



ADVANCED MANUFACTURING



ELECTRON BEAM WELDING

for large & high-accuracy manufacturing



A Group REEL company

ENIM

Systèmes Industriels



CNIM Systèmes Industriels is a French equipment manufacturer and industrial contractor specialized in the design, industrialisation and manufacturing of large, high-precision parts. The implementation of innovative processes, quality control and vertical integration of projects are all part of our DNA.

We supply products and services to high-tech industries such as Defence, the Nuclear industry, Big science, Space, Semiconductors, etc.

Electron beam welding: very high-quality parts

Electron beam welding, a technology that CNIM Systèmes Industriels (CSI) has used since 1988, is a vacuum welding process that does not require any filler material. The welds are made by melting the part's metal.

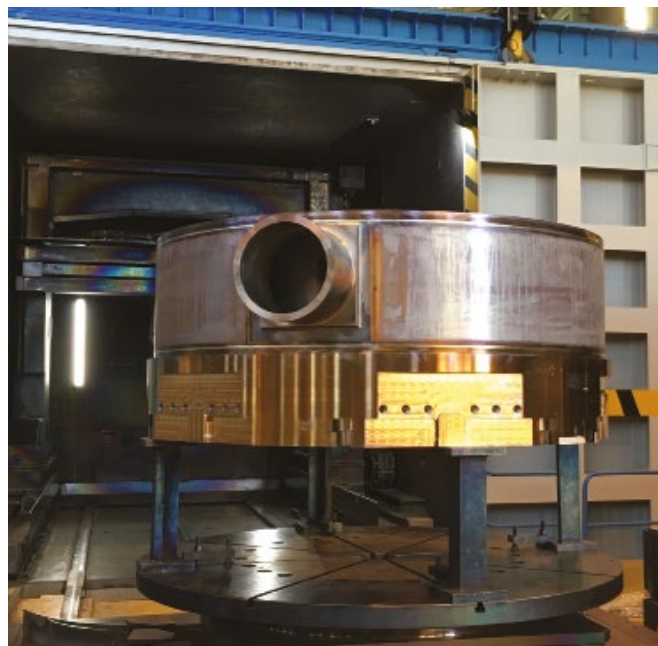
This process produces very high-quality, accurate and deep welds, guaranteeing the part's mechanical properties along the bead. Electron beam welds are made in a single pass, minimising and controlling part deformation as well as allowing highly-conductive metals to be welded.

Multi-material welding

Depending on the project, CNIM Systèmes Industriels can weld homogeneous or heterogeneous materials.

/ Homogeneous: Alloy steels, Stainless steels, Refractory steels, Zircaloy, Titanium, Tantalum, Niobium, Zirconium, Copper, Monel or Aluminium

/ Heterogeneous: Copper/Stainless steel, Molybdenum/Stainless steel, Nickel/Stainless steel, Niobium/Stainless steel or Aluminium/Copper



COMPETITIVE, EFFICIENT PROCESS

- / High-speed welding
- / Highly-repeatable process
- / Minimum deformation of parts
- / High-quality welds
- / No oxidation
- / Between 2 and 140 mm



We produce parts for high-tech industries and meet the highest quality requirements.

/ EN / ASME / RCC-M / ESPN / CODAP standards, etc...

Welding of large, or even very large, parts

CSI's welding facility has a useful volume of **230 m³**, measures **L 7.4 x W 5.5 x H 5.05 metres** and has a capacity of **30 tonnes**. It is equipped with a rotating plate and an electron-beam nozzle mounted on a five-axis gantry. This machine is suitable for **large parts with complex geometries**.

For very large parts, CSI has developed an electron beam welding process performed under a **local vacuum**.