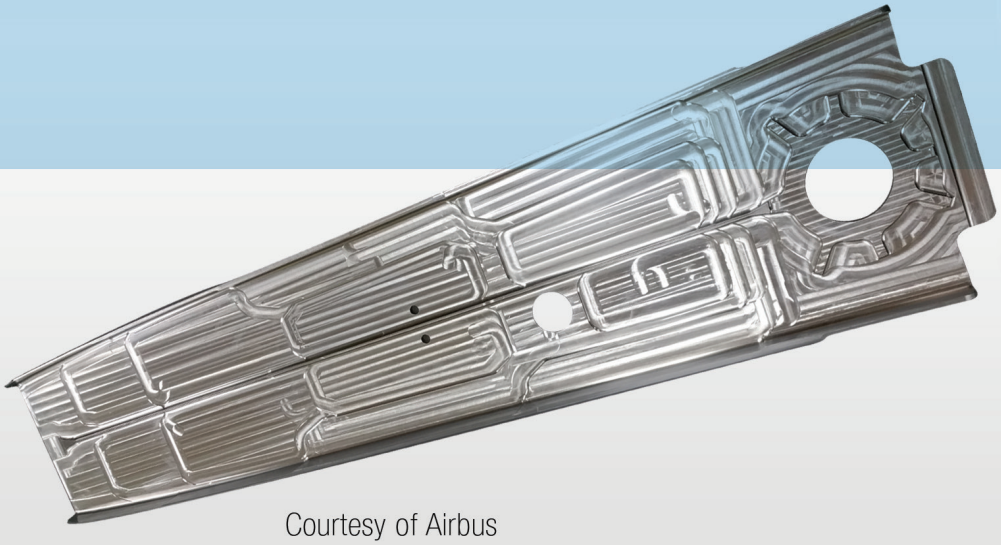
SCIAKY INC®

ELECTRON BEAM ADDITIVE MANUFACTURING

EBAM®

Metal Additive Manufacturing | 3D Printing

Save time and money on the production of your critical, large metal parts and prototypes with Sciaky's one-of-a kind Electron Beam Additive Manufacturing systems and services.



Courtesy of Airbus

Courtesy of Lockheed Martin

Sciaky has the world's most advanced large metal AM build platform.

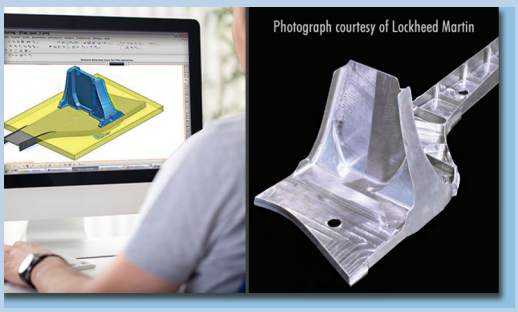
Sciaky launched its groundbreaking Electron Beam Additive Manufacturing (EBAM®) technology in 2009 with the objective to save manufacturers time and money on the production of large-scale, high-value metal parts and prototypes. Today, Sciaky's EBAM technology remains the largest, fully-programmable means of achieving near-net shape parts made of Titanium, Tantalum, Inconel, Niobium, Stainless Steels, Aluminum, Copper and other high-value metals.

PRINT LARGE METAL PARTS WITH SCIAKY'S EXCLUSIVE EBAM TECHNOLOGY

Sciaky's EBAM process can produce parts up to 19' x 4' x 4' — 5.79m x 1.22m x 1.22m — (L x W x H), allowing manufacturers to produce very large parts and structures, with virtually no waste. We can also produce parts up to 8' in diameter (2.44m). Now that's BIG!

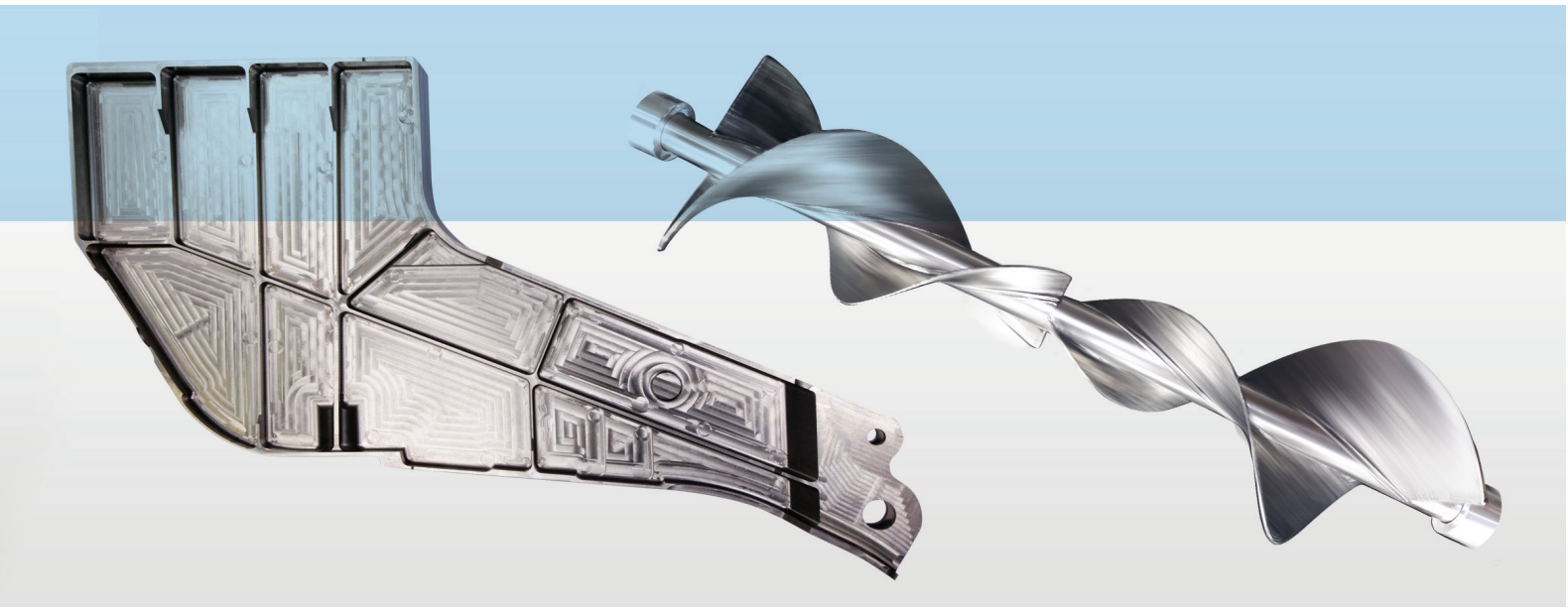
While large part additive manufacturing is our specialty, EBAM is also effective for smaller-scale parts and applications. In general, parts starting around 8 $in.^3$ (2033mm) and larger are the best candidates for the EBAM process.

