Electron Beam Melting (EBM)

The machine uses a high intense electron beam to; layer by layer; consolidate fine metallic powders to produce fully solid metal objects. The process is run under vacuum, which prevent contamination and oxidation.

**Advantages**
Elevated temperature is used in the process to prevent residual stresses and to achieve excellent material properties. Since the process is run in vacuum, contamination effects from atmosphere and surroundings are minimized. The build rate of the EBM-process is considerably higher compared to similar laser based technologies, due to the use of an electron beam as the energy source.

**Challenges**
Support structures are used to some extent and its necessary use is a challenge.

Today, the numbers of available and certified materials are limited, and process parameters for more materials are needed. The high intense electron beam causes rougher surfaces, compared to similar laser based processes.

**Build volume (X, Y, Z) mm:** 200×200×180

**Build speed, cm³/h:** Normally 55-60, up to 120 is possible.

**Layer thickness, µm:** Normally 50-100, span from 20 to 200 is possible

**Energy type:** 3 kW electron beam

**Scan speed m/s:** Maximum 8 000

**Materials:** The range of certified materials include Inconel 718, Ti6A14V, commercially pure Ti, titanium aluminate and CoCr alloy ASTM F-75