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Research to boost flow rates of geothermal wells

A two-year research project that will investigate how the renewables energy industry can reliably produce economic flow rates from geothermal wells will be undertaken by the University of Adelaide in association with CSIRO, the South Australian Government and industry partners.

Credit: University of Adelaide

The research will be led by the South Australian Centre for Geothermal Energy Research (SACGER), part of the University's Institute for Mineral and Energy Resources, in collaboration with CSIRO and partnered by South Australia's Department for Manufacturing, Innovation, Trade, Resources and Energy and geothermal companies Panax Geothermal Limited and Geodynamics Ltd. The project recently received a funding boost from the Australian Renewable Energy Agency's (ARENA) Emerging Renewables Program.

SACGER Director, Professor Martin Hand, said the research would have significant implications for the geothermal potential of sedimentary basins (hot sedimentary aquifers or HSA) in Australia and the development of a ‘near zero’ emission energy industry.

‘Tapping the full potential of this energy source, however, requires that we gain a much better understanding of natural and engineered geothermal systems both within sedimentary basins and the rocks underneath them,’ Professor Hand said.

‘South Australia is home to Australia's most advanced geothermal energy projects, with around 30 km of drilling targeting both deep fractured rock and high temperature sedimentary systems.

‘But predicting permeability and well productivity ahead of drilling in order to generate the required economic fluid flow rates is the most significant technical challenge confronting the Australian geothermal industry.’

The project, 'Reservoir Quality in Sedimentary Geothermal Resources', will evaluate why the fluid flow rates from Australia's only two geothermal wells in hot sedimentary aquifer reservoirs – Celsius-1 in the Cooper-Eromanga Basin and Salamander-1 in the Otway Basin – have been significantly lower than expected.

The researchers aim to determine the causes of the low flow rates and how to evaluate reservoir quality before drilling.

They also hope to identify better geothermal targets, devise remediation strategies to reverse causes of low flows and develop mitigation strategies for future geothermal drilling.

Source: University of Adelaide