

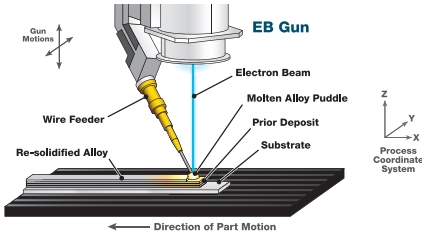
SCIANKY INC.

EBAM[®] 150



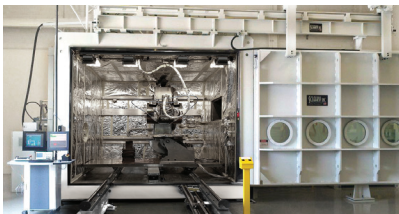
EBAM - The only large-scale metal 3-D printing system in the world with qualified applications for land, sea, air, and space.

► **SCIANKY'S EBAM PROCESS PROVIDES HIGH DEPOSITION RATES FOR LARGE-SCALE PARTS.**



The best material candidates for EBAM applications are weldable metals that are available in wire feedstock. Includes:

- Titanium and Titanium Alloys
- Inconel 718, 625
- Tantalum
- Tungsten
- Niobium
- 2319/4043 Aluminum
- 70/30 Copper Nickel
- 4130/4135 Steel
- Stainless Steel (300 Series)



Sciaky's EBAM 150 System

Metal Additive Manufacturing | 3D Printing Do It All With The EBAM[®] 150

Sciaky's Electron Beam Additive Manufacturing (EBAM) 150 System is one of the most versatile advanced manufacturing systems on the market. The EBAM 150 takes advantage of the large format printing capability that EBAM is known for - large metal structures made of high-value metals. The size of the 150 model allows not just large part printing, but also allows EB welding tasks for the larger parts typically used in Oil/Gas exploration, Power Generation and Aerospace applications.

SCIANKY'S EBAM 150 SYSTEM TECHNICAL DATA:

- Chamber Dimensions: 150" (3810 mm) x 110" (2794 mm) x 110" (2794 mm)
- Build Envelope: 110" (2794mm) wide x 47" (1194 mm) deep x 60" (1524 mm) high
- High Efficiency Pumping (up to 1×10^{-5} Torr ultimate vacuum pressure)
- Power Level up to 42 kW-60 kV
- Internal Boom Mounted Gun with High Resolution Optics & Servo Gun Tilt Axis
- X, Y & Z Servo Axes with Multiple Part Positioner Options
- CNC Control: Joint Scanning and Digitizing System
- Wirefeed with Motorized Wire Nozzle - Dual wirefeed optional
- Electron Beam Additive Manufacturing (EBAM[®]) Package with IRISS[®] Closed-Loop Control (CLC)

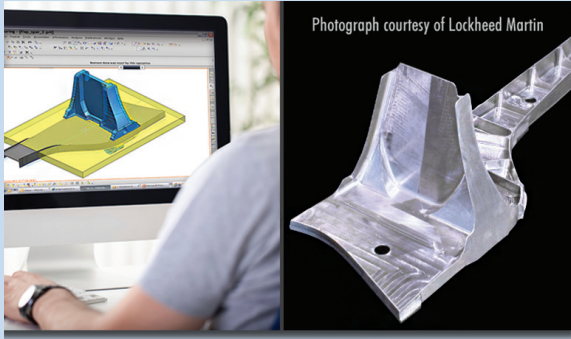
SCIANKY'S EBAM 150 UTILITIES:

- Electrical Supply Option 1: 480 VAC 3 PH, 250 Amp, 60 Hz
- Electrical Supply Option 2: 400 VAC, 3 PH 300 Amp, 50 Hz
- Air Supply: 90 PSIG (6.3 Kg/cm²), 130 psi max, 15 SCFM (26 CMH) nominal, 3/4" NPT
- Water: 35 PSIG (2.5 Kg/cm²), 60°F (16°C), 13.5 GPM (51 L/M)
- Chiller: 400-480 VAC, 3 PH, 40 Amp, 50/60 Hz Option
- Running Draw: 140A + Chiller and/or Vacuum Enhancement if present

To learn about Sciaky's patented technology, visit www.sciaky.com/patents

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► SCIAKY'S ELECTRON BEAM ADDITIVE MANUFACTURING (EBAM) TECHNOLOGY: HOW DOES IT WORK?



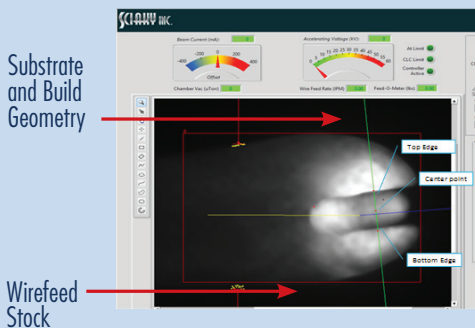
Starting with a 3D model from a CAD program, Sciaky's fully-articulated, moving electron beam gun deposits metal (via wire feedstock), layer by layer, until the part is built and ready for finish machining. Deposition rates typically range from 5 to 25 lbs/hr (2.27 to 11.36 kg/hr), depending upon part geometry and the material selected.

The EBAM package provides a precisely controlled beam geometry that produces superior energy distribution on the melt pool and wire for great repeatable performance. Requiring very little maintenance, the EBAM filaments can be changed out in 10 minutes at the end or beginning of any chamber cycle.

► PARTS CREATED WITH SCIAKY'S ELECTRON BEAM ADDITIVE MANUFACTURING (EBAM) TECHNOLOGY:



► IRISS® CLOSED-LOOP CONTROL TECHNOLOGY PROVIDES REAL-TIME ADAPTIVE CONTROL



IRISS is a patented suite of sensors, software logic, and CNC controls that monitors key metal deposition parameters in order to make real-time adjustments to the deposition inputs. The data collected from the process is quantified and digested by our IRISS software algorithms. The outputs from the software will change deposition parameters such as EB power, wire feed rate, and CNC motion profiles. These adjustments are made dozens of times per second in order to guarantee that every ounce or gram of metal deposited experiences the same transition from wire, to liquid, to solid. The result is a consistent production of high quality parts, from the first part to the last.

To learn more about Sciaky's Electron Beam Additive Manufacturing (EBAM) Technology, call us at 1-877-450-2518, or visit sciaky.com.