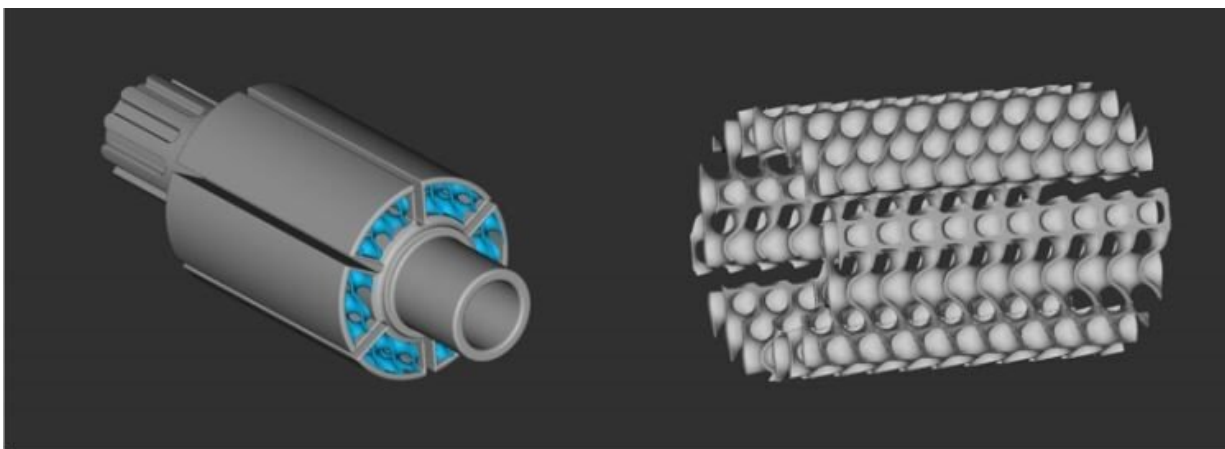


Specialized tools for geothermal energy via additive manufacturing

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By using computer-aided design and additive manufacturing, developers can improve the performance characteristics of geothermal tools, such as this optimized rotor design, and reduce production cost. Credit: ORNL, U.S. Dept. of Energy

Additive manufacturing can make the design and production of specialized tools for geothermal energy cheaper and more efficient, according to a study by Oak Ridge National Laboratory.

Geothermal is a renewable energy resource that requires specialized tools for drilling in harsh subsurface environments. The tools are typically produced in low quantities at high cost using conventional fabrication.

By using 3D-printing techniques, geothermal companies can take advantage of computer-aided technologies to design tools with enhanced performance characteristics. Those custom parts can then be printed using ORNL's high-strength alloys at a lower cost, especially when printing multiple parts in a single build. The lab's techno-economic analysis found ample opportunity to lower the cost of geothermal projects while improving system performance using [additive manufacturing](#).

"The study points to the significant benefits of additive manufacturing and provides a roadmap for future work, including the development of new AM feedstocks based on advanced, high-temperature alloys," said ORNL's Yarom Polsky.

Provided by Oak Ridge National Laboratory

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