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Low Temperature Geothermal Waste Heat to Power Abstract

Texas and other states currently have a large demand for emergency and supplemental power to remote regions with little infrastructure. In Texas, many of these remote areas have significant oil and gas operations currently in place which have a high demand for onsite power during the various operations and life of a well. Most wells in Texas also produce significant amounts water and most wells are abandoned due to high water cuts. Much of this produced water is hot enough, due to reservoir depth, to be considered as a Low Temperature Geothermal (LTG) resource, meaning capable of electricity generation. This hot fluid combination of hydrocarbons and water can be run through an Organic Rankine Power Cycle (ORC) for effective Waste-Heat-to-Power generation to mitigate the cost of producing and/or disposal of produced fluids. This provides values to otherwise worthless hot water which can potentially prolong productive well life. Hot producing wells that are naturally flowing could also provide an emergency power source. Geothermal power is ideal for this due to consistent power output and use of existing infrastructure. The end goal of this project is to make an engineering study of how much can be delivered to the surface from a horizontal well compared to a vertical well and the potential power generation available that can be delivered from produced fluid heat flows.