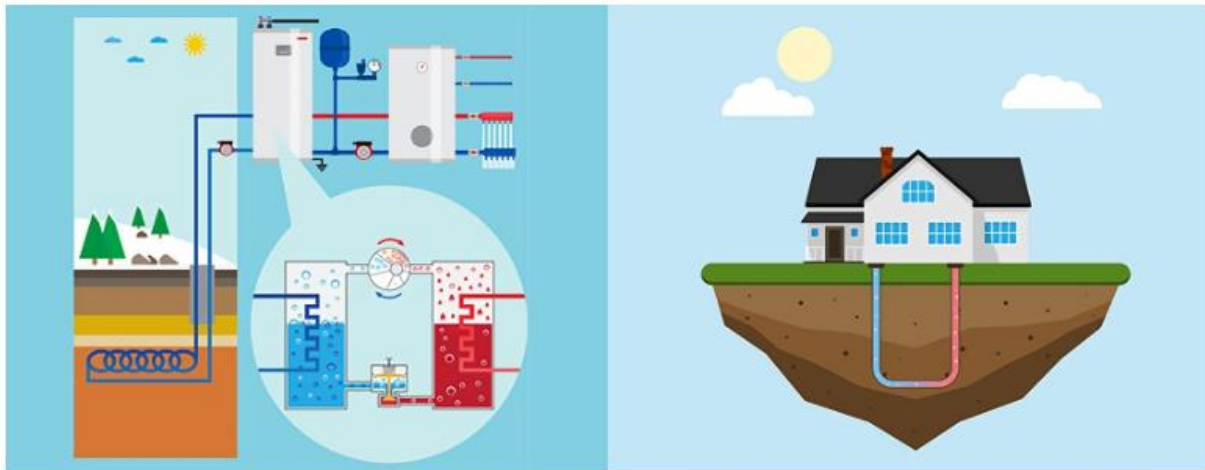


# What Is Geothermal HVAC and How Does It Work?

Posted: January 9, 2018 by Oanh Nguyen



When it comes to environmentally friendly HVAC systems, geothermal heat pumps are a promising and increasingly popular option. Baby boomer customers are attracted to the energy savings geothermal HVAC systems offer. Millennials consider going geothermal because it's better for the planet. <sup>1</sup> In fact, geothermal is expected to supply 10 to 20 percent of the world's energy by 2050. Anyone with HVAC training, show learn about this growing area.

## What Is Geothermal HVAC?

Geothermal HVAC and power systems use Earth temperature for heat exchange. While some areas of the country experiences extreme climates, temperatures underground remain constant. <sup>2</sup>

Geothermal heat pumps are considered a form of high efficiency heat pump. These systems rely on heat transfers between the air and the ground to provide heating and cooling to homes and buildings. Two other forms of geothermal systems are direct use geothermal and deep and enhanced geothermal. Direct use geothermal systems are common in regions with volcanic or tectonic activity that results in naturally heated groundwater. In these systems, hot water is pumped to use in its current state or in heat exchangers to condition the air in the building.

Deep and enhanced geothermal systems are generally used to create electricity for large commercial, agricultural, and industrial applications. They rely on steam located far below the Earth's surface that is accessed by drilling. <sup>3</sup>

## How Do Geothermal HVAC Systems Work?

Geothermal HVAC systems use the same science of refrigeration that other HVAC/R equipment relies on. Under the Second Law of Thermodynamics, heat naturally travels from hot or warm locations to cold ones. In a geothermal HVAC system, an electrically powered heat pump cycles fluid, usually water or refrigerant, through long loops of underground pipes. It is through this process that heat is transferred from ambient air in the building to the ground and vice versa. <sup>4</sup>