HOW DOES SCIAKY'S EBAM PROCESS 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 7 to 20 lbs/hr (3 to 9 kg/hr), depending upon part geometry and the material selected.



SAVE MONEY BY ELIMINATING UP TO 70% OF YOUR MATERIAL WASTE. CUT YOUR MANUFACTURING TIME BY 70–80% WITH THE WORLD'S FASTEST LARGE METAL PART BUILD RATE.

IS SCIAKY'S EBAM® TECHNOLOGY AVAILABLE FOR PART AND PROTOTYPE MANUFACTURING SERVICES?

Yes. At our world-class 3D Printing Facility, we can manufacture your prototypes and production parts using our groundbreaking EBAM process to save you significant time and money. All you have to do is share your CAD file, along with project and material requirements. Our EBAM experts will work with you every step of the way.

CAN I BUY A SCIAKY EBAM SYSTEM TO PRODUCE PARTS AND PROTOTYPES IN MY OWN FACILITY?

Yes. Sciaky offers a wide array of EBAM systems for purchase. All systems are customized to meet your specific requirements. Sciaky also provides in-depth training and support so that your staff can become EBAM experts, too.

WHAT ARE SOME OF THE BENEFITS OF SCIAKY'S EBAM TECHNOLOGY?

- It drastically reduces your material costs
- It dramatically shortens your lead times
- It slashes machining time by as much as 80%
- It saves money over costly forgings
- It eliminates wait time for dies, molds and expensive billets

- ► IRISS® Closed-Loop Control Technology ensures process repeatability and traceability (real-time adaptive control)
- ► Increases machine shop yield and throughput
- ► Provides competitive pricing leverage
- ► It's Green— EBAM saves energy, eliminates waste and reduces emissions

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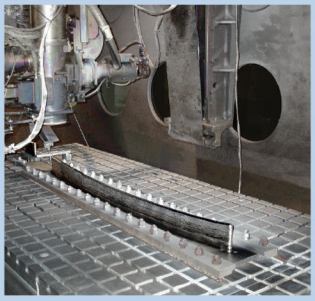
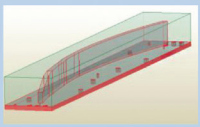
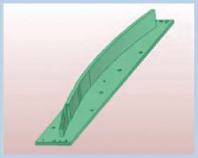
SCIAKY'S EBAM® TECHNOLOGY SAVES TIME AND MONEY OVER TRADITIONAL HOGOUT

Sciaky's AM process has been developed to deposit material only where it is needed to reduce the amount of starting materials required, which also translates into reduced time for machining. The below example is of a titanium aircraft material comparison.

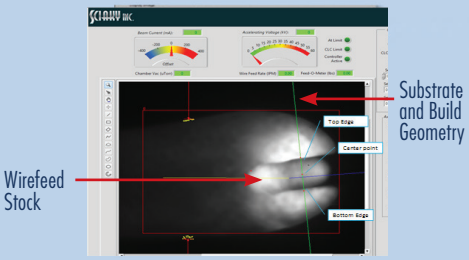






Estimated Hogout Material
Bar Stock - 57'' (1448 mm) x 6'' (152 mm) x 4'' (101 mm) = 218 lbs (99 kg)
EBAM Material Usage
Substrate Plate - 60'' (1524 mm) x 6'' (152 mm) x .5'' (13 mm) = 29 lbs (13 kg)
Deposit - 57'' (1448 mm) x .65'' (17 mm) x 3.5''(89 mm) = 29 lbs (13 kg)
Total Material = 50 lbs (23 kg)
Final Machined Part Weight = 4.5 lbs (2 kg)
EBAM material usage efficiency is approximately 80% better than hogout

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



Sciaky brings quality and control together in one step with IRISS – the Interlayer Real-time Imaging and Sensing System – which is the only real-time adaptive control system in the market that can sense and digitally self-adjust metal deposition with precision and repeatability.

HOW DOES IRISS® WORK?

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 EBAM, call Sciaky today at 1+(877)450-2518

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

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4915 West 67th Street
Chicago, Illinois 60638
877-450-2518

sciaky.com