

Digging 10 miles underground could yield enough geothermal energy to power Earth

A geothermal power company 'is developing technology to blast rock with microwaves to potentially drill the deepest holes on Earth.'



[Loukia Papadopoulos](#)

Created: Nov 19, 2022 09:10 AM EST

INNOVATION

f t in



A geothermal plant in Northeastern Iceland Scandinavia

[naumoid/iStock](#)

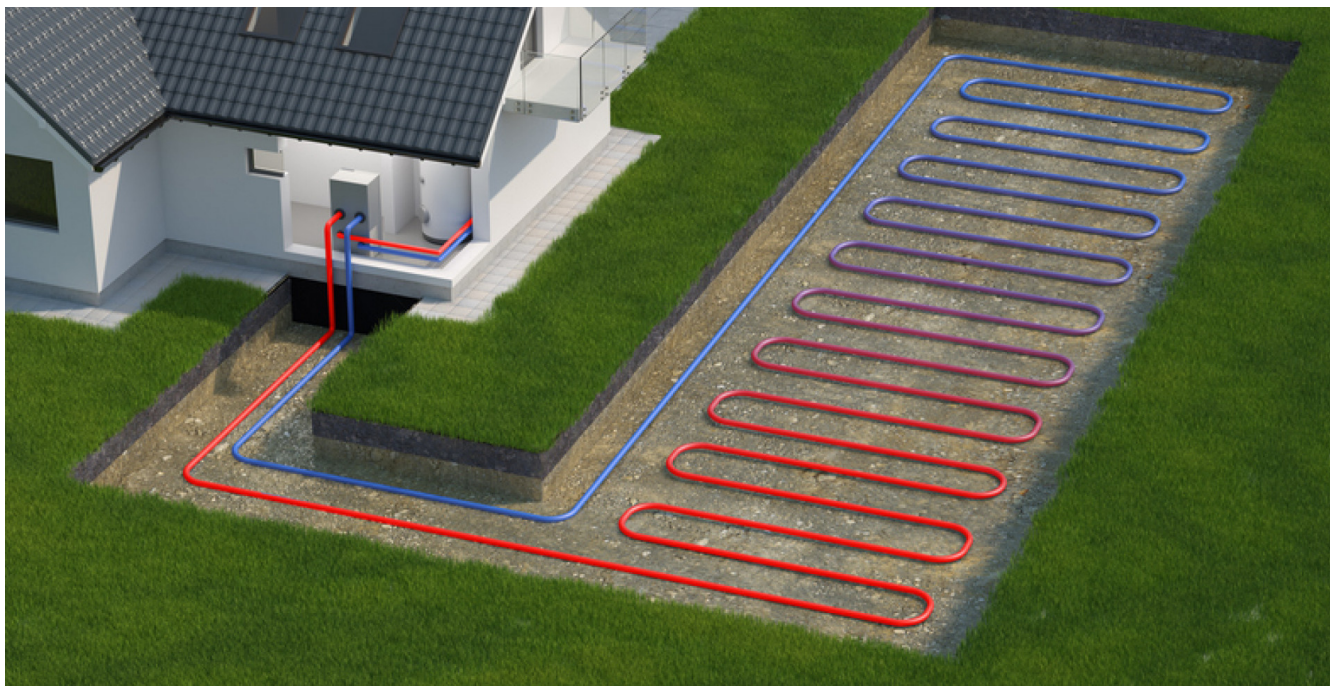
As fossil fuels cause increasing dangerous emissions, companies everywhere are looking to reduce their production of greenhouse gases.

One key way to do that is through geothermal, said Matt Houde, co-founder and project manager at Quaise Energy, [according to a press release](#) published on Thursday.

"The total energy content of the heat stored underground exceeds our annual energy demand as a planet by a factor of a billion. So tapping into a fraction of that is more than enough to meet our energy needs for the foreseeable future," said Houde.

Today, however, we can't drill deep enough to unlock that energy because we lack some key technology.

"If we can get to ten miles down, we can start to find economic temperatures everywhere. And if we go even deeper, we can get to temperatures where water [pumped to the site] becomes supercritical," a steam-like phase that will allow "a step change improvement in the power production per well and so cheapen the cost of energy," Houde said.



Geothermal underneath a home

KongeStudio/istock

He points to the deepest hole that's been drilled to date: the Kola borehole. Despite advanced developments, the notable hole just goes 7.6 miles down and took 20 years to complete because conventional equipment like mechanical drill bits couldn't withstand the conditions at those depths.

"And the truth is, we'll need hundreds if not thousands of Kola boreholes if we want to scale geothermal to the capacity that's needed," Houde said.

Blasting rocks with microwaves



Geothermal energy.

Hector Vargas, Quaise Energy

Enter Quaise, which "is developing technology to blast rock with microwaves to potentially drill the deepest holes on Earth. And no, I'm not stealing a plot device from Star Trek. This technology is real and has been proven in [an MIT] lab," said Houde.

land.

Finally, Houde said, geothermal is “the perfect energy source to take advantage of the largest workforce in the world, the oil and gas industry.” That industry has “11 million jobs in the US alone, and a skill set that is exactly what’s needed for geothermal to rapidly scale.”

Quaise is utilizing new technology that replaces drill bits with millimeter wave energy that melts and then vaporizes the rock to create ever-deeper holes. Developed at MIT over the last 15 years, scientists have demonstrated that millimeter waves could indeed drill a hole in basalt.

An ideal technology

Houde explained that millimeter waves “are ideal for the hard, hot, crystalline rock deep down that conventional drilling struggles with.” They are not as efficient in the softer rock closer to the surface, but “those are the same formations that conventional drilling excels at.” Hence the company combines both approaches to be more efficient.

Now, Houde has [ambitious plans](#) for his new technology. “Our current plan is to drill the first holes in the field in the next few years,” Houde said. “And while we continue to advance the technology to drill deeper, we will also explore our first commercial geothermal projects in shallower settings.”

SHOW COMMENT (0)



FOR YOU



INNOVATION IE PREMIUM

Airless tires made with NASA tech could end punctures and rubber waste

NASA “are simply the best in the world at modeling these materials, hands down,” SMART Tire co-founder Brian Yennie tells IE.

[Chris Young](#) | 9/15/2022



CULTURE IE PREMIUM

An 81-year-old Indian is taking one of the toughest examinations in the world. Here's why

[Deena Theresa](#) | 8/27/2022



Join the community today

Email Address

Join

MORE STORIES

Follow us on



ABOUT US CAREER CONTACT US FAQ ADVERTISE WITH US NEWSLETTER SUBSCRIPTION