



OIL & ENERGY

INVESTOR

with DR. KENT MOORS

your INSIDE ACCESS
to EXTREME WEALTH



New Geothermal Technology: How to Invest in the 30,000-Year Energy Supply

BY DR. KENT MOORS, EDITOR, *OIL & ENERGY INVESTOR*

Dear Reader,

A cheap, reliable energy source is waiting under the earth's surface. It's not oil, coal or any other fossil fuel. And it's everywhere, including under your feet, right now.

Unbelievable amounts of heat are sitting under the surface of the earth. And this heat could supply the world's energy needs for the next 30,000 years.

About seven miles underground, the earth gets very hot. Temperatures range from 900° to 4,500° Fahrenheit.

Until now, we had to rely on natural springs or geysers to bring this heat to the surface, which limited our chances to take advantage of the earth's natural energy source.

But a new geothermal drilling process could soon unlock an abundance of energy beneath the earth's surface.

Read on to discover how it works – and where to find profits in this revolutionary approach to energy production.

The Earth's Heat: An Increasing Energy Source

More than 20 countries currently use geothermal energy to generate electricity and heat. While Iceland is the best known, with almost 20% of electricity there being geothermal, the Philippines obtains more than 16% of its power from the earth's heat. Germany and Italy also generate significant power from the same source.

However, the United States – the home of geysers like Old Faithful in Yellowstone National Park – holds the most geothermal energy potential in the world. **Chevron Corp.** (NYSE:CVX), headquartered

in San Ramon, California, is actually the largest producer of such power worldwide.

And geothermal production is increasing. The Geothermal Energy Association (GEA) reported that construction has begun on 7,875.2 megawatts (MW) of new U.S. projects, up 26% year-over-year. Right now, there are 3,086.6 MW of installed geothermal capacity in the country. Current planned projects could more than triple the country's geothermal electricity output.

Washington has already committed some \$600 million for 135 geothermal research projects in 25 states through 2012. By the end of last year, there were 188 new projects in 15 states – with Nevada, California, Utah, and Oregon leading the list. Federal stimulus programs, tax incentives, and strong state renewable energy standards are fueling the growth.

The stakes are considerable.

30,000 Years of Energy in Hot Dry Rocks

A recent report from Massachusetts Institute of Technology (MIT) found that there is enough energy in the hard rock layer approximately seven miles beneath the surface of the earth to meet the world's power needs for 30,000 years.

Let me repeat that: We could power everything on this planet for 30,000 years just using the heat waiting underground.

But this energy is not going to come from the readily available sources of hot springs and geysers. The real source of geothermal power is the vast amounts of energy contained in dry rock – all over the world.

Until recently, all of this energy was inaccessible. But new drilling technology has made it possible and profitable.

Almost all current geothermal power projects rely on geysers and hot springs to bring heat from deep in the earth close to the surface. As we've seen in places like Iceland, this system works well. But it's inefficient, leaving a large percentage of the earth's heat unavailable for geothermal development.

Accessing the rest of the world's internal heat would bring energy independence and cheap, efficient electricity to almost every country across the globe. Winning the quest for this energy "holy grail" could well revolutionize the global energy system and make a bundle for those smart enough to invest at the birth of the industry.

EGS Taps the Power of HDR

The heat under the earth's surface has been there all along. But we needed something called the Enhanced Geothermal System (EGS) of drilling to unlock the energy in hot dry rock (HDR).

EGS can exploit the heat coming from dry rocks, eliminating the need to find a geyser or a hot spring before geothermal power can be produced.

Where natural geysers aren't present, an EGS team introduces cold water that's pumped through a naturally super-heated rock layer in the earth's crust. The miners then use the hot water that comes

back out of the earth to run an electrical power plant. The actual drilling and operating of an EGS plant is much more complicated than this, of course. But that's the basic principle behind EGS drilling.

The processes behind EGS and HDR have been known for some time. Until now, the ability to release the stored energy in hot dry rock has been daunting and expensive.

But MIT and several other researchers have concluded that, with investment amounting to little more than the cost of one or two new coal-fired power plants (one or two billion dollars), we could have significant power from the earth's crust on line and on tap in a couple of decades.

Geothermal Pioneers

There are pioneers already moving in this direction. Let me introduce you to some of the companies currently on my list at the forefront in rolling out the technical applications.

First up is **Nevada Geothermal Power Inc.** (TSX.V:NGP; OTC.BB:NGLPF). This Vancouver-based company has been operating its Blue Mountain site in Nevada, currently producing 36 to 38 MW of power, since 2009 and is planning to phase in similar activities at its Pumpnickel and Black Warrior locations in Nevada and Crump Geysers in Oregon.

The company has recently announced it expects an aggregate power generation of between 150 and 300 MW once all these locations are operational.

Another geothermal producer I am watching is a private company based in Bend, Oregon and appropriately named **Vulcan Power**.

This outfit can actually lay claim to having the largest geothermal property portfolio in the United States. It currently controls more than 170,000 acres of natural steam land with a 500 MW generating capacity for utilities throughout the western U.S.

