SCIARY INC.

PEBAM powered by IRISS

INTERLAYER REALTIME IMAGING & SENSING SYSTEM



We know more about the creation of each additive part than we can reasonably know about parts created other ways."

> Slade Gartner, LM Fellow at Lockheed Martin Space Systems

IRISS[™] Interlayer Realtime Imaging & Sensing System Advanced closed-loop control system for optimizing the EBAM[™] 3D-printing process

MOTIVATION

Parts that are additively manufactured without a control system can have many quality issues. Since part quality for metal is affected by parameter settings in the deposition process, uncontrolled settings can lead to variability in layer geometry, mechanical properties, microstructure, and possibly chemistry. Traditionally, deposition settings and adjustment of parameters were analyzed by an operator and manually corrected, resulting in variable part quality. This limitation is possibly the single largest barrier to the adoption of Additive Manufacturing [AM].

SOLUTION

Sciaky brings together both quality and control in one step with IRISS – the Interlayer Real-time Imaging and Sensing System. IRISS is the only real-time monitoring and control system in the market that can sense and digitally self-adjust metal deposition with precision and repeatability. Our closed-loop control is the primary enabler of Sciaky's EBAM 3D printing process that through eliminating variations, results in improved quality and production throughput.

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. This is to ensure consistent and reliable geometries, mechanical properties, microstructure construction and metal chemistry for medium to mega scale AM parts.

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Photo Courtesy of Lockheed Martin

To learn more about IRISS™, call us at 1+877-450-2518, or visit sciaky.com.

SYSTEM FEATURES & BENEFITS

- ▶ The IRISS real-time closed-loop control is integrated with Sciaky EBAM 3D-printing systems
- Digital parameter control and adjustments are made in response to real-time measured data, without process disruption
- Records every second of deposition, so the entire build can be reviewed, verifying consistency and keeping a record for later review
- Prevents surprises by dynamically adjusting parameters to maintain part integrity
- Better insures net shape fabrication and reduces post processing time and costs such as machining and inspection

IMPACT

Our innovative IRISS process control virtually eliminates inconsistencies from the first to the last layer. Because IRISS is self-adjusting, it maintains key process characteristics through the manufacturing cycle, which results in high-quality parts. The iterative nature of our control technology results in designs with greater complexity, performance and cost reductions, compared to passive, open-loop monitoring systems offered by others in the AM industry.





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



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