

By Phil Rawlings

If you have a question about geothermal installation, design or troubleshooting, send it to Phil Rawlings in care of *Geo Outlook*, Oklahoma State University, 499 Cordell South, Stillwater, OK 74078 or via e-mail to <mailto:insight@igshpa.okstate.edu>



Can standing column wells be used in all parts of the country?

Standing column wells are basically constructed in the same manner as a water well. However, this technology can only be used in areas where natural conditions fill the majority of the well with standing water. For example, if a well is 500 feet deep and has 450 feet of standing water, it would be suitable for a standing column well. If it had 100 feet of standing water, it would not be suitable.

Are there rule-of-thumb guidelines for standing column wells?

Standing column wells are open to the aquifer but still use a design criteria that is clearly defined. The results of using “rule-of-thumb” with a standing column well are going to be the same as using them for vertical closed loop system design - you are increasing the possibility for error. That said, some basic guidelines are:

- Required depth without bleed is typically 80-120 feet per nominal ton.
- Bleed (discharging some portion of the water elsewhere) rates are typically 10-30% and may reduce depth per nominal ton significantly but in a non-linear fashion.
- The well should require no more than 200 feet of casing prior to reaching rock formations - otherwise casing related costs will make the application not be cost effective.
- Well production must be sufficient to fill the well column to a stable, shallow static water level.
- If the static water level is 150 feet or deeper, use as a standing column well is not recommended.
- If bleed is used, well production must be equal to or greater than the amount of bleed discharge.
- A standing column well may be used as a water source for the building if production is equal to or greater than the building and bleed requirements. Use as a supply well actually enhances the performance of the standing column well system by moderating supply water temperatures.

Do supply and return header pipes need to be separated on ground heat exchangers?

Typically, all supply piping is run together, and all return piping is run together. The supply and return piping is usually separated in the trench or in two trenches. On smaller residential trenches, the single supply and return lines are on opposite sides of a wide trench separated by 2 feet in a narrow (chain trencher) trench – piping from the heat pump to the loop field is shallow, pipe returning to the heat pump is deep.

Mr. Rawlings has over twenty-five years experience in the geothermal industry. He is a Certified Geoechange Designer (CGD) and an IGSHPA Accredited Installer and Trainer.