless design without expensive replaceable and realigned carbon or molybdenum grids provides budgetary price and low maintenance cost.
- Usage of high temperature materials and magnetic materials with highest Curie point requires no water cooling even for heavy duty working conditions, however water and radiation cooled models are available. The design of EHV2.5 ion beam source compensates the effects of thermal expansion of its heated components.
- Closed discharge chamber minimizes a working gas losses and magnetic core heating. The ring screen protects the magnetic core top flange of heating by cathode radiation.
- Broad divergent ion beam covers a wide 3D deposition zone providing a high throughput in different PVD coating processes.
- Only the cathode filament needs to be periodically replaced with no special tools or alignment. Two cathode filaments may be installed, so you don't need to terminate process and vent chamber to replace burnt filament – just re-switch power to the second spare cathode filament and finish the process. EHV2.5 ion beam source also works with such electron emitters like hollow cathode and others.
- Any suitable End Hall ion source power supply may be used to power EHV2.5 ion beam source. We recommend our IPS3500.2 power supply with two switchable cathode filament outputs.
- EHV2.5 ion beam source may be supplied with Swagelok®, VCR®, or customer specified gas fitting.
- EHV2.5 ion beam source disassembling for periodical cleaning and maintenance takes just a few minutes without removing from vacuum chamber and even without power wiring and gas supply disconnecting.

EHV2.5 ion beam source is intended for substrates in-



situ pre-cleaning and ion beam assisting in the following PVD coating technologies:

- Resistive evaporation
- Electron beam evaporation
- Arc evaporation
- Magnetron sputtering

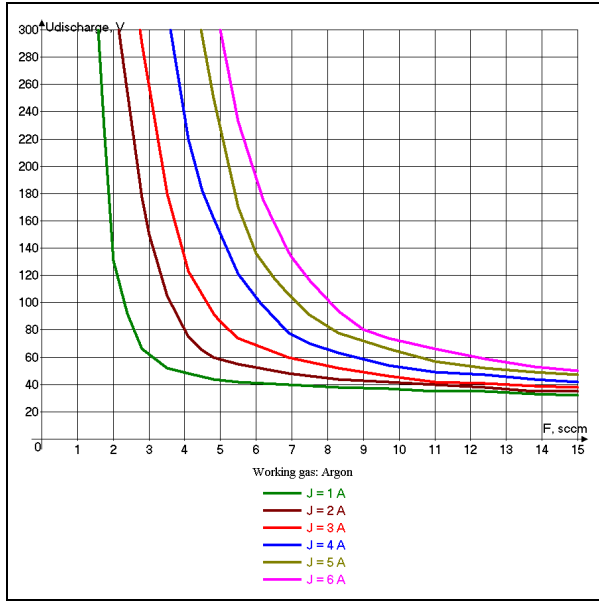
EHV2.5 ion beam source also may be used for DLC coating deposition, ion etching, surface modifications, and for other surface treatment applications in vacuum.

Excellent features and simple design allow an user upgrade with EHV2.5 ion beam source any existing coating machine and significantly improve coating processes performance:

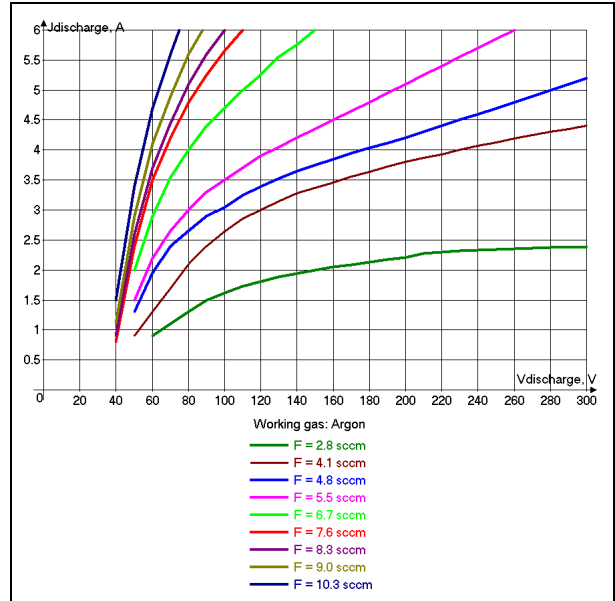
- Increase film density and adhesion
- Improve film structure
- Decrease film scattering and absorption
- Control index of refraction
- Decrease film stresses
- Improve coating stability.
- Realize deposition on cold substrates made of temperature sensitive materials.

