

# Additive manufacturing for all-metal annular barriers

## Enhancing barriers for effective zonal isolation in geothermal wells

### Electron Beam Welding (EB Weld) and Electro Beam Additive Manufacturing (EBAM)

Welltec selected Sciaky who possess a long history of Electron Beam (EB) Welding and additive manufacturing solutions to develop our “weldless” solution.

Additive manufacturing enabled multiple cylinders to be stacked vertically in an EBAM machine. The result was the successful manufacturing and testing of two prototypes of an EBAM developed, and EB welded All-Metal Expandable Packer, more reliable and versatile for Geothermal applications.

In the Make! Phase, the vouchers were used to develop, test, calibrate and fine tune the parameters for EB welding and EBAM. This ensured that the properties, geometry and shape of the material deposited were aligned the result obtainable from conventional machined (subtractive) process.

For the Geo! Phase, the voucher will be used to manufacture additional prototypes for the field testing.

### Voucher funds

As a strategic partner for this development, Sciaky Inc. has proven to have the knowledge and technology required to manufacture and improve the additive manufacturing process.

The funds will be used for the further development of Electron Beam Additive Manufacturing (EBAM) techniques and EB Welding of engineered design.

#### **Team:**

Ricardo Vasques - [rvasques@welltec.com](mailto:rvasques@welltec.com) Katy – TX  
 Yosafat Esquitin - [yesquitin@welltec.com](mailto:yesquitin@welltec.com) Katy – TX  
 Ryan Melander - [rmelander@welltec.com](mailto:rmelander@welltec.com) Minot – ND  
 Nick Rakic - [nrakic@welltec.com](mailto:nrakic@welltec.com) Katy – TX  
 Gbenga Onadeko - [gonadeko@welltec.com](mailto:gonadeko@welltec.com) Katy – TX

#### **Team:**

Nathan Rarick - [nrarick@sciaky.com](mailto:nrarick@sciaky.com) Chicago – IL  
 John Ohara - [johara@sciaky.com](mailto:johara@sciaky.com) Chicago – IL  
 Todd Breault - [tbreault@sciaky.com](mailto:tbreault@sciaky.com) Chicago - IL

