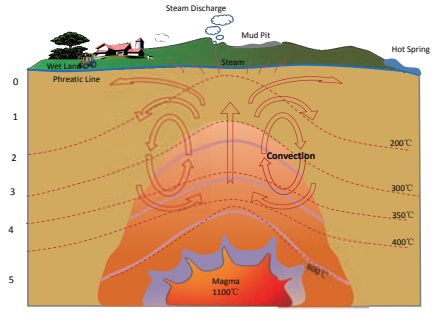
Deep Geothermal Energy Technology

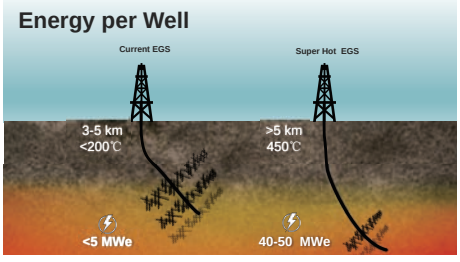
Geothermal heat is a renewable source of energy originating from the depths of the Earth caused by the convection of molten magma heated by radioactive material decay and pressures within Earth’ s core.

Technical Principles

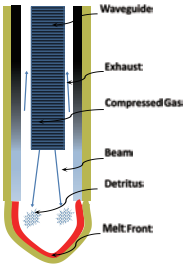
Deep geothermal energy technology refers to the use of drilling and fracturing to construct an efficient, stable recirculation of heat, transferring it heat directly to the surface for utilization as electricity.



Schematic of an Ideal Geothermal System



Different Power Generating Capacity of Different Enhanced Geothermal Systems (EGS)



Schematic of Millimeter-wave Drilling System

Technical Roadmap

ENN's deep geothermal energy program focuses on the development of large-scale, high-value resources and the advancement of exploration systems such as drilling equipment, reservoir reconstruction and engineering technologies that enhance the overall efficiency and comprehensive utilization of geothermal resources. Our research focus includes:

1. The development of Enhanced Geothermal System (EGS), the development of Super-Hot Rock (SHR, geothermal strata with temperatures above 400°C) and related technologies.

2. The development of millimeter wave drilling (MMW) (suitable for high temperature and pressure rock formations) technology to improve geothermal drilling efficiencies and reduce costs.

Technical Prospects

The overall utilization of geothermal energy in China is miniscule and plagued with low efficiency and geothermal energy accounts for a small fraction of energy production. The development of SHR would significantly reduce geothermal power generation costs; compared to electrical generation from dry hot rock, the number of wells required for SHR power is 1/14th that of dry hot rock, substantial reduction in investment cost while increasing electrical output over 10 times. As a non-carbon, clean and renewable energy source, deep geothermal energy has near exhaustible reserves, environmentally friendly, safe and reliable with has high development potential. The development of deep geothermal energy will effectively increase the proportion of clean energy in China's energy infrastructure and enhance its energy portfolio stability.

Tel: 0316-2597090 Fax: 86-316-2596907 E-mail: nyyjy@enn.cn HR E-mail: careers@enn.cn