



# Rotation Hammer Drilling Motor

## BENEFITS

- Allows for drilling in high temperature environments
- Unique power delivery that does not require a gear set to transmit power
- Can operate in both single direction and reversible modes
- Generates high levels of torque from a compact package

## APPLICATIONS

- Energy exploration
- Geothermal well development
- Mining
- High temperature drilling exploration

## SANDIA DISCLOSURE ON SD#

- 11627

## INTELLECTUAL PROPERTY & LICENSING CONTACT

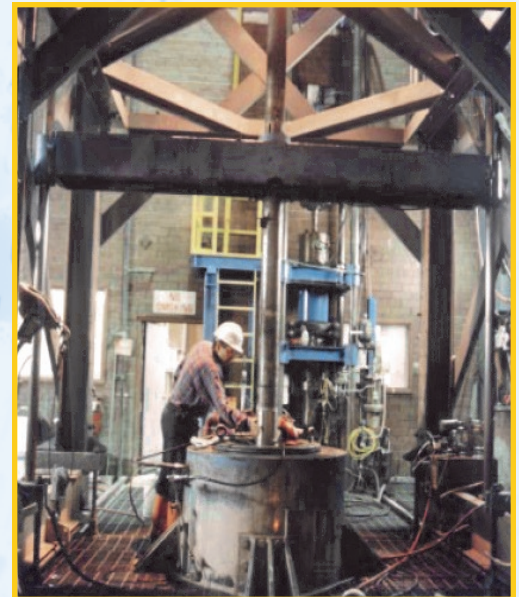
Virginia Cleary

505.284.8902

[vdclear@sandia.gov](mailto:vdclear@sandia.gov)

## Summary

Sandia has designed a unique downhole drilling motor that can generate rotation for drilling in high temperature environments. Unlike conventional motors, this device does not require elastomeric components which tend to break down during high temperature drilling. This motor can also be designed to operate in both single direction and reversible modes. The power delivery is also unique in that it does not require a gear set to transmit power, instead using a vane motor driven by a working fluid.



The device consists of a power generation section, power delivery section, and a bearing section. The rotational hammer is used to generate rotation in a drill bit through the transfer of angular momentum and is driven to a specified angular velocity before impacting the drill bit. Upon impact, energy is transferred from the rotating hammer to the bit, resulting in rotational advancement. This unique motor generates high levels of torque from a compact package.

## Licensing & Partnering Status:

Various license and partnering options are available. Please contact the Intellectual Property department to discuss.

## Technology Readiness Level:

Sandia estimates this technology at a TRL 4. The key elements of the device have been integrated and demonstrated to work in a laboratory environment.



Sandia National Laboratories is a multi-program laboratory operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.  
SAND #xxxx-xxxx



**Sandia  
National  
Laboratories**