Geothermal systems better than battery

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Enhanced geothermal systems can tap into heat energy deep underground the Earth"s surface. New research says they could also be better than existing technologies like batteries for storing excess renewable energy from wind and solar power.

A new proposal could solve those issues and bolster all three renewable technologies. The idea is simple--use advanced geothermal reservoirs to store excess wind and solar power in the form of ...

This geothermal startup showed its wells can be used like a giant underground battery. If Fervo Energy"s field results work at commercial scale, it could become cheaper and easier to green the...

Many consider geothermal to be an around-the-clock clean energy resource, but according to a Princeton-led study in collaboration with startup Fervo Energy, operating new geothermal plants flexibly could provide the best value for the grid. By leveraging the inherent energy storage properties of an emerging technology known as enhanced ...

In late January, a geothermal power startup began conducting an experiment deep below the desert floor of northern Nevada. It pumped water thousands of feet underground and then held it there, watching for what would happen.

Geothermal power plants work by circulating water through hot rock deep beneath the surface. In most modern plants, it resurfaces at a well head, where it"s hot enough to convert refrigerants or other fluids into vapor that cranks a turbine, generating electricity.

But Houston-based Fervo Energy is testing out a new spin on the standard approach--and on that day, its engineers and executives were simply interested in generating data.

The readings from gauges planted throughout the company"s twin wells showed that pressure quickly began to build, as water that had nowhere else to go actually flexed the rock itself. When they finally released the valve, the output of water surged and it continued pumping out at higher-than-normal levels for hours.

The results from the initial experiments--which MIT Technology Review is reporting exclusively--suggest Fervo can create flexible geothermal power plants, capable of ramping electricity output up or down as needed. Potentially more important, the system can store up energy for hours or even days and deliver it back over similar periods, effectively acting as a giant and very long-lasting battery. That means the plants could shut down production when solar and wind farms are cranking, and provide a rich stream of clean electricity when those sources flag.

There are remaining questions about how well, affordably, and safely this will work on larger scales. But if Fervo can build commercial plants with this added functionality, it will fill a critical gap in today"s grids, making it cheaper and easier to eliminate greenhouse-gas emissions from electricity systems.

"We know that just generating and selling traditional geothermal is incredibly valuable to the grid," says Tim Latimer, chief executive and cofounder of Fervo. "But as time goes on, our ability to be responsive, and ramp up and down and do energy storage, is going to increase in value even more."

"Welcome to Geothermal Highway," he said from behind the wheel of a company pickup, as we passed the first of several geothermal plants along Interstate 80.