High-temperature plasma rock drill

A plasma generator therefore is a device that produces such plasma. As is well known, when plasma is directed at a target, the gas will reassociate, and will produce tremendous quantities ...

This highlights the need for a new, cheaper drilling technology, such as Plasma-Pulse Geo-Drilling (PPGD), to improve the economic feasibility of AGS. PPGD is a rather new drilling method and ...

This paper presents one of such activities - development of novel technology based on electrical plasma for hard rock drilling. During this development, another application was identified as ...

Abstract The analytic basis of high temperature, full bore directed energy opening in rock is presented including energy requirements, rates of penetration, high temperature physics ...

High efficiency drilling technology and rock-breaking speed-increase mechanism in high temperature, high pressure and high hardness formations of deep and ultra-deep wells ...

These issues have made traditional deep drilling techniques inadequate for reaching the ultra-hot rock layers necessary for high-efficiency ...

The internal tubes are ignited by means of the thermite charge (8), or by Zundhulsen (16) and burned at a temperature of> 5500 ° C. At this high temperature, all rock compositions ...

With the exploration and development of oil and gas exploration continues to expand, the research on high-efficiency rock breaking drilling technology is imperative. ...

High-energy plasma jet rock-breaking technology is regarded as a very promising new drilling approach for deep hard rock, attributed to its high energy density, high rock-breaking ...

Future Trends in Geothermal Drilling Advanced drilling technologies aim to increase penetration rates, reduce costs, and access deeper resources Laser, plasma, and spallation drilling ...

With Plasma Pulsed Geo Drilling (PPGD), a drilling process that removes rock electrically and thermally using high-voltage pulses is currently in development.

High-energy plasma jets use high-temperature media to heat rock. The removal process is accompanied by a variety of complex phenomena, so it is crucial to study rock-breaking ...

The high-temperature plasma jet exits nozzles and destroys rock at the bottom of the drill hole, drilling to

depths of 3-10 km. Plasma drilling is useful for drilling ...

With the continuous development of the geological engineering field, high-voltage electric pulse plasma rock-fracturing technology has ...

The combustion tubes are ignited with the help of thermite charge (8), or by means of ignition sleeves (16) and burn with a temperature of> 5500 ° C. At this high temperature, all rock ...

The experimental results including those obtained under other conditions demonstrate that formation rock in deep borehole under high pressure and high temperature condition can be ...

But several key technology gaps still stand in the way of deep drilling in hostile subsurface geological environments. Technology companies and laboratories must make rapid advances ...

PLASMABIT® drilling platform is composed of four main subsystems Pulse Plasma Drilling Head Bottom Hole Assembly Modules Transfer Line ...

Here, we report on a novel hybrid drilling approach which combines low energy pulsed electrical plasma and traditional drag type drilling, where the pulsed plasma partially ...

Furthermore, considering that localized high temperatures are formed within the plasma channels during discharge, increasing the number of electrodes in an auxiliary ...

This study designed a novel high-energy pulsed plasma power supply and pulsed gas supply system to achieve rock fracturing through the instantaneous high-temperature and ...

These high drilling costs can be reduced significantly with contactless drilling technologies (e.g., thermal spallation drilling, laser drilling, microwave drilling, and Plasma Pulse Geo-Drilling), as ...

Rock disintegration technology and related solutions Non-contact drilling device based on robust plasma generator To efficiently reach sources up to 10 km / 35000 ft deep Demand for new ...

This paper investigates the effects of plasma on the rock properties on optical parameters such as expansion coefficient during plasma arc assists ...

Plasma drilling uses an electric arc to generate high-temperature plasma that can melt and remove rock and drill boreholes. It describes the physical principles ...

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