

Category: Materials, Coatings and Processes

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Electro-beam welding

Whether components for aerospace, the automotive industry or scientific research facilities where other welding processes reach their limits, the electron beam ensures optimum results. The welding process in a vacuum brings many advantages:

- **Easy automation:** Since the electron beam is a digital tool, joining processes can be easily automated, welding results can be reproduced at any time, and mechanical quality values can be reliably maintained.
- **Flexibility:** The electron beam can be shaped as desired via magnetic fields and enables the welding of geometrically complex components. This gives designers freedom during process design and construction.
- **High efficiency:** The process delivers deep, narrow, and parallel seams. With simple seam preparation and a weld depth of over 150 mm, the electron beam is far superior to other thermal processes.
- **Multi-layer welding is just as unnecessary as additional material.** By working close to the final contour, over the top measurements can be significantly reduced.
- **Maximum precision:** Electron beam welding achieves precise results with minimal stress and distortion of the workpieces.
- **High welding speed:** A wide range of metallic materials and material combinations can be welded by electron beam at high speed and with virtually no ejections. The finished components can be installed immediately or with little rework.



Innovative Aspects:

Precise, flexible, easy to automate - these properties make the electron beam the number one choice for

- all standard metals, demanding mechanical materials such as titanium, duplex steels, aluminium, or mixed compounds, as well as steel that is difficult to weld.
- Heavy duty components.
- Workpieces with a wall thickness of more than 150 mm.
- Components with sensitive inner workings (for example sensors).

Application Areas:

- Electron beam welding is suitable for various applications, such as following industrial sectors:
- Aviation and aerospace.
- Oil & Gas industry.
- Automotive industry (sprockets, valves, etc.).
- Semiconductor industry (stainless steel and aluminum heat sinks).

Electron-beam welding is suitable for all electrically conductive materials, which can be welded with the conventional arc processes (electrode, MIG/MAG and TIG), and for welding combinations of different materials. Due to the vacuum, oxygen-sensitive materials can also be welded especially aluminium, stainless steel, titanium, niobium and tantalum.

Cooperation:

The company offers welding as a service.