In March, Vulcan filed for permission to build a 60 MW binary-cycle geothermal power plant near Fernley, Nevada. That facility is within 30 miles of five existing geothermal plants. Vulcan expects the plant to be in operation by 2012.

Both of these companies are phasing in geothermal power. Both are making use of existing electricity-generating infrastructures and positioning the new facilities in locations adjacent to the generating plants and to a developing network of geothermal energy sites. That reduces the development expense and transport costs.

Elsewhere, the developments are equally significant and coming in on an even higher scale.

In 2010, Japanese major **Mitsubishi Heavy Industries Ltd.** (TYO:7011) announced it has teamed up with Icelandic utility provider Reykjavik Energy to build geothermal projects jointly in developing countries throughout the world. The goal is staggering: To control no less than 50 percent of the global geothermal market in four years.

Mitsubishi says the new partnership will offer an integrated turnkey approach to provide poorer nations with construction, engineering, exploration, financing, and operational capability, along with components supply. In short, they are proposing nothing less than to change how vast areas of the world view energy production.

For the immediate future, the geothermal sourcing of power will be a slowly rising element in the energy mix.

To be a major player, EGS approaches are required. And that introduces a concern: EGS requires considerable hydraulic stimulation – which, upon occasion, causes seismic activity. To date, EGS projects have produced no fewer than five earthquakes in various parts of the world, measuring up to 3.9 on the Richter scale. Some care will be needed in overseeing how the technology is applied.

Actions to Take:

If you're an adventurous investor with funds you feel comfortable placing in a start up or foreign stock exchange, the geothermal field is a great place to be. But remember that investing in small companies or those on foreign exchanges comes with its own set of risks.

Be prepared for volatility in any small-cap stock, and watch out for price manipulation. And when looking at a foreign stock, make sure you, and your broker, are well versed in the common practices and rules on that foreign exchange and the country's investing laws.

Taking those risks and precautions into account, look at these two geothermal pioneers to find gains in the coming surge:

- **Nevada Geothermal Power Inc.** (TSX.V:NGP; OTC.BB:NGLPF) is a micro cap stock that's listed on the Toronto Stock Exchange - technically it's on the TSX Ventures Exchange - and sold over the counter in the United States. The small size of this company, with a market cap of less than \$100 million, leaves it open to volatility and manipulation.

At the same time, Nevada Geothermal is a growing company in a growing field. And it has a potentially bright future ahead of it.

If you decide the risks are worth it, talk to your broker about buying stocks on the TSX or over the counter. And once you have shares, watch Nevada Geothermal carefully.

- Investing in **Mitsubishi Heavy Industries Ltd.** (TYO:7011) has the opposite problem found with Nevada Geothermal. While Nevada Geothermal is too small to support deep investment, Mitsubishi is too big. This Japanese company is a large conglomerate that produces everything from trains to air conditioners.


Mitsubishi's units sell PATRIOT launch systems to the U.S. military and luxury ocean liners to Princess Cruises. The company builds sports arenas, planes, trains and, yes, automobiles.

While Mitsubishi does plan to control half the world's geothermal power, that is a drop in the bucket to a business that saw \$35 billion in revenue last year.

Mitsubishi is still a great company to watch, though. This industrial producer will be looking for smaller subcontractors and partners to aid its new geothermal projects. And those subcontractors are where investors will find exceptional gains in the upcoming geothermal boom.

In coming months, keep an eye on the small companies Mitsubishi is making deals with for geothermal services and products to find excellent profit opportunities before the rest of the world hears about the geothermal boom.

Sincerely,



Dr. Kent Moors

Dr. Kent Moors has been advising the world's largest and most active energy producers and buyers for 31 years, including six of the world's top 10 oil companies and high-level government officials from the U.S., Russia, Kazakhstan, the Bahamas, Iraq, and Kurdistan. Business clients include the Bank of England, Citicorp, AT&T, Deutsche Bank, the European Bank for Reconstruction and Development, the Russian Central Bank, and Westinghouse.

THE MONEY MAP PRESS Copyright 2011–present, Money Map Press, LLC 105 W. Monument St., Baltimore, MD 21201

All rights reserved. No part of this report may be reproduced or placed on any electronic medium without written permission from the publisher. Information contained herein is obtained from sources believed to be reliable, but its accuracy cannot be guaranteed.

Money Map Press Disclaimer: Nothing published by Money Map Press should be considered personalized investment advice. Although our employees may answer your general customer service questions, they are not licensed under securities laws to address your particular investment situation. No communication by our employees to you should be deemed as personalized investment advice. We expressly forbid our writers from having a financial interest in any security recommended to our readers. All of our employees and agents must wait 24 hours after on-line publication or 72 hours after the mailing of printed-only publication prior to following an initial recommendation. Any investments recommended by Money Map Press should be made only after consulting with your investment advisor and only after reviewing the prospectus or financial statements of the company.