

## **An Alternative to Ground Geothermal**

### **FeBTUCell™: Innovation in Ground Geothermal**

The current industry mainly uses two systems that offer a low return on energy applied:

*System Geothermal Option 1* or some use of the term Geo exchange, is a system involving an glycol and an excavated trench with plastic tubing. The return on input energy / output energy or Coefficient of Performance (COP) is 2-3. The trench is placed below frost. It is typical to see 50°F. This may be 7-10 ft deep and involves excavation, backfill and may involve importing free draining materials to the site. This work often proceeds landscaping, and roads and services like hydro and water which do need careful pre-planning. It is rarely possible in cities or existing homes with limited square footage left to fit this in after a home, parking lot or landscaping area is installed.

The schedule usually requires 2 weeks of good weather days, being similar to house basement foundation

*System Geothermal Option 2* is a system involving ground look vertically via a well drilling / geothermal unit often done with road tires using water to drill to avoid ground loss or a mud slurry like polymer or bentonite. Plastic tubing and Glycol is placed and the mud is displaced with cement (a high CO2 material). A license is required to handle Glycol.

The schedule is usually 3 days to complete 2 ft of vertical drilling and loop placement. And for Clay Or Rock, this is a very messy operation to control.

### **THE SOLUTION**

FeBTUCell™ is patented in the US and Canada on a unique overflow system that allows for Evaporation Cooling will enhance the high return on inputted energy. COP=10. The use of clean water is easier and a clear benefit over glycol.

One of the key advantages of FeBTUCell™ is that it uses readily available steel liners. Typically these are supplied at .375-.500 wall thickness. The diameter of the liner sizes used are 40, 72 and 120 inches. 30 Ton Heat-Cool Geo exchange is possible with caisson drills floated to site.

Examples of foundation drill to use, Bauer 28 if sectional temporary cased, (near a lake like lake or near a Oce depths of drilling are typically 25-50 feet deep, enabling high numbers of piles installed per day by one caisson drill. The closed water furnace system heat pump make up water supplies all the 5-20 gallon overflow to annulus water, between the inner "closed" and "pressurized" 20-24 inch diameter steel water filled, circulating and to a nearby water furnace.

The unique high COP of FeBTUCell™ is the water in contact with steel in effective area and in high rates of heat transfer.