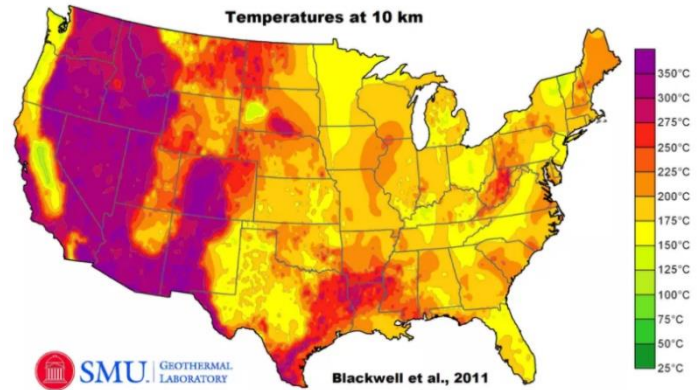


Technical Challenge

Enhanced Geothermal Systems (EGS) presents an enormous potential as a renewable energy resource. A quick look at the vast quantity of super-heated rock that exists throughout the western region of the USA provides a clear understanding of why the potential is so large (see image at right).

According to the DOE and as reported ([here](#)), EGS could provide the US with 15 million terawatt-hours-thermal (TWhth). As the reporting continues, “this EGS-based resource is theoretically sufficient to heat every US home and commercial building for at least 8,500 years.”



One of the key technologies to enable the production of geothermal energy from EGS is a robust cost-effective ultra-high temperature isolation packer that can withstand the lifecycle and typical temperatures of geothermal wells. Within the current Energy industry, there is not a suitable option available to meet this new industry need.

The Solution – A Retrievable All-Metal Isolation Packer System

The engineering team at Downhole Emerging Technologies (DET) have invented a solution and are nearly finished with the development of this new product. It not only meets the high-temperature needs, but also will survive up to one year within the EGS well. Additionally, it can be easily deployed and retrieved using cost-effective existing wireline systems.

To manufacture this all-metal high-strength alloy system, the team at DET and their partners are utilizing Additive Manufacturing (AM) processes for the main component of the device. Without AM technologies, this innovative packer system could not possibly be manufactured.

During the most recent phase of the project, the performance of the packer system was dramatically improved during a series of design upgrades. The forces required to deploy the system are now within the range of current setting tools on the market. This will allow us to move the prototype system into field testing, starting with shallow test wells and, as clients gain trust from additional evidence of success, into real operating boreholes.

It is our intention to continue to collaborate with the following connectors/partners:

- Star-Precision, Houston, TX (www.star-precision.com)
- Proto Labs, Inc., Maple Plain, MN (www.protolabs.com)
- Rice Alliance for Technology and Entrepreneurship (www.alliance.rice.edu)