



Electron Beam Welding



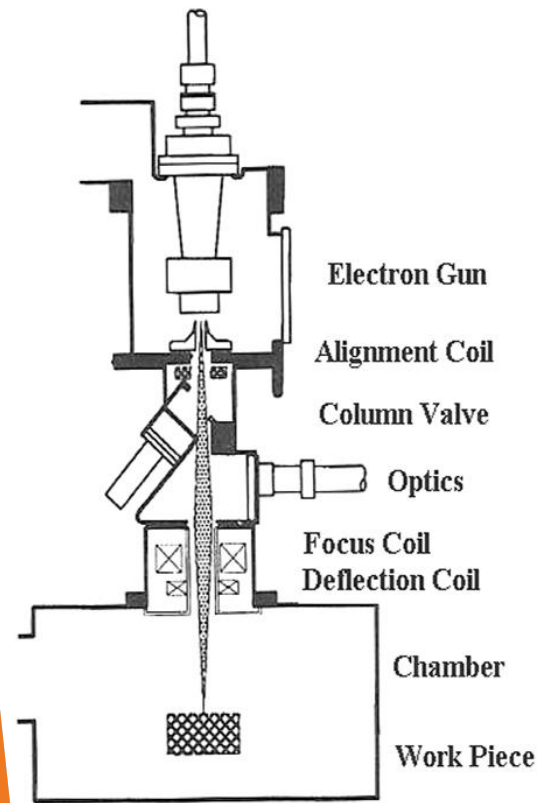
Benefits of EB Welding:

- Receive the maximum amount of weld penetration with the least amount of heat input, resulting in reducing distortion
- EB Welding often reduces the need for secondary operations
- Repeatability is achieved through electrical control systems
- A cleaner, stronger, and homogeneous weld is produced in a vacuum
- The electron beam machine's vacuum environment eliminates atmospheric contaminants in the weld
- Exotic alloys and dissimilar materials can be welded
- Extreme precision due to CNC programming and magnification of operator viewing
- Electron Beam Welding frequently yields a 0% scrap rate
- The electron beam process can be used for salvage and repair of new and used components



The Electron Beam Machine Process

An Electron Beam Welding system is composed of an electron beam gun, a power supply, control system, motion equipment, and vacuum-welding chamber. Fusion of base metals eliminates the need for filler metals (Autogenous welds). The vacuum requirement for operation of the electron beam equipment eliminates the need for shielding gases and fluxes. The electron beam gun has a tungsten filament, which is heated, freeing electrons. The electrons are accelerated from the source with high-voltage potential between a cathode and anode. The stream of electrons passes through a hole in the anode. The beam is directed by magnetic forces of focusing and deflecting coils. This beam is directed out of the gun column and strikes the workpiece. The potential energy of the electrons is transferred to heat upon impact of the workpiece and cuts a perfect hole at the weld joint. Molten metal fills in behind the beam, creating a deep, finished weld. The electron beam stream and workpiece are manipulated by means of precise, computer-driven controls, within a vacuum welding chamber, therefore eliminating oxidation or contamination





EBW Machine Specification

- Up to 60 kV Accelerating Voltage
- Up to 50 mA Beam Current
- 3 kW Switch Mode Power Supply
- PLC Based Control System
- Fast Response, Closed Loop Beam Current Control
- Rotary Motion Systems
- User Friendly operator console

Specifications	
Beam Power	3 kW
Accelerating Voltage	60 kV
Vacuum Chamber Dimension	50 × 50 × 50 cm
Operating Vacuum	$5 \times 10^{-2} Pa$
Rotary speed	0.02~20 RPM
Positioning Accuracy	100 μm



Electron Beam Application Development



www.ebad-group.com

Tel: 021-36016754

Fax:021-36464985