

HotRock Geothermal Research Consortium



New-paradigm geothermal is booming, interest and investment are intense, and projects are progressing at an increasing pace. Currently there are many independent vectors of work, led mainly by startups with their own siloed intellectual properties. Bigger companies are watching closely, but most have not yet jumped in. The conventional geothermal industry is still focused on hydrothermal resources: but new technology breakthroughs will create opportunities to expand.

The HotRock Geothermal Research Consortium will integrate these isolated bodies of science and engineering knowledge to broaden and accelerate the scale-up of geothermal power anywhere.

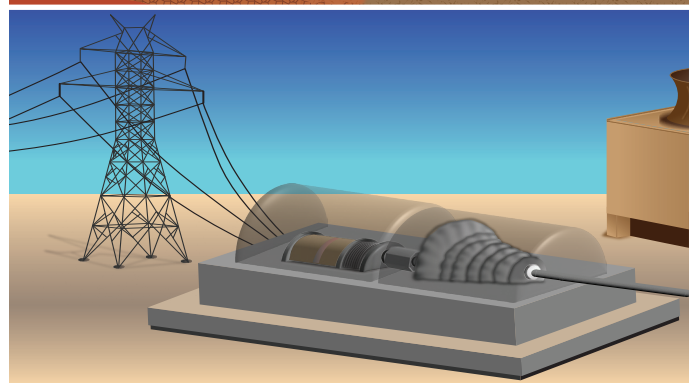
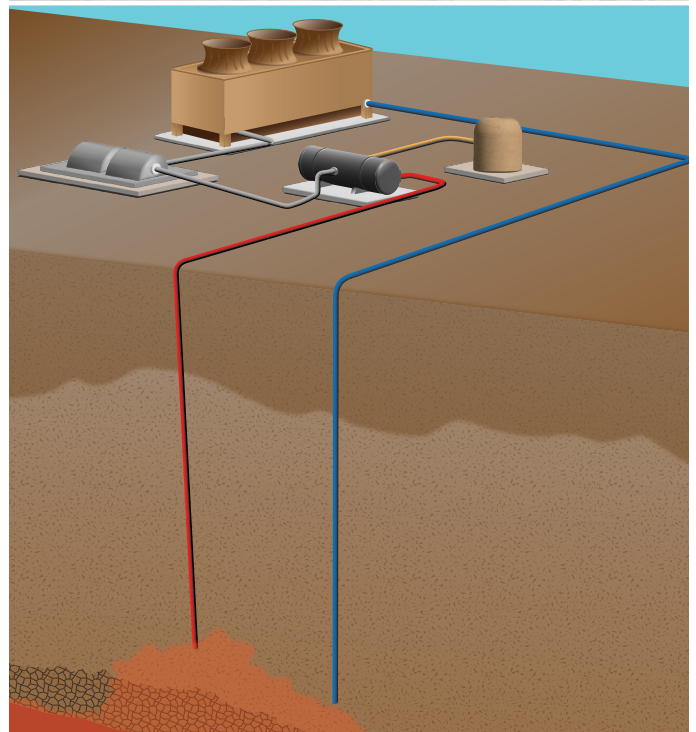
Vision

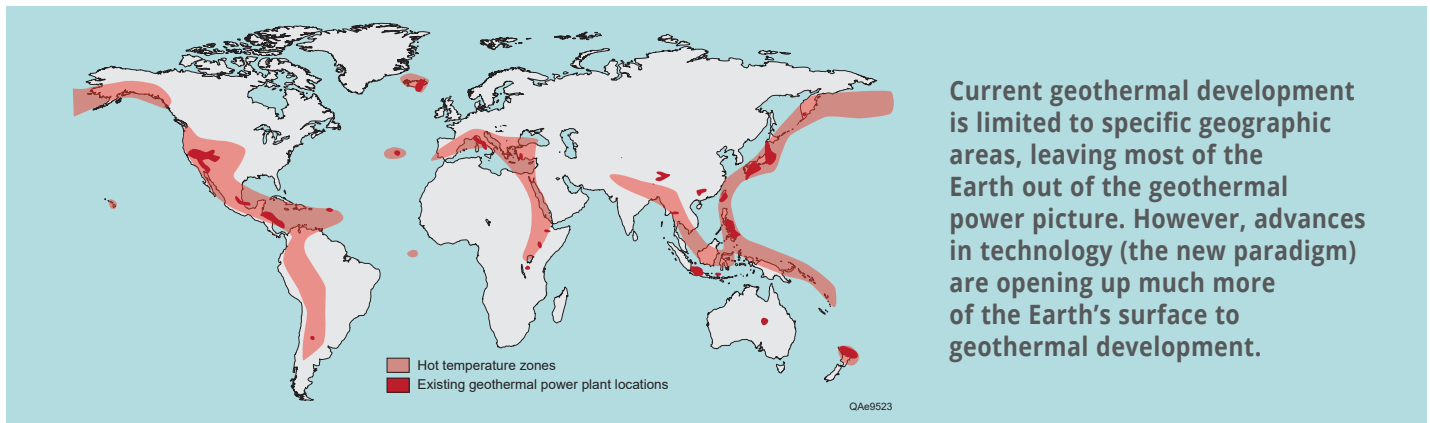
An industry-funded research consortium to find and fill the science and technology gaps needed to further develop the geothermal-anywhere ecosystem. This will incorporate science, engineering, economics, policy, and entrepreneurship efforts and will be led by the Bureau, *the* organization with the skills and proven track record to lead a major enterprise such as this.

Scope

The HotRock research consortium will address the broadest range of research and engineering topics, from deep within the subsurface to the consumer:

- subsurface geology and engineering
- surface power generation, grids, economics, and policy
- direct heat applications for heating and cooling, agriculture, etc.





As these applications have disruptive impact in the race to lower carbon emissions, the scope will be international, exploring how resources and certain technologies that are successful in one region could be scaled up in others.

Evident issues that need work include but are not limited to the following:

- Fit-for-purpose geothermal reservoir characterization: best indicators of suitable heat reservoirs—transfer of oil and gas methodology into geothermal
- Downhole tools and methods for well construction, well monitoring, and production enhancement
- Modeling heat transfer in fractures and into wellbores
- Supercritical CO₂–rock interactions
- Induced seismicity monitoring and mitigation
- Higher-temperature materials, sensors, cements, etc.
- Comparing designs and economics of diverse methods for harvesting heat
- Techno-economics of converting heat to electricity
- Low-temperature heating and cooling uses—a more efficient use of heat than generating electricity and potentially larger profitable market

Membership

\$75k/year. Companies will be able to collaborate with the PIs and researchers, obtain all the research results, and influence the areas of research. Each member company will appoint a representative to the advisory board to help make strategic decisions on spending and research.

HotRock will organize annual meetings attended by the sponsors and other invited guests as appropriate. The primary goals of the meetings will be to showcase the research performed by this consortium as well as by certain collaborators and partners, and to discuss the research strategy going forward.

Science Leadership

PI – Ken Wisian, ken.wisian@beg.utexas.edu (Bureau of Economic Geology)

Shuvajit Bhattacharya, shuvajit.bhattacharya@beg.utexas.edu (Bureau of Economic Geology)

Silviu Livescu, silviu.livescu@austin.utexas.edu (Department of Petroleum and Geosystems Engineering)

Nicola Tisato, nicola.tisato@jsg.utexas.edu (Department of Geological Sciences)