SPECIFICATIONS

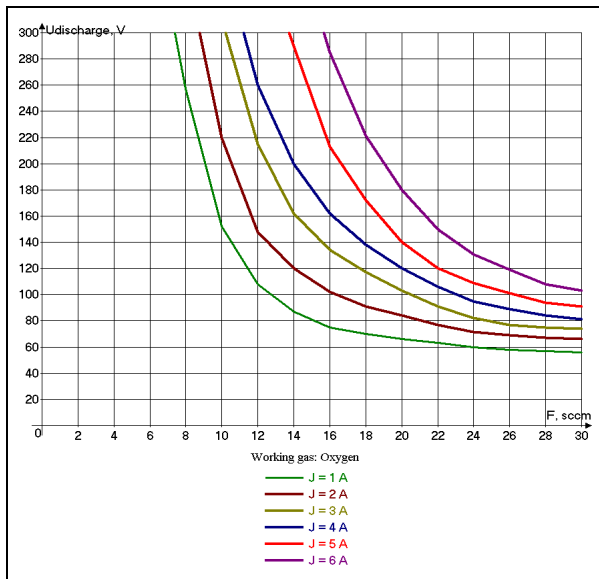
Maximal anode current , A ; - Without water cooling, at least/ With water cooling, up to	6/10	Working gas	Ar, Xe, N ₂ , O ₂ , CH ₄ , and other gases and their mixes
Nominal anode current, A - Without water cooling / With water cooling	1 ... 5/8	Magnetic system	Permanent magnet
Anode voltage, V	40 ... 350	Overall dimensions (without standoffs), inches	Dia. 5.5x7.5
Ion beam divergence, grad	80		
Operating pressure range, Pa (depends on vacuum chamber volume and pumping system)	$5 \times 10^{-3} - 10^{-1}$	Weight, lb	10



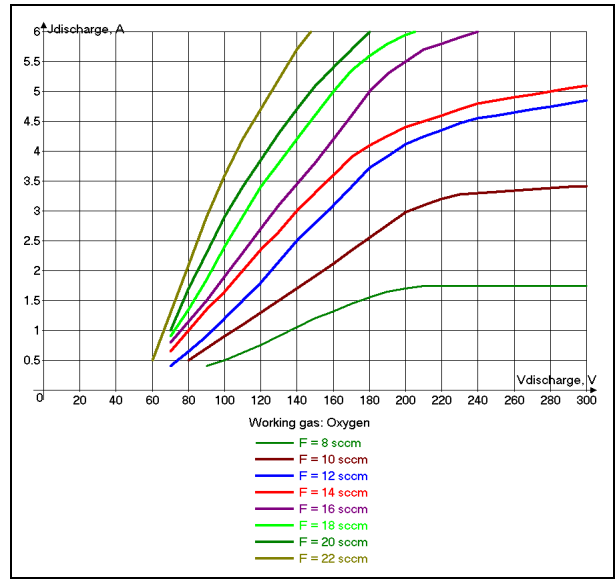
EHV2.5 Ion Beam Source discharge voltage vs argon flow rate for different discharge currents



EHV2.5 Ion Beam Source discharge current vs discharge voltage for different argon flow rates



EHV2.5 Ion Beam Source discharge voltage vs oxygen flow rate for different discharge currents



EHV2.5 Ion Beam Source discharge current vs discharge voltage for different oxygen flow rates