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The key to high-performing geothermal wells

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Geothermal systems are an efficient way to heat and cool a building. They operate unobtrusively and don't rely on the weather. Geothermal is always working. The earth-couple is the critical component for a geothermal system. For open loop systems that utilize deep wells as the earth-couple, it is important to understand what the earth will give, both good and bad, to achieve a high performing system. For Standing Column Wells, they are drilled to 1,500 feet deep in rock formations never before tested, and depths that test the limits of the well contractor. This is new frontier. But for many geothermal projects, the well is all but ignored. It's assumed, with fingers crossed, the earth will cooperate. For a project that goes right, others go wrong - collapsed boreholes, crooked wells, and poor water quality. There is finger-pointing and change orders, and in the end, the Owner gets an under-performing system when a high performing one was always there. Why?

The well is the foundation to a successful geothermal system and needs the attention it deserves. Experts in geology, hydrogeology and geo-chemistry fill this role and should be part of the design team to assist in plans and specifications, construction inspection, and troubleshooting. Because it is cost-prohibitive to conduct a testing program prior to well construction, then it's key to understand subsurface conditions during construction. Use the first well as your test well to measure aquifer thermal conductivity, rock density, water yield, and water quality. Results allow for design modifications and no surprises when the system is turned on.

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