PBF-EB-machine for powder bed-based additive manufacturing of metallic high-performance components (PBF-EB: electron beam powder bed fusion)

The new Spectra H machine (Colibrium Additive, a GE Aerospace company) enables the processing of high-temperature materials, such as Ni-based alloys or titanium aluminides. The machine is state-of-the-art and shows improved beam quality and system robustness.

The beam quality is significantly increased using a single crystal Lanthanum Hexaboride (LaB6) cathode, which means that the beam diameter is less affected by the beam power. In addition, LaB6 cathodes show an increased service life. Compared to systems with tungsten filament, the service life increases by an order of magnitude from 100 h to 1000 h.

The machine is delivered with a freely programmable beam control. The open architecture (Research Mode) ensures that all process parameters are known and freely adjustable at any time. Innovative scanning strategies can be introduced to the machine and the PBF-EB-process.

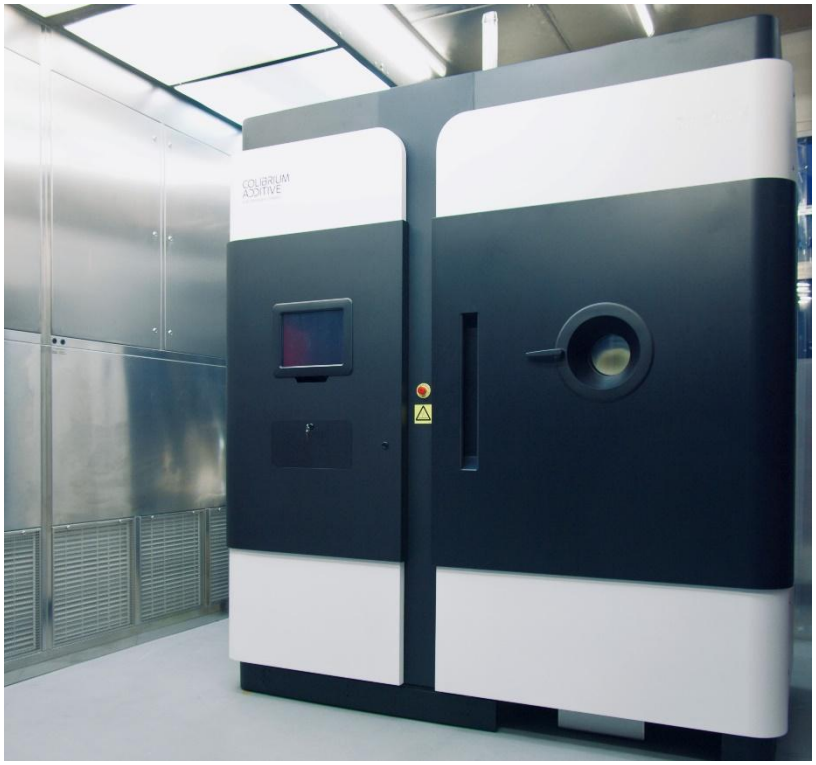

Figure 1: PBF-EB-machine Spectra H (Colibrium Additive, a GE Aerospace company). Location: Neue Materialien Fürth GmbH.