## **Electron beam machining/welding**

- In the EBM, electrical energy is used to generate the electrons with high energy.
- ➢ In this process, a high velocity focused beam of electrons are used to remove the metal from the work-piece.
- > These electrons are traveling at half the velocity of light.
- $\succ$  This process is best suited for the micro-cutting of materials.
- When the high-velocity beam of electrons strikes the workpiece, its kinetic energy is converted into heat.
- This concentrated heat raises the temperature of work-piece material and vaporizes a small amount of it, resulting in the removal of material from the work-piece.



## **Advantages of EBM**

- Suitable for micro finishing
- ➢ High accuracy.
- There is no mechanical contact between the tool and the workpiece.
- ➤ Harder materials can also be machined at a faster rate than conventional machining.
- > Brittle and fragile materials can be machined.
- > Extremely close tolerances are obtained.

## Limitation of EBM

- $\succ$  The cost of equipment is very high.
- > High skilled operators are required to operate this machine.
- > It is not suitable for large workpieces.
- ➢ High specific energy consumption.