

THE INNOVATORS OF THE ELECTRON BEAM

EBOGEN EG 150

ELECTRON BEAM GENERATOR 150 kV

- Power range from 5 to 60 kW (at 150 kV), High voltage range from 70 to 150 kV.
- Mounting stationary or combined with a generator-movement system on the chamber ceiling (vertical) or the chamber wall (horizontal).
- Ceramic filament insulators protected against vaporization, oil-free high voltage plug-in connector
- Highest reproducibility and long-term stability of the beam parameters give consistent results
- Fast and accurate cathode change with mounting device – no subsequent adjustment of the beam parameters required as a rule
- Separate high vacuum system (9×10^{-5} mbar) for the beam generating system.
- Column valve between beam generation system and working chamber. Generator remains evacuated during venting the chamber.
- The EB-generators consist of modular units. The separate units are mounted in cylindrical, leaded housings and connected vacuum-tight by flanges.
- Fast beam deflection system EBO Jump Basic with electron optical viewing system EBO View, automatic beam alignment EBO Set, Offline seam tracking control system EBO Scan Offline.
- Optimal observation ability by the coaxially viewing system



Steigerwald Strahltechnik GmbH
Emmy-Noether-Str. 2 · 82216 Maisach · Germany
Phone: +49 8141 3535-0 · Fax: +49 8141 3535-215
info@steigerwald-eb.de · www.steigerwald-eb.de



EBOGEN EG 150

Generators using **acceleration voltages up to 150 kV** are called high-voltage generators. They offer the following technical and economic **advantages for the user**:

- Higher power density in the focus, which means a lower beam diameter in the focus. This results in narrower welds and a greater penetration depth
- Greater working distance up to 1,500 mm
Due to the higher speed of electrons the power density even for greater working distances is higher than for low-voltage generators, as the focus diameter is smaller
- Reduced magnetic deflection. Resident magnetic fields, residual magnetism in workpieces or in clamping devices deflect the electron beam from its planned direction.
The beam deflection through magnetic fields of interference at an acceleration voltage of 150 kV amounts to only half the value of that of 70 kV.

Beam quality:

The symmetrical power density distribution with high peak power in the beam centre, a low-tolerance stability of the electrical supply system and the proven mechanical construction play a decisive factor for the very good beam quality

Spot position accuracy:

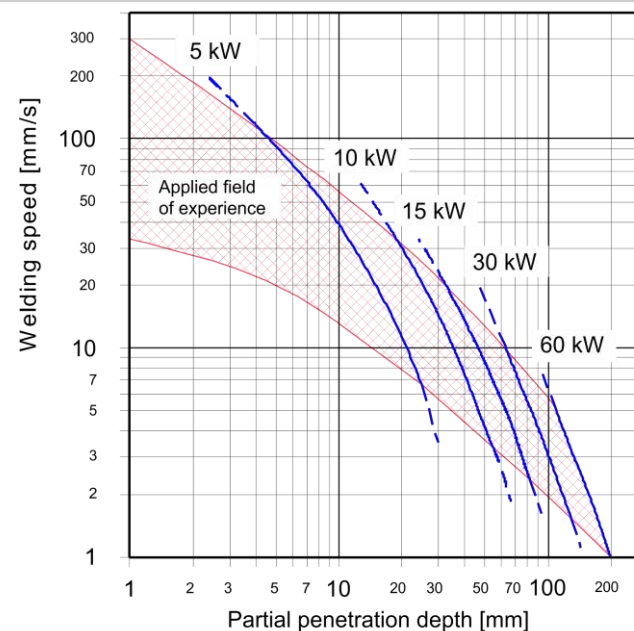
The position of the focused beam relative to the machine co-ordinates must be independent of the operating conditions.

Special generator types:

At higher beam powers and for special applications also with double lens system (BL) and additional beam band system (BLK) available.

■ TECHNICAL DATA EBOGEN EG 150

Type EG xx B(LK)	5B	10B	15B	20B(LK)	30B(LK)	40B(LK)	50B(LK)	60B(LK)
High voltage [U _A]	70 to 150 kV (≤ ± 0,5% full scale)							
Beam current [I _B] ≥100 kV 0 to	33 mA	66 mA	100 mA	133 mA	200 mA	266 mA	333 mA	400 mA
Beam power [P] 0 to	5 kW	10 kW	15 kW	20 kW	30 kW	40 kW	50 kW	60 kW
Number of alignments / stigmators	1 default (type B) / 2 optional (type BL/BLK)							
Beam deflection angle (DC; 150 kV)	max. ± 5°							
Working distance [A _w]	200 to 1500 mm			200 to 1200 mm				
Working pressure beam source	≤ 9 x 10 ⁻⁵ mbar							



Guide values for electron beam welding with 150 kV in steel.

Due to different material properties, beam modulations and oscillations precise statements can only be determined by experiments

Full penetration welds need additional power to create the underbead.